



# South Coast Air Quality Management District

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BOARD MEETING DATE: August 7, 2020

AGENDA NO. 18


REPORT: Report to Legislature and CARB on South Coast AQMD's  
Regulatory Activities for Calendar Year 2019

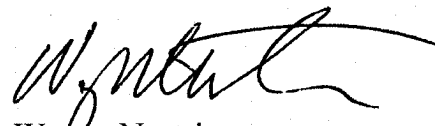
SYNOPSIS: The South Coast AQMD is required by law to submit a report to the Legislature and CARB on its regulatory activities for the preceding calendar year. The report is to include a summary of each rule and rule amendment adopted by South Coast AQMD, number of permits issued, denied, or cancelled, emission offset transactions, budget and forecast, and an update on the Clean Fuels program. Also included is the Annual RECLAIM Audit Report, as required by RECLAIM Rule 2015 - Backstop Provisions.

COMMITTEE: No Committee Review

## RECOMMENDED ACTION:

Receive and file the attached report and direct staff to forward the final report to the Legislature and CARB.

APPROVED by the South Coast Air Quality Management District Board Date: <u>August 7, 2020</u>  Clerk of the Board
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Wayne Nastri  
Executive Officer

DA: FW: HC

## Background

South Coast AQMD is subject to several internal and external reviews of its air quality programs.

In 1990, the Legislature directed South Coast AQMD to provide an annual review of its regulatory activities (SB 1928, Presley) and specified the type of information required (Health and Safety Code §40452). Many of the required elements overlap with other requirements of separate legislation. For example, information on South Coast AQMD's

Clean Fuels Program is a requirement of this report but it is also a separate requirement under legislation passed in 1999 (SB 98, Alarcón). The purpose of this report is to compile a comprehensive regulatory overview. Most of the information included in this report is not new but is simply a compilation of information previously seen by the Board. For example, Chapter I lists all the rules and rule amendments adopted by the Board during 2019. The Annual RECLAIM Audit Report, which the Board approved on March 6, 2020, is also required to be submitted to the Legislature by Rule 2015 - Backstop Provisions.

The specific requirements of this report include:

- A summary of each major rule and rule amendment adopted by the Board;
- The number of permits to operate or permits to construct that were issued, denied, cancelled or not renewed;
- Data on emission offset transactions and applications during the previous year;
- The budget and forecast of staff increases or decreases for the following fiscal year;
- An identification of all sources of revenue used to finance South Coast AQMD activities;
- An update on the South Coast AQMD's Clean Fuels program; and
- The annual RECLAIM Audit Report.

### **Attachment**

Report to the Legislature on the Regulatory Activities of the South Coast AQMD for Calendar Year 2019<sup>1</sup>

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<sup>1</sup> Due to the bulk of these materials, chapters III, IV and V of the report can be found online at [www.aqmd.gov](http://www.aqmd.gov). Anyone who would like to obtain a hard copy of these materials may do so by contacting South Coast AQMD's Public Information Center at (909) 396-2001.

**REPORT TO THE LEGISLATURE ON THE  
REGULATORY ACTIVITIES OF THE  
SOUTH COAST  
AIR QUALITY MANAGEMENT DISTRICT**

**Pursuant to  
Chapter 1702, Statutes of 1990 (SB 1928)**



**August 2020**

Cleaning the Air that We Breathe...

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
GOVERNING BOARD**

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Wayne Nastri  
Executive Officer



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# EXECUTIVE SUMMARY

## Introduction

The South Coast Air Quality Management District (South Coast AQMD) is subject to internal and external reviews of its air quality programs. These include annual reviews of the South Coast AQMD's budget, forecast and proposed operating budget for the upcoming fiscal year, and compliance program audits. In addition, the South Coast AQMD is required to submit to the California Air Resources Board (CARB) and State Legislature an annual review of its regulatory activities for the preceding calendar year (CY). The attached report satisfies this latter requirement, which is mandated pursuant to Chapter 1702, Statutes of 1990 (SB 1928, Presley), Section 40452 of the California Health and Safety Code.

## Rule Development and Other Projects Approved in 2019 and CEQA Alternatives

This section contains a summary of each rule adoption, amendment, rescission, and other projects approved by the South Coast AQMD Governing Board in the preceding CY (e.g., 2019). Each summary contains detailed information about the estimated emission reductions, cost-effectiveness, alternatives considered pursuant to the requirements in the California Environmental Quality Act (CEQA), socioeconomic impacts, and sources of funding.

Projects undertaken by public agencies are subject to CEQA, so rules and regulations promulgated by South Coast AQMD must first be reviewed to determine if they are considered to be a "project" as defined by CEQA. For any proposal that is either not a "project" or determined to be exempt from CEQA, no further action is required. If the project has the potential to create significant or less than significant adverse effects on the environment, then an environmental analysis is necessary. New rules being adopted, or existing rules being amended or rescinded typically require a comprehensive CEQA document that contains an environmental impact analysis which includes the following:

- \* identification of potentially significant adverse environmental impacts evaluated based on environmental checklist topics;
- \* identification of feasible measures, if any, to mitigate significant adverse environmental impacts to the greatest extent feasible;
- \* if necessary, a discussion and comparison of the relative merits of feasible project alternatives that generally achieve the goals of the project, but may generate fewer or less severe adverse environmental impacts; and,
- \* identification of environmental topics not significantly adversely affected by the project.

If significant adverse environmental impacts are identified, feasible mitigation measures, if any, and alternatives must be identified and an analysis of the relative merits of each alternative is required. However, if the CEQA document concludes that no significant adverse environmental impacts would be generated by a proposed project, neither the identification of feasible mitigation measures nor an analysis of CEQA alternatives to the project is required. However, even if a project is determined not to have significant environmental impacts, the CEQA document will

contain a focused analysis of the potential environmental impacts. South Coast AQMD operates under a regulatory program certified by the Secretary for Resources pursuant to Public Resources Code Section 21080.5 and CEQA Guidelines Section 15251(l). The adoption, amendment or rescission of South Coast AQMD rules and regulations are subject to South Coast AQMD's certified CEQA program, while the adoption, amendment or rescission of plans such as the AQMP are not. Having a certified regulatory program means that the South Coast AQMD can incorporate its environmental analyses into CEQA documents other than environmental impact reports (EIRs), negative declarations (NDs), or mitigated NDs (MNDs) without being subject to a limited number of specific CEQA requirements identified in Public Resources Code Section 21080.5. Instead, all CEQA documents prepared by South Coast AQMD pursuant to its certified regulatory program are either called an Environmental Assessment (EA), or some variant of an EA such as a Subsequent or Supplemental EA, or Addendum to an EA.

In 2019, the South Coast AQMD adopted two new rules (Rules 1118.1 and 1480), amended 27 rules (Rules 110, 209, 212, 301, 303, 306, 307.1, 309, 315, 518.2, 1100, 1100.2, 1106, 1111, 1134, 1310, 1325, 1407, 1605, 1610, 1612, 1620, 1623, 1710, 1714, 2001, and 3006) and three regulations (Regulations III, IX, and X), and rescinded one rule (Rule 1106.1). Also, in 2019, South Coast AQMD amended the BACT Guidelines and approved six other projects for which a CEQA analysis was conducted, as follows: Request for Reclassification of Coachella Valley for 1997 8-Hour Ozone Standard; three Community Emissions Reduction Plans for three Year One Communities in accordance with Assembly Bill 617; Facility-Based Mobile Source Measures for five commercial Airports; and Contingency Measure Plan for the 1997 8-Hour Ozone Standard. Of these projects, analyses of CEQA alternatives were required and conducted for Rules 1100, 1110.2, and 1134. Refer to Chapter 1 for the details regarding these approved projects.

Refer to Chapter 1 for the details regarding rule adoptions, rule amendments, and CEQA alternatives.

### **CEQA Lead Agency Projects**

South Coast AQMD also acts as the Lead Agency under CEQA for non-South Coast AQMD projects where South Coast AQMD typically has primary approval (i.e., discretionary permitting authority). Under CEQA, the Lead Agency is responsible for determining whether an EIR, ND, or other type of CEQA document is necessary for any proposal considered to be a "project" as defined by CEQA. Further, the Lead Agency is responsible for preparing the environmental analysis, complying with all procedural requirements of CEQA, and approving the environmental documents. All documents prepared by South Coast AQMD for permit projects are subject to the standard CEQA requirements. South Coast AQMD staff is responsible for preparing or reviewing prepared CEQA documents for stationary source permit projects.

In 2019, the South Coast AQMD approved two lead agency projects: 1) Addendum to the April 2007 Final Mitigated Negative Declaration for Southern California Edison: Mira Loma Peaker Project, Ontario; and 2) Addendum to the May 2017 Final Environmental Impact Report for Tesoro: Los Angeles Refinery Integration and Compliance Project. Refer to Chapter 1 for details regarding these lead agency projects.

Refer to Chapter 1 for details regarding this lead agency project.

## **Socioeconomic Impact Assessments**

California Health and Safety Code Section 40440.8 requires that South Coast AQMD perform socioeconomic impact assessments for its rules and regulations that will significantly affect air quality or emissions limitations. Prior to the requirements of Section 40440.8, South Coast AQMD staff had been evaluating the socioeconomic impacts of its actions pursuant to a 1989 Governing Board Resolution. Additionally, South Coast AQMD staff assesses socioeconomic impacts of CEQA alternatives analyzed for rules with significant cost and emission reduction impacts.

The elements of socioeconomic impact assessments include direct effects on various types of affected industries in terms of control costs and cost-effectiveness as well as public health benefits associated with AQMPs. Additionally, South Coast AQMD staff uses an economic model developed by Regional Economic Models, Inc. (REMI) to analyze the potential direct and indirect socioeconomic impacts of South Coast AQMD rules on Los Angeles, Riverside, Orange, and San Bernardino Counties. These impacts include, but are not limited to, employment and competitiveness.

In 2019, the South Coast AQMD identified and analyzed new socioeconomic impacts for six projects which include two newly adopted rules (Rules 1118.1 and 1480) and four amended rules (Rule 1110.2 with Rule 1100, and Rules 1134 and 1407). The South Coast AQMD also identified and analyzed ongoing socioeconomic impacts for one amended regulation (Regulation III) and two amended rules (Rule 209 and 320). No socioeconomic impacts were identified for projects which included amendments to twenty-two rules (Rules 110, 212, 303, 306, 307.1, 309, 315, 518.2, 1100, 1106, 1111, 1310, 1325, 1605, 1610, 1612, 1620, 1623, 1710, 1714, 2001, and 3006). The BACT Guidelines were also amended in 2019 but no significant socioeconomic impacts were created because the amendments did not result in more stringent requirements than would otherwise occur. Additionally, six other projects were approved: Request for Reclassification of Coachella Valley for 1997 8-Hour Ozone Standard; three Community Emissions Reduction Plans for three Year One communities in accordance with Assembly Bill 617; Facility-Based Mobile Source Measures for five commercial airports; and Contingency Measure Plan for the 1997 8-Hour Ozone Standard. A socioeconomic analysis was not conducted for any of these projects as it is not required by statute or South Coast AQMD Governing Board resolution. Refer to Chapter 1 for details regarding the socioeconomic impact assessments.

Refer to Chapter 1 for details regarding the socioeconomic impact assessments.

## **Engineering and Permitting**

### Background

Section 40452 of the California Health and Safety Code requires that the South Coast AQMD (SCAQMD) submit an annual report to both the state board and Legislature that summarizes its regulatory activities for the preceding calendar year. Paragraph (b) of Section 40452 requires that the annual report include data on “the number of permits to operate or to construct, by type of industry, that are issued and denied, and the number of permits to operate that are not renewed.” Paragraph (c) of section 40452 requires that the annual report also includes data on emission offset transactions and applications during the previous fiscal year, including an accounting of the

number of applications for permits for new or modified sources that were denied because of the unavailability of emission offsets. In addition, SCAQMD Rule 2015 requires submittal of the annual Regional Clean Air Incentives Market (RECLAIM) Audit Report for the 2018 Compliance Year to the Legislature.

The following paragraphs provide a brief summary for each report.

#### Permitting Data – Calendar Year 2019

During calendar year 2019, SCAQMD dispositioned a total of 7,426 applications. The majority of these applications were for Permits to Operate (3,002), Area Sources & Certified/ Registrations (1,060), and Changes of Operators (918). Also, 889 permits were not renewed. This data, broken down into nine different categories, is summarized in Table 1 of Attachment A.

Table 2 in Attachment A contains a breakdown of permits dispositioned (in the nine categories) and permits not renewed, by type of industry. The type of industry was based on North American Industry Classification System (NAICS) codes, which were provided by the applicant at the time of application filing. The top four NAICS codes were 447110/447190 – Gasoline Service Stations, 811121 - Automotive Body, Paint, and Interior Repair and Maintenance, 324110 - Petroleum Refineries, and 812320 – Dry Cleaning and Laundry Services (except Coin-Operated).

#### Emission Offset Transactions Data – Fiscal Year 2018/2019

During fiscal year 2018-19, a total of 43 emission offset transactions were completed, which include 37 transactions for reactive organic gases (ROG), five transactions for oxides of nitrogen (NOx), and one transaction for particulate matter with an aerodynamic diameter less than 10 microns (PM10). There were no transactions for oxides of sulfur (SOx) and carbon monoxide (CO). The amounts of emissions offsets transferred, by pollutant, include 981 pounds per day of ROG, 26 pounds per day of NOx, and three pounds of PM10 (see Table 3 of Attachment B). Seven banking applications were processed resulting in the issuance of new emission offsets for 77 pounds per day of ROG and 513 pounds per day of PM10. Additionally, no applications were denied for a permit for a new source for the reason of failure to provide the required emission offsets. (See Attachment B for details)

#### RECLAIM Audit Report

The REgional CLean Air Incentives Market (RECLAIM) program was adopted in 1993 to provide facilities with flexibility in achieving the same emissions reduction goals as would have achieved under the traditional command and control approach, while lowering the cost of compliance. To ensure RECLAIM is achieving its goal, South Coast AQMD Rule 2015 - Backstop Provisions, requires preparation of an annual audit report on the program. This Annual RECLAIM Audit Report assesses emission reductions, availability of RECLAIM Trading Credits (RTCs) and their average annual prices, job impacts, compliance issues, and other measures of performance for the twenty-fourth year of this program. The results of the annual audit show that RECLAIM continues to meet its aggregate emission goals and all other specified objectives.

As discussed in more detail in the audit report (see Chapter V), a total of 253 facilities were in the RECLAIM program at the end of Compliance Year 2018. Total NOx emissions from RECLAIM facilities were 22 percent less than the aggregate NOx allocations, and SOx emissions were 14 percent less than the aggregate SOx allocations for the program. The vast majority of RECLAIM facilities complied with their allocations during the 2018 compliance year (94 percent of NOx facilities and 97 percent of SOx facilities).

A total of over \$1.52 billion in RTCs has been traded since the adoption of RECLAIM, of which \$34.2 million occurred in calendar year 2019 (compared to \$3.9 million in calendar year 2018), excluding swaps. The annual average prices of discrete-year NOx and SOx RTCs and infinite-year block (IYB – trades that involve blocks of RTCs with a specified start year and continuing in perpetuity) NOx and SOx RTCs traded in calendar years 2018 and 2019 were all below the applicable review thresholds for initiating program review.

In Compliance Year 2018, RECLAIM facilities reported a net gain of 326 jobs, representing 0.32 percent of their total employment. The RECLAIM program also met other applicable requirements including meeting the applicable federal offset ratio under New Source Review and having no significant seasonal fluctuation in emissions. Additionally, there is no evidence that RECLAIM resulted in any increase in health impacts due to emissions of air toxics.

Refer to Chapter V for the “Annual RECLAIM Audit Report for 2018 Compliance Year.”

### **Budget and Work Program**

Refer to Chapter III for the Fiscal Year 2020-2021 Budget Report.

### **Clean Fuels Programs**

#### **2019 Annual Report**

In CY 2019, the South Coast AQMD Clean Fuels Program executed 68 new contracts, projects or studies and modified four continuing project adding dollars toward research, development, demonstration and deployment projects as well as technology assessment and transfer of alternative fuel and clean fuel technologies. The South Coast AQMD Clean Fuels Program contributed nearly \$11.9 million in partnership with other governmental organizations, private industry, academia and research institutes, and interested parties, with total project costs of approximately \$134 million. The \$11.9 million includes \$3.12 million recognized into the Clean Fuels Fund as pass-through funds from United States Environmental Protection Agency (U.S. EPA) Airshed Grant funds for a battery-electric shuttle bus replacement project. Additionally, in CY 2019, the Clean Fuels Program continued to leverage other outside funding opportunities, securing new awards totaling \$19.9 million from federal, state and local funding opportunities.

Like the last couple of years, the significant project scope of a few key contracts executed in 2019 resulted in higher than average leveraging of Clean Fuels dollars. Typical historical leveraging is \$4 for every \$1 in Clean Fuels funding. In 2019, South Coast AQMD continued this upward trend with more than \$14 leveraged for every \$1 in Clean Fuels funds. Leveraging dollars and

aggressively pursuing funding opportunities is critical given the magnitude of needed funding identified in the 2016 AQMP to achieve federal ozone air quality standards.

The projects or studies executed in 2019 included a diverse mix of advanced technologies. The following core areas of technology advancement for 2019 executed contracts (in order of funding percentage) include:

1. Electric and Hybrid Vehicle Technologies and Related Infrastructure (emphasizing electric and hybrid electric trucks developed by OEMs and container transport technologies with zero emission operations);
2. Health Impacts Studies (including MATES V);
3. Technology Assessment and Transfer/Outreach;
4. Hydrogen and Mobile Fuel Cell Technologies and Infrastructure;
5. Fuel/Emissions Studies; and
6. Engine Systems/Technologies (emphasizing alternative and renewable fuels for truck and rail applications).

During CY 2019, the South Coast AQMD supported a variety of projects and technologies, ranging from near- term to long-term research, development, demonstration and deployment activities. This “technology portfolio” strategy provides the South Coast AQMD the ability and flexibility to leverage state and federal funding while also addressing the specific needs of the Basin. Projects included significant electric and hybrid electric technologies and infrastructure to develop and demonstrate medium- and heavy-duty vehicles in support of transitioning to a near-zero and zero emissions goods movement industry; development, demonstration and deployment of large displacement natural gas and ultra-low emissions engines; and demonstration of emissions control technologies for heavy-duty engines; and natural gas and renewable natural gas deployment and support.

In addition to the 72 executed contracts and projects, 15 research, development, demonstration and deployment projects or studies and 18 technology assessment and transfer contracts were completed in 2019. As of January 1, 2020, there were 128 open contracts in the Clean Fuels Program.

In accordance with California H&SC Section 40448.5.1(d), this annual report must be submitted to the state legislature by March 31, 2020, after approval by the South Coast AQMD Board.

### **2020 Plan Update**

Staff’s re-evaluation of the Clean Fuels Program to develop the annual Plan Update is based on a reassessment of the technology progress and direction for the agency. The Program continually seeks to support the development and deployment of lower-emitting technologies with increased collaboration with OEMs in order to get to large scale deployment. The design and implementation of the Clean Fuels Program Plan must balance the needs in the various technology sectors with technology readiness on the path to commercialization, emissions reduction potential and cofunding opportunities. For several years, the state has continued to focus a great deal of its attention on climate change and petroleum reduction goals, but the South Coast AQMD has necessarily remained committed to developing, demonstrating and commercializing technologies that reduce criteria pollutants, specifically NO<sub>x</sub> and toxic air contaminants (TACs). Fortunately,

many, if not the majority, of these technologies that address the Basin's need for NOx and TAC reductions also garner reductions in greenhouse gases (GHG) and petroleum use. Due to these "co-benefits," the South Coast AQMD has been successful in partnering with the state, which allows the Clean Fuels Program to leverage its funding extensively.

To identify technology and project opportunities where funding can make a significant difference in deploying progressively cleaner technologies in the Basin, the South Coast AQMD employs several outreach and networking activities. These activities range from close involvement with state and federal collaboratives, partnerships and industrial coalitions, to the issuance of Program Opportunity Notices (PONs) to solicit project ideas and concepts as well as issuance of Requests for Information (RFIs) to determine the state of various technologies and the development and commercialization challenges faced by those technologies. Additionally, unsolicited proposals from OEMs and other clean fuel technology developers are regularly received and reviewed. Potential development, demonstration and certification projects resulting from these outreach and networking activities are included conceptually within the Draft 2020 Plan Update. On a related side note, because of Assembly Bill (AB) 6171, which requires reduced exposure to communities most impacted by air pollution. TAO conducted additional outreach to AB 617 communities regarding available zero and near-zero emission technologies as well as the incentives to accelerate those cleaner technologies into their communities.

The Plan Update includes projects to develop, demonstrate and commercialize a variety of technologies, from near-term to long-term commercialization, that are intended to provide solutions to the emission control needs identified in the 2016 AQMP. Given the need for significant reductions over the next five to ten years, near-zero and zero emission technologies are emphasized. Areas of focus include:

- reducing emissions from port-related activities, such as cargo handling and container movement other technologies, including demonstration and deployment of zero emission drayage trucks;
- developing and demonstrating ultra-low emission, liquid fuel, larger displacement engines and zero emission heavy-duty vehicles;
- developing, demonstrating and deploying advanced natural gas engines and vehicles as well as near-zero and zero emission technologies for high horsepower applications;
- mitigating criteria pollutant emissions from renewable fuels, such as renewable natural gas, diesel and hydrogen as well as other renewable fuels and waste streams;
- producing transportation fuels and energy from renewable and waste stream sources;
- developing and demonstrating electric-drive (fuel cell, battery, plug-in hybrid and hybrid) technologies across light-, medium- and heavy-duty platforms;
- establishing large-scale hydrogen refueling and EV charging infrastructure to accelerate introduction of zero emission vehicles into the market; and
- developing and demonstrating advanced zero emission microgrids for energy storage and demand.

Potential projects across nine core technologies by funding priority:

1. Hydrogen/Mobile Fuel Cell Technologies and Infrastructure (especially large-scale refueling facilities);



2. Engine Systems/Technologies (emphasizing alternative and renewable fuels for truck and rail applications);
3. Electric/Hybrid Vehicle Technologies and Related Infrastructure (emphasizing electric and hybrid electric trucks and container transport technologies with zero emission operations);
4. Fueling Infrastructure and Deployment (predominantly natural gas and renewable fuels);
5. Stationary Clean Fuel Technologies (including microgrids and renewables);
6. Fuel and Emission Studies;
7. Emission Control Technologies;
8. Health Impact Studies; and
9. Technology Transfer/Assessment and Outreach.

These potential projects for 2020 total \$16.1 million, with anticipated leveraging of more than \$4 for every \$1 of Clean Fuels funding for total project costs of \$81.86 million. Some of the proposed projects may also be funded by revenue sources other than the Clean Fuels Program, especially VOC and NOx mitigation and incentive projects.

**CHAPTER I**  
**RULE DEVELOPMENT, CEQA, and SOCIOECONOMIC IMPACT ANALYSES**

## **RULE DEVELOPMENT AND OTHER PROJECTS APPROVED IN 2019 AND CEQA ALTERNATIVES**

This section contains a summary of each rule adoption, amendment, rescission, and other projects approved by the South Coast AQMD Governing Board in the preceding calendar year (e.g., 2019). Each summary provides detailed information about the estimated emission reductions, cost-effectiveness, alternatives considered pursuant to the requirements in the California Environmental Quality Act (CEQA), socioeconomic impacts, and sources of funding.

Projects undertaken by public agencies are subject to CEQA, so rules and regulations promulgated by South Coast AQMD must first be reviewed to determine if they are considered to be a “project” as defined by CEQA. For any proposal that is either not a “project” or determined to be exempt from CEQA, no further action is required. If the project has the potential to create significant or less than significant adverse effects on the environment, then an environmental analysis is necessary. New rules being adopted, or existing rules being amended or rescinded typically require a comprehensive CEQA document that contains an environmental impact analysis which includes the following:

- identification of potentially significant adverse environmental impacts evaluated based on environmental checklist topics;
- identification of feasible measures, if any, to mitigate significant adverse environmental impacts to the greatest extent feasible;
- if necessary, a discussion and comparison of the relative merits of feasible project alternatives that generally achieve the goals of the project, but may generate fewer or less severe adverse environmental impacts; and,
- identification of environmental topics not significantly adversely affected by the project.

If significant adverse environmental impacts are identified, feasible mitigation measures, if any, and alternatives must be identified and an analysis of the relative merits of each alternative is required. However, if the CEQA document concludes that no significant adverse environmental impacts would be generated by a proposed project, neither the identification of feasible mitigation measures nor an analysis of CEQA alternatives to the project is required. However, even if a project is determined not to have significant environmental impacts, the CEQA document will contain a focused analysis of the potential environmental impacts.

South Coast AQMD operates under a regulatory program certified by the Secretary for Resources pursuant to Public Resources Code Section 21080.5 and CEQA Guidelines Section 15251(l). The adoption, amendment or rescission of South Coast AQMD rules and regulations are subject to South Coast AQMD’s certified CEQA program, while the adoption, amendment or rescission of plans such as the AQMP are not. Having a certified regulatory program means that the South Coast AQMD can incorporate its environmental analyses into CEQA documents other than environmental impact reports (EIRs), negative declarations (NDs), or mitigated NDs (MNDs) without being subject to a limited number of specific CEQA requirements identified in Public Resources Code Section 21080.5. Instead, all CEQA documents prepared by South Coast AQMD pursuant to its certified regulatory program are either called an Environmental Assessment (EA), or some variant of an EA such as a Subsequent or Supplemental EA, or Addendum to an EA.

The following section identifies all new and amended rules that were adopted by the South Coast AQMD Governing Board in 2019, in sequential order according to the month of project approval. One rule was rescinded in 2019. This section also summarizes other projects requiring a CEQA analysis were approved by the South Coast AQMD Governing Board in 2019. The type of CEQA document (including projects that were determined to be exempt from CEQA) is described for each project. Alternatives are summarized only for those projects identified as having potentially significant impacts requiring an alternatives analysis pursuant to CEQA.

#### **JANUARY 4, 2019**

Two projects were approved by the South Coast AQMD Governing Board in January:

- 1. Adopted Rule 1118.1 – Control of Emissions From Non-Refinery Flares:** Rule 1118.1 was adopted to reduce oxides of nitrogen (NO<sub>x</sub>) and volatile organic compound (VOC) emissions from non-refinery flares, and to encourage alternatives to flaring. The rule implements, in part, the 2016 Air Quality Management Plan (AQMP) Control Measure CMB-03 – Emission Reductions from Non-Refinery Flares, and facilitates the transition of the NO<sub>x</sub> RECLAIM program to a command-and-control regulatory structure to assist implementation of Control Measure CMB-05 – NO<sub>x</sub> Reduction from RECLAIM Assessment. Rule 1118.1 establishes emission limits for NO<sub>x</sub>, VOC, and carbon monoxide (CO) for new, replaced, or relocated flares and a capacity threshold for existing flares. Flares that surpass the capacity threshold are required to either reduce flaring below the threshold or replace the flare with a unit complying with the NO<sub>x</sub> emission limits. Replaced and new flares with emissions high enough to require monitoring and reporting under Annual Emissions Reporting (AER) have additional flare gas throughput limitations. In particular, replaced flares will be limited to a flare gas throughput of 110 percent of the average annual throughput for the two calendar years preceding the submittal of the flare application, and new flares will be limited a flare gas throughput of no more than 45 million standard cubic feet per year (MMscf/year). Lastly, source test provisions have been established to ensure that emission limits or the low-emission exemption are being met. Rule 1118.1 was submitted to CARB for inclusion into the State Implementation Plan (SIP). A Final EA was prepared for the project and the analysis concluded that there would be no significant adverse environmental impacts. Since no significant adverse environmental impacts were identified, no alternatives analysis and no mitigation measures were required. The South Coast AQMD Governing Board certified the Final EA and approved the project. Since mitigation measures were not made a condition of project approval, a Mitigation Monitoring and Reporting Plan pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097 was not adopted. Findings pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15091, and a Statement of Overriding Considerations pursuant to CEQA Guidelines Section 15093, were also not required and therefore, not adopted. A Notice of Decision, prepared pursuant to Public Resources Code Section 21080.5(d)(2)(E), CEQA Guidelines Sections 15252(b) and 15094(b), and South Coast AQMD Rule 110(f), was filed with and posted by the California Natural Resources Agency.

*Estimated Emission Reductions:* 0.18 ton per day of NO<sub>x</sub> and 0.014 ton per day of VOC from 2024 and onward. *Cost Effectiveness:* \$45,000 per ton of NO<sub>x</sub> reduced. *CEQA*

*Alternatives:* None, not required. *Socioeconomic Impact:* Yes, see Socioeconomic Impact Assessments section. *Source(s) of Funding:* Permit Fees, Emission Fees, and Annual Operating Fees.

- 2. Amended Rule 1325 – Federal PM2.5s New Source Review Program:** Rule 1325 was amended to correct a deficiency identified by the United States Environmental Protection Agency (U.S. EPA) relative to the definition of the term “regulated NSR (New Source Review) pollutant” by including a reference to PM2.5 and its precursors, including VOC and ammonia, to be consistent with the existing definition of “precursors”. Rule 1325 was submitted to CARB for inclusion into the SIP. The South Coast AQMD Governing Board determined that the project was exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Activities Covered by General Rule<sup>1</sup>, CEQA Guidelines Section 15268 – Ministerial Projects, and CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment. and no exceptions to the application of the categorical exemption set forth in CEQA Guidelines Section 15300.2 – Exceptions, including the “unusual circumstances” exception, applied to the project. Because this project was determined to be exempt from CEQA, consideration of a range of CEQA alternatives was not applicable. The South Coast AQMD Governing Board approved the project and a Notice of Exemption, prepared pursuant to CEQA Guidelines Section 15062, was filed with and posted by the counties of Los Angeles, Orange, Riverside and San Bernardino.

*Estimated Emission Reductions:* None. *Cost-Effectiveness:* Not applicable. *CEQA Alternatives:* None, not required. *Socioeconomic Impact:* Not applicable. *Source(s) of Funding:* Emission Fees.

## **FEBRUARY 1, 2019**

One project was approved by the South Coast AQMD Governing Board in February:

**Amended Best Available Control Technology (BACT) Guidelines:** Amendments to the BACT Guidelines added new or updated determinations and/or policy to reflect the most current achieved-in-practice air pollution control equipment and processes. In particular, the revisions added new and amended listings to Part B: Lowest Achievable Emission Rate (LAER) Determinations for Major Polluting Facilities, Part D: BACT Determinations for Non-Major Polluting Facilities and updated Parts A and C, Policy for Major and Non-Major Polluting Facilities, respectively. Additionally, revisions were made to reflect current South Coast AQMD practices in permitting and to make administrative amendments to the Charter for the BACT Scientific Review Committee. The South Coast AQMD Governing Board determined that the project was exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Activities Covered by General Rule<sup>2</sup> and CEQA Guidelines Section 15308 –

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<sup>1</sup> The phrase “Activities Covered by General Rule” describes this CEQA exemption at the time the amendment to Rule 1325 was adopted. However, the 2019 edition of the CEQA Guidelines reworded this description as “Common Sense Exemption.” Both phrases may be used interchangeably when referring to CEQA Guidelines Section 15061(b)(3).

<sup>2</sup> The phrase “Activities Covered by General Rule” describes this CEQA exemption at the time the amendment to Rule 1325 was adopted. However, the 2019 edition of the CEQA Guidelines reworded this description as “Common

Actions by Regulatory Agencies for Protection of the Environment and no exceptions to the application of the categorical exemption set forth in CEQA Guidelines Section 15300.2 – Exceptions, including the “unusual circumstances” exception, applied to the project. Because this project was determined to be exempt from CEQA, consideration of a range of CEQA alternatives was not applicable. The South Coast AQMD Governing Board approved the project and a Notice of Exemption, prepared pursuant to CEQA Guidelines Section 15062, was filed with and posted by the counties of Los Angeles, Orange, Riverside and San Bernardino.

*Estimated Emission Reductions:* None. *Cost-Effectiveness:* Not applicable. *CEQA Alternatives:* None, not required. *Socioeconomic Impact:* Not applicable. *Source(s) of Funding:* Permit Fees, Emission Fees and Annual Operating Fees.

### **MARCH 1, 2019**

One project was approved by the South Coast AQMD Governing Board in March:

**Amended Rules: 110 – Rule Adoption Procedures to Assure Protection and Enhancement of the Environment; 212 – Standards for Approving Permits and Issuing Public Notice; 301 – Permitting and Associated Fees; 303 – Hearing Board Fees; 306 – Plan Fees; 307.1 – Alternative Fees for Air Toxics Emissions Inventory; 309 – Fees for Regulation XVI and Regulation XXV; 315 – Fees for Training Classes and License Renewal; 518.2 – Federal Alternative Operating Conditions; 1310 – Analysis and Reporting; 1605 – Credits For The Voluntary Repair of On-Road Motor Vehicles Identified Through Remote Sensing Devices; 1610 – Old-Vehicle Scrapping; 1612 – Credits for Clean On-Road Vehicles; 1620 – Credits for Clean Off-Road Mobile Equipment; 1623 – Credits for Clean Lawn and Garden Equipment; 1710 – Analysis, Notice, and Reporting; 1714 – Prevention of Significant Deterioration for Greenhouse Gases; and 3006 – Public Participation:** To modernize communications, streamline public notification, and implement requirements in California Senate Bill (SB) 1502 and U.S. EPA revisions for public noticing of certain permitting programs, 18 rules were grouped into the following four categories and amended: 1) Public Notifications for New Source Review and Federal Permit Programs; 2) Public Notifications for Rulemaking Activities; 3) Communications for Implementing Fee Rules; and 4) Public Notifications for Offset Program Rules. Relative to the category of Public Notifications for New Source Review and Federal Permit Programs, amendments to Rules 212, 518.2, 1710, 1714, and 3006 removed the requirement for public notification by newspaper, and added requirements to post draft permits and public notices for permit actions on the South Coast AQMD website. Relative to the category of Public Notifications for Rulemaking Activities, Rule 110 was amended in accordance with SB 1502 to allow the South Coast AQMD to send certain public notices by email for those electing to receive public notices by email. Relative to the category of Communications for Implementing Fee Rules, Rules 301, 303, 306, 307.1, 309, and 315 were amended to allow certain fee invoices to be emailed and to expand payment options for these invoices to include electronic payment. Relative to the category of Public Notifications for Offset Program Rules, to have rules procedures comparable to those for

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Sense Exemption.” Both phrases may be used interchangeably when referring to CEQA Guidelines Section 15061(b)(3).

processing permits with e-noticing, Rules 1310, 1605, 1610, 1612, 1620, and 1623 were amended to replace the requirement for conducting public notice via newspaper publication with posting public notices on the South Coast AQMD website. The South Coast AQMD Governing Board determined that the project was exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Activities Covered by General Rule<sup>3</sup>. Because this project was determined to be exempt from CEQA, consideration of a range of CEQA alternatives was not applicable. The South Coast AQMD Governing Board approved the project and Notice of Exemption, prepared pursuant to CEQA Guidelines Section 15062, was filed with and posted by the counties of Los Angeles, Orange, Riverside and San Bernardino.

*Estimated Emission Reductions:* None. *Cost-Effectiveness:* Not applicable. *CEQA Alternatives:* None, not required. *Socioeconomic Impact:* Not applicable. *Source(s) of Funding:* Emission Fees and Annual Operating Fees.

#### **APRIL 5, 2019**

One project was approved by the South Coast AQMD Governing Board in April:

##### **Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines:**

To update NOx emission limits for stationary gas turbines and facilitate the transition of the NOx RECLAIM program to a command-and-control regulatory structure in accordance with 2016 Air Quality Management Plan (AQMP) Control Measure CMB-05 – Further NOx Reductions from RECLAIM Assessment, amendments to Rule 1134: 1) expanded rule applicability to include stationary gas turbines that were not previously required to comply; 2) updated the NOx and ammonia emission limits for stationary gas turbines to comply with Best Available Retrofit Control Technology (BARCT); 3) established new exemptions for low-use equipment, certain existing combined cycle gas turbines, and emergency standby gas turbines; 4) provided relief from having to comply with ammonia requirements for turbines that do not use ammonia for controlling NOx emissions; and 5) revised existing exemptions to remove obsolete provisions. Rule 1134 was submitted to CARB for inclusion into the SIP. A Final Subsequent Environmental Assessment (SEA) was prepared for the project and the analysis concluded that while the project will reduce NOx emissions, complying with Rule 1134 may cause some facility operators to make physical modifications to their equipment in order to achieve compliance, and these activities may create secondary adverse environmental impacts. The storage and use of aqueous ammonia resulting from the installation of selective catalytic reduction (SCR) systems were identified as having potentially significant adverse impacts in the topic of hazards and hazardous materials. Mitigation measures were required although none were identified that would eliminate or reduce the significant adverse hazards and hazardous materials impacts to less than significant levels. An analysis of project alternatives was also required and the following three alternatives were analyzed, but none were chosen:

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<sup>3</sup> The phrase “Activities Covered by General Rule” describes this CEQA exemption at the time the amendment to Rule 1325 was adopted. However, the 2019 edition of the CEQA Guidelines reworded this description as “Common Sense Exemption.” Both phrases may be used interchangeably when referring to CEQA Guidelines Section 15061(b)(3).

**Alternative A – No Project:** Alternative A, the no project alternative, means instead of implementing the proposed amendments to Rule 1134, the August 1997 version of Rule 1134 would remain in effect such that stationary gas turbines at RECLAIM facilities would not have to comply with the more stringent NOx emission limits and affected equipment would remain in the NOx RECLAIM program. Under this alternative, no NOx emission reductions will be achieved, no ammonia use would occur, and the stationary gas turbines at RECLAIM and non-RECLAIM facilities would not achieve BARCT level equivalency.

**Alternative B – Earlier Compliance Date 12/31/2022:** Alternative B analyzed the same NOx and ammonia emission limits contained in the proposed amendments to Rule 1134 but with a compliance date for meeting the NOx and ammonia emission limits occurring one year earlier, December 31, 2022, whereby allowing three years to achieve compliance. The earlier compliance date under Alternative B was more stringent than the amendments proposed to Rule 1134.

**Alternative C – Phased Compliance Dates:** Alternative C analyzed the same NOx and ammonia emission limits contained in the proposed amendments to Rule 1134, but with varying compliance dates depending on fuel type, as follows: 1) Liquid Fuel – Outer Continental Shelf: December 31, 2023, 2) Natural Gas – Combined Cycle: June 30, 2023; 3) Natural Gas – Compressor Gas Turbine: December 31, 2023; 4) Natural Gas – Simple Cycle: December 31, 2022; 5) Produced Gas: December 31, 2023; 6) Produced Gas – Outer Continental Shelf: December 31, 2023; and 7) Other: December 31, 2023. The earlier compliance dates for the Natural Gas – Combined Cycle and Natural Gas – Simple Cycle categories under Alternative C were more stringent than the amendments proposed to Rule 1134 but less stringent than Alternative B for the Natural Gas – Combined Cycle category.

The South Coast AQMD Governing Board certified the Final SEA and approved the project, as proposed. A Mitigation Monitoring and Reporting Plan pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097, a Statement of Overriding Considerations pursuant to CEQA Guidelines Section 15093, and Findings pursuant to CEQA Guidelines Section 15091 were also adopted. A Notice of Decision, prepared pursuant to Public Resources Code Section 21080.5(d)(2)(E), CEQA Guidelines Sections 15252(b) and 15094(b), and South Coast AQMD Rule 110(f), was filed with and posted by the California Natural Resources Agency.

*Estimated Emission Reductions:* 2.8 tons per day of NOx after implementation of the BARCT limits. *Cost-Effectiveness:* Cost-effectiveness was evaluated for five types of equipment: 1) \$11,500 per ton of NOx reduced for combined cycle turbines; 2) \$8,400 per ton of NOx reduced for simple cycle turbines; 3) \$3,600 per ton of NOx reduced for outer continental shelf gas turbines; and 4) \$4,900 per ton of NOx reduced for compressor gas turbines. *CEQA Alternatives:* Three alternatives were analyzed, see alternatives described above. *Socioeconomic Impact:* Yes, see Socioeconomic Impact Assessments section. *Source(s) of Funding:* Permit Fees, Emission Fees and Annual Operating Fees.



**MAY 3, 2019**

Two projects were approved by the South Coast AQMD Governing Board in May:

- 1. Amended Regulation III – Fees and Rule 209 – Transfer and Voiding of Permits:** Amendments to the following Regulation III rules (Rules 301 – Permitting and Associated Fees, 303 – Hearing Board Fees, 304 – Equipment, Materials, and Ambient Air Analyses, 304.1 – Analyses Fees, 306 – Plan Fees, 307.1 – Alternative Fees for Air Toxics Emissions Inventory, 308 – On-Road Motor Vehicle Mitigation Options Fees, 309 – Fees for Regulation XVI and Regulation XXV, 311 – Air Quality Investment Program (AQIP) Fees, 313 – Authority to Adjust Fees and Due Dates, 314 – Fees for Architectural Coatings, and 315 – Fees for Training Classes and License Renewal) were combined with amendments to Rule 209. The amendments to Rules 301, 303, 304, 304.1, 306, 307.1, 308, 309, 311, 313, 314, and 315 included the following: 1) an increase in fees for consistency with the increase in the California Consumer Price Index (pursuant to Rule 320 – Automatic Adjustment Based on Consumer Price Index for Regulation III Fees); 2) new and increased fees to meet the requirements of recently adopted rules and state mandates; 3) new or increased fees for cost recovery; and 4) administrative changes that include clarifications, deletions, or corrections to existing rule language. Amendments to Rule 209 clarified how permit transfers are considered when there is a change of owner/operator. All of the amended rules were submitted to CARB for inclusion into the SIP to the extent necessary to satisfy Clean Air Act Section 182(a)(3)(B). The South Coast AQMD Governing Board determined that the project was exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption; CEQA Guidelines Section 15273 – Rates, Tolls, Fares, and Charges; and CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment, and no exceptions to the application of the categorical exemption set forth in CEQA Guidelines Section 15300.2 – Exceptions, including the “unusual circumstances” exception, applied to the project. Because this project was determined to be exempt from CEQA, consideration of a range of CEQA alternatives was not applicable. The South Coast AQMD Governing Board approved the project and a Notice of Exemption, prepared pursuant to CEQA Guidelines Section 15062, was filed with and posted by the counties of Los Angeles, Orange, Riverside and San Bernardino.

*Estimated Emission Reductions:* None. *Cost-Effectiveness:* Not applicable. *CEQA Alternatives:* None, not required. *Socioeconomic Impact:* Yes, see Socioeconomic Impact Assessments section. *Source(s) of Funding:* Emission Fees and Annual Operating Fees.

- 2. Amended Rule 1106 – Marine and Pleasure Craft Coating, and Rescinded Rule 1106.1 – Pleasure Craft Coating Operations:** The project was comprised of amending Rule 1106 to incorporate the requirements of Rule 1106.1 and simultaneously rescind Rule 1106.1. Rule 1106 was also amended to align VOC content limits with U.S. EPA Control Techniques Guidelines (CTGs) and other California air districts, and promote consistency with other VOC-related rules contained in South Coast AQMD Regulation XI – Source Specific Standards. A Revised Final EA was prepared for the project and the analysis concluded that there would be no significant adverse environmental impacts. Since no significant adverse environmental impacts were identified, no alternatives

analysis and no mitigation measures were required. The South Coast AQMD Governing Board certified the Revised Final EA and approved the project. Since mitigation measures were not made a condition of project approval, a Mitigation Monitoring and Reporting Plan pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097 was not adopted. Findings pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15091, and a Statement of Overriding Considerations pursuant to CEQA Guidelines Section 15093, were also not required and therefore, not adopted. A Notice of Decision, prepared pursuant to Public Resources Code Section 21080.5(d)(2)(E), CEQA Guidelines Sections 15252(b) and 15094(b), and South Coast AQMD Rule 110(f), was filed with and posted by the California Natural Resources Agency.

*Estimated Emission Reductions:* None. *Cost-Effectiveness:* Not applicable. *CEQA Alternatives:* None, not required. *Socioeconomic Impact:* No, see Socioeconomic Impact Assessments section. *Source(s) of Funding:* Permit Fees, Emission Fees, and Annual Operating Fees.

## **JUNE 7, 2019**

Three projects were approved by the South Coast AQMD Governing Board in June:

- 1. Submission of Amended Rule 1106 – Marine and Pleasure Craft Coatings, for Inclusion into the SIP and Withdrawal of Rescinded Rule 1106.1 – Pleasure Craft Coating Operations, form the SIP:** This project submitted the May 3, 2019 version of Rule 1106 to CARB for inclusion into the SIP as well as sought withdrawal of Rule 1106.1 as rescinded on May 3, 2019 from the SIP. The South Coast AQMD Governing Board determined that the project was exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption, and CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment, and no exceptions to the application of the categorical exemption set forth in CEQA Guidelines Section 15300.2 – Exceptions, including the “unusual circumstances” exception, applied to the project. Because this project was determined to be exempt from CEQA, consideration of a range of CEQA alternatives was not applicable. The South Coast AQMD Governing Board approved the project and a Notice of Exemption, prepared pursuant to CEQA Guidelines Section 15062, was filed with and posted by the counties of Los Angeles, Orange, Riverside and San Bernardino.

*Estimated Emission Reductions:* None. *Cost-Effectiveness:* Not applicable. *CEQA Alternatives:* None, not required. *Socioeconomic Impact:* Not applicable. *Source(s) of Funding:* Permit Fees, Emission Fees, and Annual Operating Fees.

- 2. Request for Reclassification of Coachella Valley for 1997 8-Hour Ozone Standard:** Due to higher ozone levels experienced in the Coachella Valley in 2017 and 2018 which caused exceedances of the 1997 8-hour ozone standard, the South Coast AQMD submitted a request to the U.S. EPA to reclassify the Coachella Valley from Severe to Extreme nonattainment for the 1997 8-hour ozone standard. The reclassification also sought to establish a new attainment date of June 15, 2024 to provide additional time to

bring the Coachella Valley into attainment with this standard. The South Coast AQMD Governing Board determined that the project was exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption and CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment, and no exceptions to the application of the categorical exemption set forth in CEQA Guidelines Section 15300.2 – Exceptions, including the “unusual circumstances” exception, applied to the project. Because this project was determined to be exempt from CEQA, consideration of a range of CEQA alternatives was not applicable. The South Coast AQMD Governing Board approved the project and a Notice of Exemption, prepared pursuant to CEQA Guidelines Section 15062, was filed with and posted by the counties of Los Angeles, Orange, Riverside and San Bernardino.

*Estimated Emission Reductions:* None. *Cost-Effectiveness:* Not applicable. *CEQA Alternatives:* None, not required. *Socioeconomic Impact:* Not applicable. *Source(s) of Funding:* Emission Fees and Annual Operating Fees.

- 3. Amended Rule 301 – Permitting and Associated Fees:** Rule 301 was amended to: 1) restructure how toxics emissions fees are collected from facilities; and 2) increase toxics emissions fees to provide cost recovery for recent state mandates and other regulatory actions taken by the South Coast AQMD. Amended Rule 301 was submitted to CARB for inclusion into the SIP to the extent necessary to satisfy Clean Air Act Section 182(a)(3)(B). The South Coast AQMD Governing Board determined that the project was exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption; CEQA Guidelines Section 15273 – Rates, Tolls, Fares, and Charges; and CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment, and no exceptions to the application of the categorical exemption set forth in CEQA Guidelines Section 15300.2 – Exceptions, including the “unusual circumstances” exception, applied to the project. Because this project was determined to be exempt from CEQA, consideration of a range of CEQA alternatives was not applicable. The South Coast AQMD Governing Board approved the project and Notice of Exemption, prepared pursuant to CEQA Guidelines Section 15062, was filed with and posted by the counties of Los Angeles, Orange, Riverside and San Bernardino.

*Estimated Emission Reductions:* None. *Cost-Effectiveness:* Not applicable. *CEQA Alternatives:* None, not required. *Socioeconomic Impact:* Yes, see Socioeconomic Impact Assessments section. *Source(s) of Funding:* Emission Fees and Annual Operating Fees.

## **JULY 12, 2019**

Three projects were approved by the South Coast AQMD Governing Board in July:

- 1. Amended Rule 301 – Permitting and Associated Fees:** Rule 301 was amended to require facilities certify that information contained within the annual emission reports is accurate to the best knowledge of the official certifying the report to implement Section 182(a)(3)(B) of the Clean Air Act and to memorialize current practice. Subparagraphs (e)(1)(A) and (e)(1)(B) and paragraphs (e)(2), (e)(5), and (e)(8) of Rule 301 were submitted to CARB for inclusion into the SIP. The South Coast AQMD Governing Board determined

that the project was exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption; CEQA Guidelines Section 15273 – Rates, Tolls, Fares, and Charges; and CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment, and no exceptions to the application of the categorical exemption set forth in CEQA Guidelines Section 15300.2 – Exceptions, including the “unusual circumstances” exception, applied to the project. Because this project was determined to be exempt from CEQA, consideration of a range of CEQA alternatives was not applicable. The South Coast AQMD Governing Board approved the project and a Notice of Exemption, prepared pursuant to CEQA Guidelines Section 15062, was filed with and posted by the counties of Los Angeles, Orange, Riverside and San Bernardino.

*Estimated Emission Reductions:* None. *Cost-Effectiveness:* Not applicable. *CEQA Alternatives:* None, not required. *Socioeconomic Impact:* Not applicable. *Source(s) of Funding:* Emission Fees and Annual Operating Fees.

**2. Amended Regulation IX – Standards of Performance for New Stationary Sources, and Amended Regulation X – National Standards for Hazardous Air Pollutants:**

Regulation IX was amended to incorporate Standards of Performance for New Stationary Sources (NSPS) by reference to reflect final actions by the U.S. EPA in the Federal Register relative to 40 Code of Federal Regulations (CFR) Part 60. Regulation X was amended to incorporate National Emission Standards for Hazardous Air Pollutants (NESHAP) by reference to reflect final actions by the U.S. EPA in the Federal Register relative to 40 CFR Part 61. The South Coast AQMD Governing Board determined that the project was exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption, and CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment, and no exceptions to the application of the categorical exemption set forth in CEQA Guidelines Section 15300.2 – Exceptions, including the “unusual circumstances” exception, applied to the project. Because this project was determined to be exempt from CEQA, consideration of a range of CEQA alternatives was not applicable. The South Coast AQMD Governing Board approved the project and a Notice of Exemption, prepared pursuant to CEQA Guidelines Section 15062, was filed with and posted by the counties of Los Angeles, Orange, Riverside and San Bernardino.

*Estimated Emission Reductions:* None. *Cost-Effectiveness:* Not applicable. *CEQA Alternatives:* None, not required. *Socioeconomic Impact:* Not applicable. *Source(s) of Funding:* Permit Fees, Emission Fees and Annual Operating Fees.

**3. Amended Rule 2001 – Applicability:** In response to U.S. EPA’s direction to remove the opt-out provision that was previously added in the October 5, 2018 version, Rule 2001 was amended accordingly to prevent facilities from exiting the RECLAIM program until all rules that need to be updated in accordance with the transition to a command-and-control regulatory structure are adopted and approved into the SIP. The South Coast AQMD Governing Board determined that the project was exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption, and CEQA

Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment, and no exceptions to the application of the categorical exemption set forth in CEQA Guidelines Section 15300.2 – Exceptions, including the “unusual circumstances” exception, applied to the project. Because this project was determined to be exempt from CEQA, consideration of a range of CEQA alternatives was not applicable. The South Coast AQMD Governing Board approved the project and a Notice of Exemption, prepared pursuant to CEQA Guidelines Section 15062, was filed with and posted by the counties of Los Angeles, Orange, Riverside and San Bernardino.

*Estimated Emission Reductions:* None. *Cost-Effectiveness:* Not applicable. *CEQA Alternatives:* None, not required. *Socioeconomic Impact:* Not applicable. *Source(s) of Funding:* Permit Fees, Emission Fees and Annual Operating Fees.

## **SEPTEMBER 6, 2019**

Three projects were approved by the South Coast AQMD Governing Board in September:

- 1. Adopted Community Emissions Reduction Plan for San Bernardino and Muscoy Community per Assembly Bill 617:** In accordance with California Assembly Bill (AB) 617, the San Bernardino and Muscoy (SBM) Community was one of three high priority areas selected by CARB as being a disadvantaged community with a high cumulative exposure burden for criteria pollutants and toxic air contaminants. A Community Emissions Reduction Plan (CERP) for the SBM community was developed to address the following key areas of environmental concern: truck idling and warehouse truck traffic; Burlington Northern Santa Fe (BNSF) railyard; warehousing; the Omnitrans bus yard; concrete batch plants; and schools, hospitals, parks, and community centers. The CERP includes actions to reduce emissions and exposures, an implementation schedule, an enforcement plan, and a description of the process and outreach conducted to develop the CERP. The South Coast AQMD Governing Board determined that the project was exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption, CEQA Guidelines Section 15262 – Feasibility and Planning Studies, CEQA Guidelines Section 15303 – New Construction or Conversion of Small Structure, CEQA Guidelines Section 15306 – Information Collection, CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment, CEQA Guidelines Section 15309 – Inspections, and CEQA Guidelines Section 15321 – Enforcement Actions by Regulator Agencies, and no exceptions to the application of the categorical exemptions set forth in CEQA Guidelines Section 15300.2 – Exceptions, including the “unusual circumstances” exception, applied to the project. Because this project was determined to be exempt from CEQA, consideration of a range of CEQA alternatives was not applicable. The South Coast AQMD Governing Board approved the project and a Notice of Exemption, prepared pursuant to CEQA Guidelines Section 15062, was filed with and posted by the counties of Los Angeles, Orange, Riverside and San Bernardino.

*Estimated Emission Reductions:* 127.9 tons per year of NOx and 0.91 ton per year of diesel particulate matter (DPM). *Cost-Effectiveness:* Not applicable. *CEQA Alternatives:* None, not required. *Socioeconomic Impact:* Not applicable. *Source(s) of Funding:* State grant (AB 617).

- 2. Adopted Community Emissions Reduction Plan for East Los Angeles, Boyle Heights, and West Commerce Community per Assembly Bill 617:** In accordance with California Assembly Bill (AB) 617, the East Los Angeles, Boyle Heights, and West Commerce (ELABHWC) Community was one of three high priority areas selected by CARB as being a disadvantaged community with a high cumulative exposure burden for criteria pollutants and toxic air contaminants. A Community Emissions Reduction Plan (CERP) for the ELABHWC community was developed to address the following key areas of environmental concern: truck and automobile traffic (including trucks from railyards and warehouses); rail; metal processing; rendering facilities; auto body shops; and schools, hospitals, parks, and community centers. The CERP includes actions to reduce emissions and exposures, an implementation schedule, an enforcement plan, and a description of the process and outreach conducted to develop the CERP. The South Coast AQMD Governing Board determined that the project was exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption, CEQA Guidelines Section 15262 – Feasibility and Planning Studies, CEQA Guidelines Section 15303 – New Construction or Conversion of Small Structure, CEQA Guidelines Section 15306 – Information Collection, CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment, CEQA Guidelines Section 15309 – Inspections, and CEQA Guidelines Section 15321 – Enforcement Actions by Regulator Agencies, and no exceptions to the application of the categorical exemptions set forth in CEQA Guidelines Section 15300.2 – Exceptions, including the “unusual circumstances” exception, applied to the project. Because this project was determined to be exempt from CEQA, consideration of a range of CEQA alternatives was not applicable. The South Coast AQMD Governing Board approved the project and a Notice of Exemption, prepared pursuant to CEQA Guidelines Section 15062, was filed with and posted by the counties of Los Angeles, Orange, Riverside and San Bernardino.

*Estimated Emission Reductions:* 377.1 tons per year of NOx and 1.5 tons per year of DPM.  
*Cost-Effectiveness:* Not applicable. *CEQA Alternatives:* None, not required.  
*Socioeconomic Impact:* Not applicable. *Source(s) of Funding:* State grant (AB 617).

- 3. Adopted Community Emissions Reduction Plans for Wilmington, Carson, and West Long Beach Community per Assembly Bill 617:** The Wilmington, Carson, and West Long Beach (WCWLB) Community was one of three high priority areas selected by CARB as being a disadvantaged community with a high cumulative exposure burden for criteria pollutants and toxic air contaminants. A Community Emissions Reduction Plan (CERP) for the WCWLB community was developed to address the following key areas of environmental concern: refineries (including flaring and the public notification process, refinery equipment, and storage tanks/refinery leaks); ports; trucks; oil drilling and production wells (including leaks and odors); rail; and schools. The CERP includes actions to reduce emissions and exposures, an implementation schedule, an enforcement plan, and a description of the process and outreach conducted to develop the CERP. The South Coast AQMD Governing Board determined that the project was exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption, CEQA Guidelines Section 15262 – Feasibility and Planning Studies, CEQA Guidelines Section 15303 – New Construction or Conversion of Small Structure, CEQA Guidelines Section 15306 –

Information Collection, CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment. Projects, CEQA Guidelines Section 15309 – Inspections, and CEQA Guidelines Section 15321 – Enforcement Actions by Regulator Agencies, and no exceptions to the application of the categorical exemptions set forth in CEQA Guidelines Section 15300.2 – Exceptions, including the “unusual circumstances” exception, applied to the project. Because this project was determined to be exempt from CEQA, consideration of a range of CEQA alternatives was not applicable. The South Coast AQMD Governing Board approved the project and a Notice of Exemption, prepared pursuant to CEQA Guidelines Section 15062, was filed with and posted by the counties of Los Angeles, Orange, Riverside and San Bernardino.

*Estimated Emission Reductions:* 3,207 tons per year of NO<sub>x</sub>, 64 tons per year of VOC, 11 tons per year of SO<sub>x</sub>, and 20 tons per year of DPM. *Cost-Effectiveness:* Not applicable. *CEQA Alternatives:* None, not required. *Socioeconomic Impact:* Not applicable. *Source(s) of Funding:* State grant (AB 617).

#### **OCTOBER 4, 2019**

One project was approved by the South Coast AQMD Governing Board in October:

**Amended Rule 1407 – Control of Emissions of Arsenic, Cadmium, and Nickel from Non-Chromium Metal Melting Operations:** In accordance with 2016 AQMP Control Measure TXM-06 – Control of Toxic Emissions from Metal Melting Facilities, Rule 1407 was amended to: establish control efficiency requirements, mass emission limits, and emission control device monitoring requirements to control point source emissions; add housekeeping and building enclosure provisions to limit fugitive emissions; add source testing and recordkeeping requirements; and revise and/or delete a majority of exemptions that were overly broad and did not consider facility throughput and concentrations of arsenic, cadmium, and nickel and instead establish a throughput limit to qualify for an exemption. A Final EA was prepared for the project and the analysis concluded that there would be no significant adverse environmental impacts. Since no significant adverse environmental impacts were identified, no alternatives analysis and no mitigation measures were required. The South Coast AQMD Governing Board certified the Final EA and approved the project. Since mitigation measures were not made a condition of project approval, a Mitigation Monitoring and Reporting Plan pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097 was not adopted. Findings pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15091, and a Statement of Overriding Considerations pursuant to CEQA Guidelines Section 15093, were also not required and therefore, not adopted. A Notice of Decision, prepared pursuant to Public Resources Code Section 21080.5(d)(2)(E), CEQA Guidelines Sections 15252(b) and 15094(b), and South Coast AQMD Rule 110(f), was filed with and posted by the California Natural Resources Agency.

*Estimated Emission Reductions:* Emission reductions of arsenic, cadmium, and nickel were not quantified but reduced exposure to these toxic air contaminants is expected. *Cost-Effectiveness:* Not applicable. *CEQA Alternatives:* None, not required. *Socioeconomic*

*Impact:* Yes, see Socioeconomic Impact Assessments section. *Source(s) of Funding:* Permit Fees, Emission Fees and Annual Operating Fees.

## **NOVEMBER 1, 2019**

One project was approved by the South Coast AQMD Governing Board in November:

**Amended Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines, and Amended Rule 1100 – Implementation Schedule for NO<sub>x</sub> Facilities:** Rule 1110.2 was amended to remove the exemption that previously allowed stationary engines greater than 50 brake horsepower at RECLAIM, former RECLAIM, and non-RECLAIM facilities from having to achieve the NO<sub>x</sub> emission limits in order to facilitate the transition to facilitate the transition of the NO<sub>x</sub> RECLAIM program to a command-and-control regulatory structure in accordance with implementing 2016 AQMP Control Measure CMB-05 – NO<sub>x</sub> Reduction from RECLAIM Assessment. Rule 1110.2 was also amended to: 1) provide options for averaging times to demonstrate compliance with the NO<sub>x</sub> concentration limits; 2) revise CEMS requirements for engines at essential public services; 3) include interim VOC concentration limits for linear generators; 4) exempt diesel crane engines operated offshore from NO<sub>x</sub>, VOC, and CO emission limits and periodic source testing provisions provided the engines meet specific criteria and an Inspection and Monitoring Plan is prepared and implemented for those engines; 5) exempt remote radio transmission towers to be consistent with Rules 219 – Equipment Not Requiring a Written Permit Pursuant to Regulation II and 222 – Filing Requirements for Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation II; and 6) remove obsolete provisions, update monitoring, reporting, and recordkeeping requirements, and provide clarifications. Rule 1100 was also amended to establish the implementation schedule for NO<sub>x</sub> RECLAIM facilities affected by Rule 1110.2. Both amended rules were submitted to CARB for inclusion into the SIP. A Final SEA was prepared for the project and the analysis concluded that while the project will reduce NO<sub>x</sub> emissions, some facility operators may need to make physical modifications to their equipment in order to achieve compliance, and these activities may create secondary adverse environmental impacts. In particular, the storage and use of aqueous ammonia resulting from the installation of SCR systems were identified as activities that may create potentially significant adverse hazards and hazardous materials impacts. Mitigation measures were required although none were identified that would eliminate or reduce the potentially significant adverse hazards and hazardous materials impacts to less than significant levels. An analysis of project alternatives was also required; the following four alternatives were analyzed, but none were chosen:

**Alternative A – No Project:** Alternative A, the no project alternative, means that instead of implementing the proposed amendments to Rule 1110.2, the June 2016 version of Rule 1110.2 and the December 2018 version of Rule 1100 would remain in effect such that qualifying engines at RECLAIM facilities would not have to comply with the NO<sub>x</sub> emission limits in set forth in the proposal and they would not be required to transition out of the NO<sub>x</sub> RECLAIM program. Under this alternative, no NO<sub>x</sub> emission reductions will be achieved, no ammonia use would occur, and the stationary engines at RECLAIM and non-RECLAIM facilities would not achieve BARCT level equivalency. Further, under this alternative, linear



generator engines will continue to be required to meet the Distributed Generation (DG) limits which means that there will be no increase in VOC emissions because linear generator engines will not have the option of comply with an interim VOC limit of 25 parts per million by volume (ppmv). Alternative A is less stringent than the proposal with no air quality benefits and no adverse hazards and hazardous materials impacts.

**Alternative B – Distributed Generation Limits:** While the timeline for the facilities transitioning out of RECLAIM would be the same as the proposal, Alternative B analyzed engines that would be required to meet the NO<sub>x</sub>, VOC, and CO emission limits listed in Table IV of Rule 1110.2 which are lower than the NO<sub>x</sub> emission limits in the proposal such that more NO<sub>x</sub> emission reductions would occur by December 31, 2023 (within four years). However, to meet the emission limits under Alternative B, both RECLAIM and non-RECLAIM facilities would be affected and increased construction and operation impacts would be expected (e.g., installation of new SCR systems and modifications or replacement of existing SCR systems, increased use and delivery of ammonia or urea). Alternative B would be expected to result in greater emission reductions of VOC and CO emissions relative to the proposal. Further, under Alternative B, linear generator engines will continue to be required to meet the DG limits which means that there will be no increase in VOC emissions because linear generator engines will not have the option of comply with an interim VOC limit of 25 ppmv. While the emission limits for NO<sub>x</sub>, CO, and VOC under Alternative B are more stringent than the proposal, the adverse environmental impacts would be greater than the proposal due to more facilities undergoing construction within the same compliance schedule.

**Alternative C – Stricter Limits:** Alternative C analyzed the same requirements as the proposal with the same timeline for the facilities transitioning out of RECLAIM but with the affected engines complying with a more stringent NO<sub>x</sub> emission limit resulting in greater NO<sub>x</sub> emission reductions. However, to meet the emission limits under Alternative C, both RECLAIM and non-RECLAIM facilities would be affected and increased construction and operation impacts would be expected (e.g., installation of new SCR systems and modifications or replacement of existing SCR systems, increased use and delivery of ammonia or urea). Further, under Alternative C, linear generator engines will continue to be required to meet the DG limits which means that there will be no increase in VOC emissions because linear generator engines will not have the option of comply with an interim VOC limit of 25 ppmv. Alternative C is more stringent than the proposal, but less stringent than Alternative B.

**Alternative D – Phased in Compliance Dates:** While the requirements and the timeline for the facilities transitioning out of RECLAIM would be the same as the proposal, Alternative D analyzed a delayed compliance date of December 31, 2030 for achieving the NO<sub>x</sub> and ammonia emission limits for engines used for natural gas compression and pipeline transmission operated at RECLAIM and former

RECLAIM facilities. The same number of facilities and equipment would be affected under Alternative D but a portion of the NOx emissions reductions would be delayed. Additionally, the delayed compliance date for engines used for natural gas compression and pipeline transmission will have the effect of fewer facilities with overlapping construction activities since some facilities will have an additional four years to comply with the NOx and ammonia emission limits. Further, under Alternative D, linear generator engines will continue to be required to meet the DG limits which means that there will be no increase in VOC emissions because linear generator engines will not have the option of comply with an interim VOC limit of 25 ppmv. Therefore, Alternative D is less stringent than the proposal but would result in fewer impacts from construction activities on a peak daily basis.

The South Coast AQMD Governing Board certified the Final SEA and approved the project, as proposed. A Mitigation Monitoring and Reporting Plan pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097, a Statement of Overriding Considerations pursuant to CEQA Guidelines Section 15093, and Findings pursuant to CEQA Guidelines Section 15091 were also adopted for this project. A Notice of Decision, prepared pursuant to Public Resources Code Section 21080.5(d)(2)(E), CEQA Guidelines Sections 15252(b) and 15094(b), and South Coast AQMD Rule 110(f), was filed with and posted by the California Natural Resources Agency.

*Estimated Emission Reductions:* 0.29 ton per day of NOx for Rule 1110.2; no emission reductions were estimated for Rule 1100. *Cost-Effectiveness:* Cost-effectiveness was estimated at up to \$41,000 per ton of NOx reduced. *CEQA Alternatives:* Four alternatives were analyzed, see alternatives described above. *Socioeconomic Impact:* Yes, see Socioeconomic Impact Assessments section. *Source(s) of Funding:* Permit Fees, Emission Fees and Annual Operating Fees.

## **DECEMBER 6, 2019**

Four projects were approved by the South Coast AQMD Governing Board in December:

- 1. Amended Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces:** Rule 1111 was amended to add an exemption to manufacture, distribute, sell, and install condensing or non-condensing natural gas furnaces that emit no more than 40 nanograms of NOx per Joule (ng/J) in lieu of the NOx emission limit of 14 ng/J in areas with altitudes at or higher than 4,200 feet above sea level until October 1, 2020. Recordkeeping requirements were also added for the manufacturer, distributor, and installer to track the distribution, sales, and installations of these furnaces; and the verification of the elevation will be based on U.S. Geological Survey data. Amended Rule 1111 was submitted to CARB for inclusion into the SIP. The South Coast AQMD Governing Board determined that the project was exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption. Because this project was determined to be exempt from CEQA, consideration of a range of CEQA alternatives was not applicable. The South Coast AQMD Governing Board approved the project and a Notice of Exemption, prepared pursuant to CEQA Guidelines Section 15062, was filed with and posted by the counties of Los Angeles, Orange, Riverside and San Bernardino.

*Estimated Emission Reductions:* Minimal and temporary foregone NOx emission reductions of 1.35 pounds per day. *Cost-Effectiveness:* Not applicable. *CEQA Alternatives:* None, not required. *Socioeconomic Impact:* Not applicable. *Source(s) of Funding:* Permit Fees, Emission Fees, and Annual Operating Fees.

- 2. Adopted Rule 1480 – Ambient Monitoring and Sampling of Metal Toxic Air Contaminants:** Rule 1480 was adopted to establish a process to require a facility to conduct ambient monitoring and sampling of metal toxic air contaminants provided that specific criteria are met. The process includes an initial notice, request for information, notice of findings, and notice to designate the facility. A facility that is designated will be required to submit a Monitoring and Sampling Plan and conduct ambient monitoring and sampling. Rule 1480 also includes an alternative monitoring and sampling provision where the facility can elect to have the South Coast AQMD conduct ambient monitoring and sampling for a fee. Rule 1480 also has monitoring, reporting, and recordkeeping requirements, and provisions to reduce and cease monitoring and sampling provided certain criteria are met. The South Coast AQMD Governing Board determined that the project was exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption; CEQA Guidelines Section 15306 – Information Collection; and CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment, and no exceptions to the application of the categorical exemptions set forth in CEQA Guidelines Section 15300.2 – Exceptions, including the “unusual circumstances” exception, applied to the project. Because this project was determined to be exempt from CEQA, consideration of a range of CEQA alternatives was not applicable. The South Coast AQMD Governing Board approved the project and a Notice of Exemption, prepared pursuant to CEQA Guidelines Section 15062, was filed with and posted by the counties of Los Angeles, Orange, Riverside and San Bernardino.

*Estimated Emission Reductions:* None. *Cost-Effectiveness:* Not applicable. *CEQA Alternatives:* None, not required. *Socioeconomic Impact:* Yes, see Socioeconomic Impact Assessments section. *Source(s) of Funding:* Emission Fees, and Annual Operating Fees.

- 3. Approved Facility-Based Mobile Source Measure for Commercial Airports:** The Facility-Based Mobile Source Measure (FBMSM) implements 2016 AQMP Control Measure MOB-04 – Emission Reductions at Commercial Airports, and applies to the following five airports: Los Angeles International Airport (LAX); Hollywood Burbank Airport (BUR); John Wayne Orange County Airport (JWA); Long Beach Airport (LGB); and Ontario International Airport (ONT). South Coast AQMD entered into a separate Memorandum of Understanding (MOU) with each airport. Each MOU is comprised of: 1) a voluntary agreement related to specified activities that each airport agreed to implement to reduce emissions from non-aircraft mobile sources in accordance with the respective airport’s Air Quality Improvement Measures (AQIM) or Air Quality Improvement Plan (AQIP); and 2) South Coast AQMD’s enforceable commitment to the U.S. EPA to achieve overall NOx emission reductions to which each airport MOU will contribute a portion.

**MOU Between the South Coast AQMD and the City of Los Angeles Department of Airports:** The MOU for LAX specifies the following measures from the LAX AQIM that are capable of achieving SIP creditable emission reductions: 1) the ground support equipment emission reduction policy; 2) the LAX alternative fuel vehicle incentive program; and 3) the zero emission bus program.

**MOU Between South Coast AQMD and Burbank-Glendale-Pasadena Airport Authority Regarding Hollywood Burbank Airport's Air Quality Improvement Plan:** The MOU for BUR specifies the following measures from the BUR AQIP that are capable of achieving SIP creditable emission reductions: 1) ground support equipment emission reduction policy; and 2) the zero-emission shuttle bus program.

**MOU Between the South Coast AQMD and John Wayne Airport, Orange County Regarding John Wayne Airport's Air Quality Improvement Plan:** The MOU for JWA specifies the following measures from the JWA AQIP that are capable of achieving SIP creditable emission reductions: 1) ground support equipment emission reduction policy; 2) jet fuel pipeline to replace delivery trucks; and 3) parking shuttle bus electrification.

**MOU Between the South Coast AQMD and the City of Long Beach Regarding Long Beach Airport's Air Quality Improvement Plan:** The MOU for LGB specifies the ground support equipment emission reduction policy measure from the LGB AQIP that is capable of achieving SIP creditable emission reductions.

**MOU Between the South Coast AQMD and Ontario International Airport Regarding Ontario International Airport's Air Quality Improvement Plan:** The MOU for ONT specifies the ground support equipment emission reduction policy measure from the ONT AQIP that is capable of achieving SIP creditable emission reductions.

The South Coast AQMD Governing Board determined that the FBMSM as implemented in each airport MOU was exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption; CEQA Guidelines Section 15306 – Information Collection; and CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment, and no exceptions to the application of the categorical exemptions set forth in CEQA Guidelines Section 15300.2 – Exceptions, including the “unusual circumstances” exception, applied to the project. Because this project was determined to be exempt from CEQA, consideration of a range of CEQA alternatives was not applicable. The South Coast AQMD Governing Board approved the project and a Notice of Exemption for each airport MOU, prepared pursuant to CEQA Guidelines Section 15062, was filed with and posted by the counties of Los Angeles, Orange, Riverside and San Bernardino.

*Estimated Emission Reductions:* 0.52 ton per day of NOx in 2023 and 0.37 ton per day in 2031. *Cost-Effectiveness:* Not applicable. *CEQA Alternatives:* None, not required. *Socioeconomic Impact:* Not applicable. *Source(s) of Funding:* Mobile Source revenue.

- 4. Approved Contingency Measure Plan for the 1997 8-Hour Ozone Standard:** In a joint strategy between the South Coast AQMD and CARB, the Contingency Measure Plan was developed to address the contingency measure requirements for meeting the 1997 8-hour ozone NAAQS for the Basin, including achieving 108 tons per day of NOx emission reductions allocated to Clean Air Act section 182(e)(5) measures designed to attain the NAAQS by 2023. The Contingency Measure Plan: 1) identifies new emission reduction strategies designed to achieve approximately 24 to 26 tons per day of NOx emission reductions towards the Clean Air Act section 182(e)(5) commitment; 2) describes how pursuing additional incentive funding can help advance the development of zero or near-zero technologies into full commercialization and accelerate turnover to cleaner engines (e.g., 15 tons per day of NOx emission reductions could be achieved by 2023 with \$1.4 billion of funding); and 3) identifies approximately 67 to 69 tons per day of potential NOx emission reductions needed by 2023 from sources under federal jurisdiction through federal regulatory action and/or federal incentive funding. The South Coast AQMD Governing Board determined that the Contingency Measure Plan is a later activity within the scope of the project covered by the March 2017 Final Program Environmental Impact Report (PEIR) for the 2016 AQMP 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 March 2017 Final PEIR for the 2016 AQMP adequately describes and analyzes the environmental effects of the project for the purposes of CEQA. Thus, 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. While the March 2017 Final PEIR included an alternatives analysis, this later activity did not require any new or modified alternatives. Similarly, while mitigation measures were included in the March 2017 Final PEIR, and a Mitigation, Monitoring, and Reporting Plan, pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097, was required and adopted for the 2016 AQMP, no new or modified mitigation measures will be made as a condition of the approval of this later activity. However, 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. 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.

*Estimated Emission Reductions:* No new NOx emission reductions but the Contingency Measure Plan further defines the strategies for achieving 108 tons per day of NOx emission reductions by 2023 per the commitment in the 2016 AQMP. *Cost-Effectiveness:* Not yet determined. *CEQA Alternatives:* None, not required. *Socioeconomic Impact:* Not applicable. *Source(s) of Funding:* Annual Operating Fees, Federal Grants, Mobile Source revenue, CARB Subvention/State Grants

## CEQA LEAD AGENCY PROJECTS

South Coast AQMD also acts as the Lead Agency under CEQA for non-South Coast AQMD projects where South Coast AQMD typically has primary approval (i.e., discretionary permitting authority). Under CEQA, the Lead Agency is responsible for determining whether an EIR, ND, or other type of CEQA document is necessary for any proposal considered to be a “project” as defined by CEQA. Further, the Lead Agency is responsible for preparing the environmental analysis, complying with all procedural requirements of CEQA, and approving the environmental documents. All documents prepared by South Coast AQMD for permit projects are subject to the standard CEQA requirements. South Coast AQMD staff is responsible for preparing or reviewing prepared CEQA documents for stationary source permit projects.

In 2019, two lead agency projects with corresponding CEQA documents were approved by the South Coast AQMD’s Executive Officer, as summarized below.

- 1. Addendum to the April 2007 Final Mitigated Negative Declaration for Southern California Edison: Mira Loma Peaker Project, Ontario (project approved May 17, 2019):** Southern California Edison operators proposed additional changes to their project that was previously evaluated and adopted in the Final Mitigated Negative Declaration (MND) for the Southern California Edison Mira Loma Peaker Project in Ontario, CA on April 3, 2007, referred to herein as the April 2007 Final MND. The April 2007 Final MND evaluated the installation of a General Electric natural gas-fired turbine generator, also referred to as a “peaker” unit, plus an air pollution control system comprised of a SCR unit and oxidation catalyst to reduce emissions to levels that meet all applicable local air quality emission standards. The peaker is capable of producing up to 45 megawatts (MW) of electricity on short notice during periods when the local electrical system needs power and local voltage support.

After the adoption of the April 2007 Final MND, SCE operators proposed to modify the peaker’s turbine air pollution control system to: 1) decrease the water-injection rate into the turbine’s combustor by up to 54 percent; 2) replace the SCR catalyst and increase the cross-sectional area (by nearly three times) and the pitch (i.e., angle) of the SCR catalyst beds to maximize the contact area and time the turbine’s exhaust gas moves across the catalyst, without increasing the size (outside dimensions) of the SCR enclosure; 3) replace the oxidation catalyst with an updated design and higher conversion rate, which provides functionally equivalent emissions control; 4) modify the exhaust flow distribution design and ammonia injection grid design to improve the deliverability of ammonia to the catalyst; and; 5) increase the concentration of aqueous ammonia delivered to the facility, stored on-site, and injected into the SCR from 19 percent to 29 percent. In addition, to increase the operating flexibility of the peaker so that it can provide reliable power to the grid when dispatched by the California Independent System Operator (CAISO) during peak times when renewable energy resources are not available, SCE proposed to revise its South Coast AQMD Title V Operating Permit to allow the turbine to generate power over its full operating range, from less than one MW to full load, while continuing to meet the emission limits in the current permit without increasing: 1) utilization of the Mira Loma Peaker for power generation; 2) fuel-input limits, generation capacity, or the heat rate of the turbine; and, 3) the potential to emit of criteria pollutants, greenhouse gases ,

or toxic air contaminants. The Addendum to the April 2007 Final MND concluded that the modifications to the original project previously analyzed in the April 2007 Final MND would not create any new significant adverse environmental impacts or substantially increase the severity of the significant effects previously identified. The mitigation measures that were made a condition of approval of the original project analyzed in the April 2007 Final MND and the corresponding Mitigation, Monitoring, and Reporting Plan that was adopted at that time will remain in effect. No new or modified mitigation measures were made as a condition of the approval of this project. Since there were no significant impacts that could not be mitigated to less than significant levels in the April 2007 Final MND and there were no new significant impacts in the Addendum to the April 2007 Final MND, no alternatives analysis was required under CEQA. Findings were not made and a Statement of Overriding Considerations was not required or adopted for the original project analyzed in the April 2007 Final MND since no significant adverse impacts were identified that could not be mitigated to less than significant levels. Further, because there were no new significant impacts as a result of the modified project analyzed in the Addendum to the April 2007 Final MND, neither Findings nor a Statement of Overriding Considerations were required nor adopted.

- 2. Addendum to the May 2017 Final Environmental Impact Report for Tesoro: Los Angeles Refinery Integration and Compliance Project (project approved November 5, 2019):** Tesoro Refining and Marketing Company LLC (Tesoro) operators proposed modifications to the Los Angeles Refinery Integration and Compliance (LARIC) Project that was previously evaluated in the May 2017 Final Environmental Impact Report (EIR), referred to herein as the May 2017 Final EIR, which was certified on XX date. The project evaluated in the May 2017 Final EIR was comprised of modifications necessary to more fully integrate the Tesoro Los Angeles Refinery – Wilmington Operations with the Carson Operations to form the Tesoro Los Angeles Refinery. The Refinery includes: 1) the Wilmington Operations located at 2101 East Pacific Coast Highway in the Wilmington District of the City of Los Angeles; and 2) the Carson Operations, which is the former BP Carson Refinery located at 2350 East 223rd Street in the City of Carson.

After the certification of the May 2017 Final EIR, Tesoro operators proposed to revise the original project by: 1) relocating the propane recovery project component from the Carson Operations Naphtha Isomerization Unit to the Carson Operations C3 Splitter Unit; 2) increasing the throughput of the Carson Operations Tank 35; 3) updating the toxic air contaminant speciation for the six crude oil storage tanks at the Carson Crude Terminal with additional data; and 4) updating the construction schedule. The revisions to the original project were for components that were evaluated in the certified May 2017 Final EIR, but South Coast AQMD permits to construct were not issued.

The South Coast AQMD, as lead agency, evaluated the potential for significant adverse environmental effects of the revisions to the original project pursuant to the provisions of CEQA and determined that the revisions to the original project: 1) were minor technical changes and additions necessary to make the May 2017 Final EIR adequate; 2) met all the conditions for the preparation of an addendum pursuant to CEQA Guidelines 15164; 3) were not outside of the scope of the analyses already contained in the previously certified

May 2017 Final EIR; and 4) did not create any new significant adverse environmental impacts or make existing significant adverse environmental impacts substantially worse; and 5) none of the conditions that would require the preparation of a subsequent EIR pursuant to CEQA Guidelines Section 15162 were met. The mitigation measures that were made a condition of approval of the original project analyzed in the May 2017 Final EIR and the corresponding Mitigation, Monitoring, and Reporting Plan that was adopted at that time will remain in effect. No new or modified mitigation measures were made as a condition of the approval of the revised project. Since there were no new significant impacts in the Addendum to the May 2017 Final EIR, no alternatives analysis was required under CEQA. Since significant adverse impacts were identified that could not be mitigated to less than significant levels for the original project analyzed in the May 2017 Final EIR Findings were made and a Statement of Overriding Considerations was adopted. Because there were no new significant impacts identified as a result of the revised project analyzed in the Addendum to the May 2017 Final EIR, the previous Findings and Statement of Overriding Considerations will remain in effect.

## **SOCIOECONOMIC IMPACT ASSESSMENTS**

California Health and Safety Code Section 40440.8 requires that South Coast AQMD perform socioeconomic impact assessments for its rules and regulations that will significantly affect air quality or emissions. Prior to the requirements of Section 40440.8, South Coast AQMD staff had been evaluating the socioeconomic impacts of its actions pursuant to a 1989 resolution of its Governing Board. Additionally, South Coast AQMD staff assesses socioeconomic impacts of CEQA alternatives to those rules with significant cost and emission reduction impacts.

The elements of socioeconomic impact assessments include direct effects on various types of affected industries in terms of control costs and cost-effectiveness as well as public health benefits associated with Air Quality Management Plans (AQMPs). Additionally, South Coast AQMD staff uses a state-of-the-art economic model developed by Regional Economic Models, Inc. (REMI) to analyze the potential direct and indirect socioeconomic impacts of South Coast AQMD rules on Los Angeles, Riverside, Orange, and San Bernardino Counties. These impacts include, but are not limited to, employment and competitiveness.

Of the projects considered and approved by the South Coast AQMD Governing Board in 2019, Socioeconomic Impact Assessments were required and prepared for six rule projects. Additionally, this section includes a summary of the associated socioeconomic impacts of Rule 320 because it contains a requirement for an automatic annual California Consumer Price Index (CPI) adjustment that has associated socioeconomic impacts even though no amendments to this rule were considered and approved by the South Coast AQMD Governing Board in 2019.



## **RULE DEVELOPMENT PROJECTS WITH SOCIOECONOMIC IMPACTS**

### **Rule 1118.1 – Control of Emissions from Non-Refinery Flares (Adopted January 4, 2019)**

Rule 1118.1 was adopted on January 4, 2019 to reduce NO<sub>x</sub> and VOC emissions from non-refinery flares and to encourage alternatives to flaring (e.g., beneficial use of the combustible gases and vapors). Rule 1118.1 is one of several rule development projects that facilitates the transition of the NO<sub>x</sub> RECLAIM program to a command-and-control regulatory structure. Rule 1118.1 contains emission limits for NO<sub>x</sub>, VOC and CO for new, replaced, or relocated flares and a capacity threshold for existing flares, along with implementation timeframes. Requirements for conducting source tests, installing fuel meters, and conducting monitoring, reporting, and recordkeeping are also included in the rule. Implementation of Rule 1118.1 was estimated to achieve emission reductions of 0.18 ton per day of NO<sub>x</sub> and 0.014 ton per day of VOC by 2024 and onward.

Rule 1118.1 was projected to apply to 295 flares at 153 facilities at the time of adoption, with the majority in Crude Petroleum and Natural Gas Extraction (NAICS 211111) and others in Sewage Treatment Facilities (NAICS 221320) and Solid Waste Landfills (NAICS 562212). The resulting compliance costs associated with Rule 1118.1 were projected to range from \$74,054,000 to \$97,478,000 in total (2018 dollars), or \$4.2 million to \$4.7 million annually between 2019 and 2045. Overall cost-effectiveness of Rule 1118.1 was found to be \$45,000 per ton of NO<sub>x</sub> reduced. Job impacts resulting from Rule 1118.1 were estimated at 35 to 39 jobs foregone annually, on average between 2019 and 2045 throughout the four-county region.

### **Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines (Amended April 2019)**

Rule 1134 was amended on April 5, 2019 to update NO<sub>x</sub> emission limits from RECLAIM and non-RECLAIM stationary gas turbines operating at Electrical Generating Facilities, petroleum refineries, landfills, and publicly-owned treatment works. The main provisions of the amendments expanded the applicability of the emission limits to stationary gas turbines that were not previously subject to Rule 1134 requirements, and updated emission limits for NO<sub>x</sub> and ammonia to reflect current BARCT. Full implementation of Rule 1134 was estimated to reduce 2.8 tons per day of NO<sub>x</sub> emissions by 2023.

Rule 1134 was projected to apply to 73 turbines at 35 facilities, with an estimated 33 turbines at 19 facilities expected to incur compliance costs through replacement, repowering, or retrofit. Most of the impacts from compliance costs were expected to affect the coal gasification at mine site sector (NAICS 211111) and fossil fuel sector (NAICS 211112). The main costs associated with emission control equipment were attributed to SCR retrofits and installations, and recurring costs for electricity and purchase of reagent for the SCR equipment. The resulting compliance costs associated with Rule 1134 were projected to range from \$103 million to \$133 million, with an average annual compliance cost between \$5.5 to 6.7 million (2018 dollars) from 2019 to 2045. Job impacts across the four-county region were estimated as a range of 33 to 46 jobs foregone, on average annually between 2019 and 2045.

Three CEQA alternatives were analyzed for this project. Alternative A, the “no project” alternative, means that the August 1997 version of Rule 1134 would remain in effect. Alternative

B analyzed the same NO<sub>x</sub> and ammonia emission limits contained in the proposed amendments to Rule 1134 but with a compliance date for meeting the NO<sub>x</sub> and ammonia emission limits occurring one year earlier, December 31, 2022, whereby allowing three years to achieve compliance. Alternative C analyzed the same NO<sub>x</sub> and ammonia emission limits contained in the proposed amendments to Rule 1134, but with varying compliance dates depending on fuel type, as follows: 1) Liquid Fuel – Outer Continental Shelf: December 31, 2023, 2) Natural Gas – Combined Cycle: June 30, 2023; 3) Natural Gas – Compressor Gas Turbine: December 31, 2023; 4) Natural Gas – Simple Cycle: December 31, 2022; 5) Produced Gas: December 31, 2023; 6) Produced Gas – Outer Continental Shelf: December 31, 2023; and 7) Other: December 31, 2023. The socioeconomic analyses of the CEQA alternatives estimated that overall cost-effectiveness for the CEQA Alternative B (faster implementation schedule) and Alternative C (phased implementation) were the same as the proposed amendments - \$7,975 per ton of NO<sub>x</sub> reduced. The CEQA alternatives were projected to result in 40 to 42 jobs foregone on average, annually between 2019 and 2045.

**Rule 1407 – Control of Emissions of Arsenic, Cadmium, and Nickel from Non-Chromium Metal Melting Operations (Amended October 4, 2019)**

Rule 1407 was amended on October 4, 2019 to establish arsenic, cadmium, and nickel control efficiency requirements from metal melting operations, while allowing an option to meet arsenic, cadmium, and nickel mass emission limits in place of meeting control efficiency requirements. Rule 1407 requires non-chromium metal melting facilities to demonstrate compliance with the requirements of control efficiency and mass emission limits by conducting source testing. To reduce fugitive emissions from metal melting operations, facilities are required to close openings located at opposite ends of a building. Housekeeping, maintenance, and recordkeeping requirement were also established to uphold best practices that ensure proper mitigation of non-chromium emissions. Emission reductions of arsenic, cadmium, and nickel were not quantified but reduced exposure to these toxic air contaminants is expected.

Rule 1407 was projected to apply to 60 facilities classified in a variety of industries, primarily steel product manufacturing from purchased steel (NAICS 3313), alumina and aluminum production and processing (NAICS 3313), and foundries (NAICS 3315), with 40 facilities located in Los Angeles county, 12 facilities located in San Bernardino County, and four facilities each located in Riverside and Orange Counties. The compliance costs associated with implementing Rule 1407 are attributed to baghouse emission controls for which the purchase and installation cost is estimated at \$256,000 (one-time), and annual operation and maintenance cost is estimated to be \$275,000. Major building enclosures at four affected facilities were estimated to cost \$151,000 (one-time) each, while minor enclosure modifications at 17 affected facilities of up to \$60,000 (one-time) each. Annual compliance cost estimates for Rule 1407 were projected to range between \$3.0 million to 3.1 million, or \$43.4 million to \$59.6 million total (2019 dollars) from 2019 to 2040. The projected job impacts associated with implementing Rule 1407 were estimated as a range of 90 to 92 jobs foregone, on average annually from 2019 to 2040.

**Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines and Rule 1100 – Implementation Schedule for NO<sub>x</sub> Facilities (Amended November 2019)**

Rules 1110.2 and 1100 were amended on November 1, 2019. Rule 1110.2 was amended to remove the exemption that previously allowed stationary engines greater than 50 brake horsepower at RECLAIM, former RECLAIM, and non-RECLAIM facilities from having to achieve the NO<sub>x</sub>

emission limits in order to facilitate the transition to facilitate the transition of the NO<sub>x</sub> RECLAIM program to a command-and-control regulatory structure. Rule 1110.2 included other amendments that: 1) provide options for averaging times to demonstrate compliance with the NO<sub>x</sub> concentration limits; 2) revise CEMS requirements for engines at essential public services; 3) include interim VOC concentration limits for linear generators; 4) exempt diesel crane engines operated offshore from NO<sub>x</sub>, VOC, and CO emission limits and periodic source testing provisions provided the engines meet specific criteria and an Inspection and Monitoring Plan is prepared and implemented for those engines; 5) exempt remote radio transmission towers to be consistent with Rules 219 – Equipment Not Requiring a Written Permit Pursuant to Regulation II and 222 – Filing Requirements for Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation II; and 6) remove obsolete provisions, update monitoring, reporting, and recordkeeping requirements, and provide clarifications. Rule 1100 was also amended to establish the implementation schedule for NO<sub>x</sub> RECLAIM facilities affected by Rule 1110.2. PAR 1100 is an administrative rule and does not impose additional costs to affected facilities, as such, no additional costs or socioeconomic impacts were assumed. Implementation of Rule 1110.2 was estimated to achieve 0.29 ton per day of NO<sub>x</sub> emission reductions. No emission reductions were estimated for Rule 1100. Of the 76 engines subject to Rule 1110.2, 21 were shown to achieve the emission limits and eight were identified as ready to be phased out (e.g., no longer operational due to being abandoned in place and dismantled or removed), resulting in compliance costs for 47 engines with 25 located in Los Angeles County, 10 located in Orange County, and six each located in Riverside and San Bernardino Counties. Most compliance costs associated with implementing Rule 1110.2 were shown to impact facilities classified in the following industries: Pipeline Transportation (NAICS 4862), and smaller portions of the costs affect Oil and Gas Extraction (NAICS 2111), Natural Gas Distribution (NAICS 2212), Beverage Manufacturing (NAICS 3121), and Amusement, Gambling and Recreation Industries (NAICS 7139).

The majority of compliance costs for Rule 1110.2 engines involves the retrofit or replacement and installation of SCR emission controls, while others would achieve the emission limits via tuning existing emission controls. Most engines were projected to achieve the 11 ppmv NO<sub>x</sub> emission limit without engine replacement, retrofit, or repowering; for this reason, costs associated with total engine replacement were not considered in the socioeconomic analysis.

The majority of the one-time costs were associated with the purchase and installation of SCR controls or the retrofit of existing SCR equipment. The total cost of SCRs including installation was estimated at \$33.8 million or approximately \$2.1 million average annual cost across 10 affected facilities. The largest recurring cost associated with SCR technology is for the replacement of catalyst, which totals almost \$30.6 million or \$1.9 million average annual cost across 10 affected facilities. Total costs of compliance with Rule 1110.2 range from \$87.6 million to \$113 million, or \$4.6 million to \$5.4 million annually. Cost-effectiveness for the projected NO<sub>x</sub> emission reductions was estimated from \$32,000 to \$41,000 per ton of NO<sub>x</sub> reduced. The projected job impacts associated with implementing Rule 1110.2 averaged 76 to 175 jobs foregone, annually, from 2021 to 2046 in the four-county region. No compliance costs associated with implementing the administrative changes in Rule 1100 were expected.

Four CEQA alternatives were analyzed for this project. Alternative A, the “no project” alternative, means that the June 2016 version of Rule 1110.2 would remain in effect. Alternative B analyzed engines that would be required to meet the NO<sub>x</sub>, VOC, and CO emission limits listed in Table IV of Rule 1110.2 which are lower than the NO<sub>x</sub> emission limits in the proposal such that more NO<sub>x</sub> emission reductions would occur by December 31, 2023 (within four years) but with the timeline for the facilities transitioning out of RECLAIM remaining the same as the proposal. Alternative C analyzed the same requirements as the proposal with the same timeline for the facilities transitioning out of RECLAIM but with the affected engines complying with a more stringent NO<sub>x</sub> emission limit resulting in greater NO<sub>x</sub> emission reductions. However, to meet the emission limits under Alternative C, both RECLAIM and non-RECLAIM facilities would be affected and increased construction and operation impacts would be expected (e.g., installation of new SCR systems and modifications or replacement of existing SCR systems, increased use and delivery of ammonia or urea. Further, under Alternative C, linear generator engines will continue to be required to meet the DG limits which means that there will be no increase in VOC emissions because linear generator engines will not have the option of comply with an interim VOC limit of 25 ppmv. Alternative D analyzed the same requirements as the proposal with the same timeline for the facilities transitioning out of RECLAIM but analyzed a delayed compliance date of December 31, 2030 for achieving the NO<sub>x</sub> and ammonia emission limits for engines used for natural gas compression and pipeline transmission operated at RECLAIM and former RECLAIM facilities. The socioeconomic analyses of the CEQA alternatives found overall cost-effectiveness for Alternative B (stricter emission limits/total engine replacement) was \$136,000 per ton of NO<sub>x</sub> reduced, Alternative C (faster implementation schedule) was \$78,000 per ton, and Alternative D (slower implementation schedule) was \$22,000 per ton. The analysis of the CEQA alternatives projected 118 to 722 jobs foregone on average, annually between 2021 and 2046.

#### **Rule 1480 – Ambient Monitoring and Sampling of Metal Toxic Air Contaminants (Adopted December 2019)**

Rule 1480 was adopted on December 6, 2019 to establish a process to require a facility to conduct ambient monitoring and sampling of metal TACs (e.g., which include arsenic, cadmium, hexavalent chromium, lead, manganese, nickel, and selenium) provided that specific criteria are met. The process includes an initial notice, request for information, notice of findings, and notice to designate the facility. A facility that is designated will be required to submit a Monitoring and Sampling Plan and conduct ambient monitoring and sampling. Rule 1480 also includes an alternative monitoring and sampling provision where the facility can elect to have the South Coast AQMD conduct ambient monitoring and sampling for a fee. Rule 1480 also has monitoring, reporting, and recordkeeping requirements, and provisions to reduce and cease monitoring and sampling provided certain criteria are met. According to Economic Modeling International (Emsi), nearly 1,350 facilities operate in industry categories that conduct activities with various metal TACs in the four-county region. Only those facilities that meet the designation criteria specified in Rule 1480 would be subject to ambient monitoring and sampling.

Based on the rule requirements and sampling frequencies determined for each facility used in the cost estimate, the compliance cost of implementing Rule 1480 ranged between \$135,000 and \$246,000 annually until each facility becomes eligible to cease monitoring, which is usually between two and three years to implement an approved Rule 1402 Risk Reduction Plan. Due to lack of information about affected facilities that would trigger the monitoring and sampling

requirements in the future, a historical assessment of facilities that met that criteria was used to estimate costs once a facility is designated and must carry out the monitoring and sampling until it completes an approved Rule 1402 Risk Reduction Plan. Only three facilities met Rule 1480 designation criteria prior to its adoption in 2019, but the number of facilities that may be designated in the future cannot be predicted. Designation into Rule 1480 monitoring and sampling requirements is a function of South Coast AQMD ambient air monitoring, compliance inspections, source test data, and response to public reporting and complaints. Before being designated by the South Coast AQMD as a facility required to conduct monitoring and sampling, extensive criteria must be met, and facilities also have multiple options available to correct problems to avoid being designated and subsequently incurring compliance costs associated with conducting monitoring and sampling. Due to lack of information about individual affected facilities and locations of those facilities, a macroeconomic analysis impacts, including job impacts could not be performed for this rule making.

### **Regulation III – Fees, and Rule 209 - Transfer and Voiding of Permits (Amended June 2019)**

An amendment to Rule 301 – Fees, was adopted on June 7, 2019<sup>4</sup> which substantially altered the method for assessing fees for toxic air contaminants (TACs) emissions. In recent years, South Coast AQMD’s rule development efforts have trended towards increasing monitoring and enforcement of rules for toxic air contaminants (TACs) causing increased staff time for monitoring, inspecting, and auditing facilities’ TAC emission inventories. Due to the recent increased workload and expected continuation into the future, estimates of the amount of work the South Coast AQMD is currently conducting annually associated with toxics emissions were compared to the amount of fees collected from toxics emissions. Facilities paid approximately \$19.5 million in fees for emissions that occurred in calendar year 2017, of which about \$0.5 million was attributed to TAC emissions. The cost of South Coast AQMD work annually for which toxics emissions fees could be applied is about \$20 million with approximately half associated with AB 617-related work and half from other ongoing work related to TAC emissions from stationary sources. Additional work conducted as part of implementing the AB 2588 Toxic Hot Spots program and evaluating TAC emissions from mobile sources is not reflected in this fee adjustment. The difference between the amount of revenues collected and the amount of staff resources expended is paid from a variety of sources, including emissions fees from criteria pollutants (because toxics emissions fees are a component of all emissions fees), one-time penalties, and most recently from portions of one-time allocations from the state legislature of about \$31 million for the implementation of the first two years of AB 617. There is no guarantee that these one-time revenues will continue to be funded by the State into the future.

A macroeconomic impact analysis was conducted which considered all amendments to Regulation III in 2019 with the most substantial increase attributable to the TAC Fees adjustment. Under the proposed three-year TAC fee implementation schedule, fee increases were estimated to be \$0.30 million in Fiscal Year (FY) 2019-2020, \$1.76 million in FY 2020-2021, and \$4.12 million in FY 2021-2022. However, at the June 2020 Public Hearing, the South Coast AQMD Governing Board instead approved an expedited two-year implementation timeline, with the TAC fee phase-in beginning in FY 2019-2020. Full implementation of all amended Regulation III fees in 2019 resulted in an estimated annual cost of \$4.42 million, primarily affecting the manufacturing sector

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<sup>4</sup> The toxics fees amendments to Regulation III and Rule 209 were initially presented in the May 9, 2019 Governing Board Meeting of the South Coast AQMD but were continued and ultimately adopted in the June 7, 2019 meeting.

with an average annual increase of \$1.96 million (57 percent) between 2019 and 2028. The macroeconomic impact estimated a job impact of 21 jobs gained in the four-county region, on average annually, between 2019 and 2028.

## **RULE DEVELOPMENT PROJECTS WITHOUT SOCIOECONOMIC IMPACTS**

### **Rule 1106 – Marine and Pleasure Craft Coatings (Amended May 2019) and Rule 1106.1 – Pleasure Craft Coating Operations (Rescinded May 2019)**

Rule 1106 was amended on May 3, 2019 to: 1) incorporate the requirements of Rule 1106.1 and simultaneously rescind Rule 1106.1 so that there would be a single rule covering both marine and pleasure craft coatings; 2) align VOC content limits with U.S. EPA Control Techniques Guidelines (CTGs) and other California air districts; and 3) promote consistency with other VOC-related rules contained in South Coast AQMD Regulation XI – Source Specific Standards. Amended Rule 1106 added new categories for coatings and sealants and required the most restrictive VOC content limit for products that may be marketed for both marine and pleasure craft coatings use. Since available coating products are currently being used which meet the VOC requirements in Rule 1106 with similar costs, no increased compliance costs to the affected facilities beyond what is currently required were expected. As such, no additional costs or other socioeconomic impacts were anticipated as a result of implementing amended Rule 1106.

## **EXISTING RULES WITH ONGOING SOCIOECONOMIC IMPACTS**

### **Ongoing Implementation of Rule 320 - Automatic Adjustment Based on Consumer Price Index (CPI) for Regulation III Fees**

Pursuant to the October 29, 2010 South Coast AQMD Governing Board Resolution, Rule 320 is required to undergo an annual assessment of the increase in fee rates based on the previous year's CPI by March 15. Rule 320 does not affect air quality or emission limits and as such no socioeconomic and cost-effectiveness analyses are required by statute. However, a socioeconomic impact assessment was conducted in order to assess the cost impacts of the fee increase and to provide background information, such as historical trends of South Coast AQMD revenues from various fees and sectoral distributions of these fees. The 2019 annual assessment of Rule 320 resulted in an across-the-board 3.5-percent increase in fee rates (equivalent to the change in the California CPI from December 2017 to December 2018) which went into effect on July 1, 2019. The fee increase was applied to most fees in Rules 301, 303, 304, 304.1, 306, 307.1, 308, 309, 311, 313, 314, and 315.

Nearly all the facilities regulated by the South Coast AQMD would be affected by the fee increases and these facilities belong to every sector of the economy. The fees examined included emissions fees, permit processing fees, annual permit renewal fees, toxic hot spot fees, source testing fees, and a portion of fees under Rule 2202 – On-Road Motor Vehicle Mitigation Options.

The across-the-board CPI-based fee rate increase was estimated to bring additional revenue totaling \$2.85 million to the South Coast AQMD. Based on the fee categories examined in the analysis, the manufacturing sector as a whole was shown to experience the largest increase in fees (approximately \$1.20 million for about 3,600 facilities), followed by the services sector (approximately \$0.53 million for about 10,600 facilities) and the retail trade sector (approximately

\$0.41 million for about 4,000 facilities). Within the manufacturing sector, the petroleum and coal products manufacturing industry, mostly comprised of refineries, was estimated to experience an increase of approximately \$0.49 million.

**CHAPTER II**  
**ENGINEERING AND PERMITTING ACTIVITIES**



## Engineering and Permitting

During calendar year 2019, SCAQMD dispositioned a total of 7,426 applications. The majority of these applications were for Permits to Operate (3,002), Area Sources & Certified/ Registrations (1,060), and Changes of Operators (918). Also, 889 permits were not renewed. This data, broken down into nine different categories, is summarized in Table 1 below.

<b>TABLE - 1</b>	
<b>Permit Applications Completed During Calendar Year 2019</b>	
<b>Type</b>	<b>Count</b>
Permits to Construct	441
Permits to Operate	3,002*
Changes of Operator	918
Denials	36
Cancellations	449
ERCs	65
Plans	1,250
TV/RECLAIM	205
Area Sources & Certified/Registrations	1,060
<b>Total</b>	<b>7,426</b>
<i>Permits Not Renewed</i>	889

\*This includes 1,842 applications for Permit to Construct that were issued as Permits to Construct/Operate.

Table 2 on the following page contains a breakdown of permits dispositioned (in the nine categories) and permits not renewed, by type of industry. The type of industry was based on North American Industry Classification System (NAICS) codes, which were provided by the applicant at the time of application filing. The top four NAICS codes were 447110/447190 – Gasoline Service Stations, 811121 - Automotive Body, Paint, and Interior Repair and Maintenance, 324110 - Petroleum Refineries, and 812320 – Dry Cleaning and Laundry Services (except Coin-Operated).

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
111199	All Other Grain Farming		4									4
111332	Grape Vineyards							14				14
111339	Other Noncitrus Fruit Farming			1								1
111910	Tobacco Farming		1									1
111920	Cotton Farming							1				1
111998	All Other Miscellaneous Crop Farming	10	3			10	2	6	1	6	3	41
112111	Beef Cattle Ranching and Farming										1	1
112120	Dairy Cattle and Milk Production		3	1				3		1		8
112990	All Other Animal Production		1								1	2
115114	Postharvest Crop Activities (except Cotton Ginning)	6				5	2	1				14
115210	Support Activities for Animal Production		1	1				1				3
211111	Unclassified		1					1				2
211120	Crude Petroleum Extraction		22	6		4		7	4	2	6	51
211130	Natural Gas Extraction		3			2						5
212210	Iron Ore Mining		2	1								3
212319	Other Crushed and Broken Stone Mining and Quarrying			1								1
212321	Construction Sand and Gravel Mining		1						1			2
212324	Kaolin and Ball Clay Mining		1						1			2
213112	Support Activities for Oil and Gas Operations		5								3	8
221111	Hydroelectric Power Generation	2	19	3		11	2	5	14	7		63
221112	Fossil Fuel Electric Power Generation										12	12
221118	Other Electric Power Generation	22	2			5		5	4	5		43
221122	Electric Power Distribution		1					1				2

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
221210	Natural Gas Distribution		4	1		6		5	3	24		43
221310	Water Supply and Irrigation Systems		48	6		2		8	2	6		72
221320	Sewage Treatment Facilities	2	26			3		6	1	3	2	43
221330	Steam and Air-Conditioning Supply		4					2	1			7
236115	New Single-Family Housing Construction (except For-Sale Builders)		7	4		1				47	4	63
236116	New Multifamily Housing Construction (except For-Sale Builders)		1								6	7
236117	New Housing For-Sale Builders		1	1							1	3
236118	Residential Remodelers									8		8
236210	Industrial Building Construction		2									2
236220	Commercial and Institutional Building Construction		53	5		1		1	1	53	13	127
237110	Water and Sewer Line and Related Structures Construction		5					1			1	7
237120	Oil and Gas Pipeline and Related Structures Construction		1		1							2
237210	Land Subdivision	1	9	1	3			17		2	3	36
237310	Highway, Street, and Bridge Construction		7			1		1		1	2	12
237990	Other Heavy and Civil Engineering Construction										4	4
238110	Poured Concrete Foundation and Structure Contractors		1	1				1			4	7
238120	Structural Steel and Precast Concrete Contractors		1									1
238130	Framing Contractors										1	1
238140	Masonry Contractors										1	1

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
238160	Roofing Contractors		4							10	6	20
238190	Other Foundation, Structure, and Building Exterior Contractors		1								1	2
238210	Electrical Contractors and Other Wiring Installation Contractors	1	3	2			3			15	4	28
238220	Plumbing, Heating, and Air-Conditioning Contractors		2	1				5		1	2	11
238310	Drywall and Insulation Contractors									3		3
238320	Painting and Wall Covering Contractors		5							2	2	9
238330	Flooring Contractors		1									1
238340	Tile and Terrazzo Contractors		1									1
238910	Site Preparation Contractors		25							73	36	134
238990	All Other Specialty Trade Contractors	2	21	2				1		43	5	74
311111	Dog and Cat Food Manufacturing					2						2
311211	Flour Milling		11									11
311224	Soybean and Other Oilseed Processing		2									2
311340	Nonchocolate Confectionery Manufacturing		1									1
311352	Confectionery Manufacturing from Purchased Chocolate		1									1
311412	Frozen Specialty Food Manufacturing	1	2									3
311422	Specialty Canning									2	1	3
311511	Fluid Milk Manufacturing		1			3		1				5
311513	Cheese Manufacturing							1				1
311514	Dry, Condensed, and Evaporated Dairy Product Manufacturing							1				1

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
311611	Animal (except Poultry) Slaughtering	19	4						2	13	1	39
311612	Meat Processed from Carcasses							1		2		3
311613	Rendering and Meat Byproduct Processing	6	3						4			13
311710	Seafood Product Preparation and Packaging							5				5
311812	Commercial Bakeries		13		2	2		1				18
311821	Cookie and Cracker Manufacturing										1	1
311824	Dry Pasta, Dough, and Flour Mixes Manufacturing from Purchased Flour							2				2
311830	Tortilla Manufacturing							1				1
311919	Other Snack Food Manufacturing	2	2			2			2	8		16
311920	Coffee and Tea Manufacturing		3					1		1		5
311930	Flavoring Syrup and Concentrate Manufacturing		3									3
311999	All Other Miscellaneous Food Manufacturing		3	12				6	1	1	9	32
312111	Soft Drink Manufacturing							4				4
312112	Bottled Water Manufacturing		5									5
312120	Breweries		5					2	2			9
312230	Tobacco Manufacturing		1							1		2
313110	Fiber, Yarn, and Thread Mills		1									1
313210	Broadwoven Fabric Mills		1						1			2
313240	Knit Fabric Mills										1	1
313310	Textile and Fabric Finishing Mills	4	6			2		2	4		3	21
313320	Fabric Coating Mills		2								3	5
314999	All Other Miscellaneous Textile Product Mills										1	1

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
315190	Other Apparel Knitting Mills										1	1
315210	Cut and Sew Apparel Contractors		1									1
315220	Men's and Boys' Cut and Sew Apparel Manufacturing									2		2
316110	Leather and Hide Tanning and Finishing										1	1
321114	Wood Preservation			1								1
321911	Wood Window and Door Manufacturing		3									3
321912	Cut Stock, Resawing Lumber, and Planing		1								1	2
321920	Wood Container and Pallet Manufacturing		5			1					4	10
321991	Manufactured Home (Mobile Home) Manufacturing			9								9
321999	All Other Miscellaneous Wood Product Manufacturing		1								2	3
322121	Paper (except Newsprint) Mills							1		2		3
322130	Paperboard Mills								2			2
322211	Corrugated and Solid Fiber Box Manufacturing	1	8		1					7		17
322212	Folding Paperboard Box Manufacturing		1					2				3
322220	Paper Bag and Coated and Treated Paper Manufacturing	6	11			2		1	2			22
322291	Sanitary Paper Product Manufacturing							8		1		9
322299	All Other Converted Paper Product Manufacturing		1									1
323111	Commercial Printing (except Screen and Books)	4	27	13		9		3	3	5	10	74
323113	Commercial Screen Printing		2			2				1		5

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
324110	Petroleum Refineries	27	59	2		30	2	12	27			159
324121	Asphalt Paving Mixture and Block Manufacturing		8						4		2	14
324122	Asphalt Shingle and Coating Materials Manufacturing	4	22			3	1	1	7			38
324191	Petroleum Lubricating Oil and Grease Manufacturing	1	6	28			1		3	2		41
324199	All Other Petroleum and Coal Products Manufacturing		14			6		1	5		1	27
325110	Petrochemical Manufacturing		8	1				1		8		18
325120	Industrial Gas Manufacturing		1						1	3		5
325180	Other Basic Inorganic Chemical Manufacturing	2	7			4			5			18
325199	All Other Basic Organic Chemical Manufacturing		6									6
325211	Plastics Material and Resin Manufacturing	2	20	34		16		4	1			77
325212	Synthetic Rubber Manufacturing		3						1		2	6
325311	Nitrogenous Fertilizer Manufacturing		4					1				5
325314	Fertilizer (Mixing Only) Manufacturing		4									4
325411	Medicinal and Botanical Manufacturing										1	1
325412	Pharmaceutical Preparation Manufacturing	3	28	3		7		6	3		2	52
325414	Biological Product (except Diagnostic) Manufacturing	1	4	2				6	1			14
325510	Paint and Coating Manufacturing	1	19	19	2	1		2			2	46
325520	Adhesive Manufacturing	4	9				1	1	1			16

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
325612	Polish and Other Sanitation Good Manufacturing		12									12
325620	Toilet Preparation Manufacturing		6					2				8
325910	Printing Ink Manufacturing		2			2						4
325991	Custom Compounding of Purchased Resins		4	27		2		1				34
325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing		2									2
326113	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	11	10			1		1				23
326121	Unlaminated Plastics Profile Shape Manufacturing	2	9	9		1		2	3		6	32
326130	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing							1				1
326140	Polystyrene Foam Product Manufacturing			5						1		6
326160	Plastics Bottle Manufacturing										1	1
326199	All Other Plastics Product Manufacturing	6	19		3	3	19		1	3	2	56
326211	Tire Manufacturing (except Retreading)		1									1
326212	Tire Retreading		5					1				6
326291	Rubber Product Manufacturing for Mechanical Use			1								1
326299	All Other Rubber Product Manufacturing	2						1				3
327110	Pottery, Ceramics, and Plumbing Fixture Manufacturing										4	4



**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
327120	Clay Building Material and Refractories Manufacturing		1			4					6	11
327212	Other Pressed and Blown Glass and Glassware Manufacturing										1	1
327213	Glass Container Manufacturing					1						1
327215	Glass Product Manufacturing Made of Purchased Glass	1	4									5
327310	Cement Manufacturing		9			2			8			19
327320	Ready-Mix Concrete Manufacturing		18			1						19
327331	Concrete Block and Brick Manufacturing	14	3			8						25
327332	Concrete Pipe Manufacturing		12						1	1		14
327390	Other Concrete Product Manufacturing		9									9
327420	Gypsum Product Manufacturing		4						1			5
327910	Abrasive Product Manufacturing								1			1
331110	Iron and Steel Mills and Ferroalloy Manufacturing		3			1					16	20
331210	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	1				4		1				6
331222	Steel Wire Drawing					1						1
331314	Secondary Smelting and Alloying of Aluminum		7			2			2			11
331318	Other Aluminum Rolling, Drawing, and Extruding		2			2			5	1		10
331410	Nonferrous Metal (except Aluminum) Smelting and Refining		2					1		6		9
331491	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding		3									3

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	2	10			2			3	1		18
331512	Steel Investment Foundries		3									3
331513	Steel Foundries (except Investment)		5	9								14
331523	Nonferrous Metal Die-Casting Foundries		1								1	2
331524	Aluminum Foundries (except Die-Casting)		7			1						8
331529	Other Nonferrous Metal Foundries (except Die-Casting)		1								2	3
332111	Iron and Steel Forging		1			1						2
332112	Nonferrous Forging	24	25			19		6	8	1		83
332114	Custom Roll Forming		2	1								3
332117	Powder Metallurgy Part Manufacturing		2									2
332215	Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing		2	1				2				5
332216	Saw Blade and Handtool Manufacturing			8		8			1			17
332312	Fabricated Structural Metal Manufacturing		3					1			5	9
332313	Plate Work Manufacturing		1	5		1						7
332321	Metal Window and Door Manufacturing		4									4
332322	Sheet Metal Work Manufacturing		2									2
332323	Ornamental and Architectural Metal Work Manufacturing		1									1

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
332410	Power Boiler and Heat Exchanger Manufacturing		1									1
332431	Metal Can Manufacturing	2	1			1	1	1	1	1		8
332439	Other Metal Container Manufacturing		5					2				7
332510	Hardware Manufacturing		2								2	4
332613	Spring Manufacturing		1									1
332618	Other Fabricated Wire Product Manufacturing		1									1
332710	Machine Shops		22			1					2	25
332721	Precision Turned Product Manufacturing		1									1
332722	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	4	30			4		2	1	2	7	50
332811	Metal Heat Treating		2			5						7
332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	4	31	10		7		2			6	60
332813	Electroplating, Plating, Polishing, Anodizing, and Coloring	15	44	11		11		4			6	91
332911	Industrial Valve Manufacturing		5									5
332912	Fluid Power Valve and Hose Fitting Manufacturing	6	29	4		5		1		1	1	47
332919	Other Metal Valve and Pipe Fitting Manufacturing					1						1
332994	Small Arms, Ordnance, and Ordnance Accessories Manufacturing		8	2				5	1	1		17
332996	Fabricated Pipe and Pipe Fitting Manufacturing		3									3

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
332999	All Other Miscellaneous Fabricated Metal Product Manufacturing		6								1	7
333112	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing		1									1
333120	Construction Machinery Manufacturing			1								1
333314	Optical Instrument and Lens Manufacturing		5					2				7
333316	Photographic and Photocopying Equipment Manufacturing							2				2
333318	Other Commercial and Service Industry Machinery Manufacturing	1	5			1						7
333414	Heating Equipment (except Warm Air Furnaces) Manufacturing										1	1
333415	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing		2					4				6
333514	Special Die and Tool, Die Set, Jig, and Fixture Manufacturing					1						1
333611	Turbine and Turbine Generator Set Units Manufacturing							1				1
333613	Mechanical Power Transmission Equipment Manufacturing										2	2
333912	Air and Gas Compressor Manufacturing		4									4
333924	Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing			1								1

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
333992	Welding and Soldering Equipment Manufacturing		1									1
333999	All Other Miscellaneous General Purpose Machinery Manufacturing		1									1
334111	Electronic Computer Manufacturing		2									2
334112	Computer Storage Device Manufacturing										1	1
334118	Computer Terminal and Other Computer Peripheral Equipment Manufacturing							3				3
334210	Telephone Apparatus Manufacturing		6									6
334220	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	1	7			3			1			12
334290	Other Communications Equipment Manufacturing		2					1			8	11
334310	Audio and Video Equipment Manufacturing					1						1
334412	Bare Printed Circuit Board Manufacturing		1	11				1				13
334413	Semiconductor and Related Device Manufacturing	20	8			4		12				44
334417	Electronic Connector Manufacturing							1				1
334418	Printed Circuit Assembly (Electronic Assembly) Manufacturing		4	8			1				1	14
334419	Other Electronic Component Manufacturing		1	4				3			2	10

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
334510	Electromedical and Electrotherapeutic Apparatus Manufacturing		7	1		4		4		1		17
334511	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing		3					3				6
334513	Instruments and Related Products Manufacturing for Measuring, Displaying, and Controlling Industrial Process Variables	1	1									2
334514	Totalizing Fluid Meter and Counting Device Manufacturing		1									1
334515	Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals							1				1
334516	Analytical Laboratory Instrument Manufacturing		16					4				20
334519	Other Measuring and Controlling Device Manufacturing					1						1
335121	Residential Electric Lighting Fixture Manufacturing					3						3
335122	Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	1	2									3
335311	Power, Distribution, and Specialty Transformer Manufacturing							1				1
335312	Motor and Generator Manufacturing			17								17
335314	Relay and Industrial Control Manufacturing							1				1

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
335911	Storage Battery Manufacturing		51		1	5		3				60
335931	Current-Carrying Wiring Device Manufacturing		9							1		10
335999	All Other Miscellaneous Electrical Equipment and Component Manufacturing		8								2	10
336111	Automobile Manufacturing		3					1			2	6
336211	Motor Vehicle Body Manufacturing		7	15					1			23
336310	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing		1								3	4
336320	Motor Vehicle Electrical and Electronic Equipment Manufacturing					5						5
336390	Other Motor Vehicle Parts Manufacturing		1			2						3
336411	Aircraft Manufacturing	2	3					2	1			8
336412	Aircraft Engine and Engine Parts Manufacturing	2	7					1	1	9		20
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing		10	5		4		4	2			25
336414	Guided Missile and Space Vehicle Manufacturing		6			6		1		4		17
336415	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	2			1							3
336612	Boat Building		1	4					1			6
337110	Wood Kitchen Cabinet and Countertop Manufacturing		3	2				1			1	7
337121	Upholstered Household Furniture Manufacturing										6	6

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
337122	Nonupholstered Wood Household Furniture Manufacturing		5	3							2	10
337127	Institutional Furniture Manufacturing										2	2
337211	Wood Office Furniture Manufacturing	1	1								1	3
337212	Custom Architectural Woodwork and Millwork Manufacturing		1								1	2
337214	Office Furniture (except Wood) Manufacturing		1						1		1	3
337215	Showcase, Partition, Shelving, and Locker Manufacturing	2										2
339112	Surgical and Medical Instrument Manufacturing		11			3		3		4		21
339113	Surgical Appliance and Supplies Manufacturing		2								1	3
339114	Dental Equipment and Supplies Manufacturing										3	3
339910	Jewelry and Silverware Manufacturing										1	1
339920	Sporting and Athletic Goods Manufacturing		1					1			2	4
339950	Sign Manufacturing		4	1								5
339991	Gasket, Packing, and Sealing Device Manufacturing		1									1
339992	Musical Instrument Manufacturing	1	2									3
339999	All Other Miscellaneous Manufacturing		3							6	8	17
423110	Automobile and Other Motor Vehicle Merchant Wholesalers	7	20								2	29



**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
423120	Motor Vehicle Supplies and New Parts Merchant Wholesalers		5	1		1					4	11
423130	Tire and Tube Merchant Wholesalers		1	15				2				18
423140	Motor Vehicle Parts (Used) Merchant Wholesalers		2									2
423210	Furniture Merchant Wholesalers							1			1	2
423310	Lumber, Plywood, Millwork, and Wood Panel Merchant Wholesalers		5									5
423320	Brick, Stone, and Related Construction Material Merchant Wholesalers		5								5	10
423390	Other Construction Material Merchant Wholesalers		1									1
423410	Photographic Equipment and Supplies Merchant Wholesalers							1				1
423430	Computer and Computer Peripheral Equipment and Software Merchant Wholesalers		1									1
423440	Other Commercial Equipment Merchant Wholesalers		1			1						2
423450	Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers		4	1		1		3		2		11
423510	Metal Service Centers and Other Metal Merchant Wholesalers	1	3							1		5
423610	Electrical Apparatus and Equipment, Wiring Supplies, and Related Equipment Merchant Wholesalers		1									1

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
423690	Other Electronic Parts and Equipment Merchant Wholesalers									1		1
423710	Hardware Merchant Wholesalers		2			1	1					4
423720	Plumbing and Heating Equipment and Supplies (Hydronics) Merchant Wholesalers		5									5
423730	Warm Air Heating and Air-Conditioning Equipment and Supplies Merchant Wholesalers							1				1
423810	Construction and Mining (except Oil Well) Machinery and Equipment Merchant Wholesalers		1			3				29		33
423820	Farm and Garden Machinery and Equipment Merchant Wholesalers		2									2
423830	Industrial Machinery and Equipment Merchant Wholesalers	1	10					2		5	2	20
423840	Industrial Supplies Merchant Wholesalers	2	4			1		1				8
423850	Service Establishment Equipment and Supplies Merchant Wholesalers							1				1
423860	Transportation Equipment and Supplies (except Motor Vehicle) Merchant Wholesalers							1				1
423910	Sporting and Recreational Goods and Supplies Merchant Wholesalers		1									1
423920	Toy and Hobby Goods and Supplies Merchant Wholesalers							1				1

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

<b>Compiled NAICS Codes</b>	<b>Compiled NAICS Description</b>	<b>Permit to Construct</b>	<b>Permit to Operate</b>	<b>Change of Operator</b>	<b>Denial</b>	<b>Cancelled</b>	<b>ERC</b>	<b>Plans</b>	<b>RECLAIM/TV</b>	<b>Area Source/Registration</b>	<b>Permit Not Renewed</b>	<b>Grand Total</b>
423930	Recyclable Material Merchant Wholesalers		5					1		2	1	9
423990	Other Miscellaneous Durable Goods Merchant Wholesalers		3								4	7
424120	Stationery and Office Supplies Merchant Wholesalers										1	1
424130	Industrial and Personal Service Paper Merchant Wholesalers		1	1								2
424210	Drugs and Druggists' Sundries Merchant Wholesalers		4	1				2				7
424410	General Line Grocery Merchant Wholesalers							1		1	1	3
424420	Packaged Frozen Food Merchant Wholesalers	2		2				1				5
424440	Poultry and Poultry Product Merchant Wholesalers							1				1
424460	Fish and Seafood Merchant Wholesalers							1			1	2
424470	Meat and Meat Product Merchant Wholesalers		1									1
424480	Fresh Fruit and Vegetable Merchant Wholesalers		13	8								21
424490	Other Grocery and Related Products Merchant Wholesalers	1					1	4		17	4	27
424510	Grain and Field Bean Merchant Wholesalers									1		1
424590	Other Farm Product Raw Material Merchant Wholesalers	1	6									7
424610	Plastics Materials and Basic Forms and Shapes Merchant Wholesalers		2							1		3

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
424690	Other Chemical and Allied Products Merchant Wholesalers		41	27				2			5	75
424710	Petroleum Bulk Stations and Terminals	4	34			7	1	4	3		1	54
424720	Petroleum and Petroleum Products Merchant Wholesalers (except Bulk Stations and Terminals)	1	15	9		1	2				1	29
424810	Beer and Ale Merchant Wholesalers		2									2
424820	Wine and Distilled Alcoholic Beverage Merchant Wholesalers										1	1
424910	Farm Supplies Merchant Wholesalers		1									1
424930	Flower, Nursery Stock, and Florists' Supplies Merchant Wholesalers									1		1
424950	Paint, Varnish, and Supplies Merchant Wholesalers		2			1						3
424990	Other Miscellaneous Nondurable Goods Merchant Wholesalers		3	2		2				3		10
441110	New Car Dealers		14	9		1		3		1	4	32
441120	Used Car Dealers	2	10	1		6		6			2	27
441210	Recreational Vehicle Dealers										1	1
441310	Automotive Parts and Accessories Stores		10	8	2							20
441320	Tire Dealers		1	3								4
442110	Furniture Stores		2									2
442210	Floor Covering Stores										1	1
442299	All Other Home Furnishings Stores		1								3	4
443141	Household Appliance Stores		1									1

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
443142	Electronics Stores		1					3		2		6
444110	Home Centers		2					1				3
444120	Paint and Wallpaper Stores	1	4	2							1	8
444130	Hardware Stores			1								1
444190	Other Building Material Dealers		1									1
444220	Nursery, Garden Center, and Farm Supply Stores		2			2				1		5
445110	Supermarkets and Other Grocery (except Convenience) Stores	1	12			1		71		12	3	100
445120	Convenience Stores	4	27		1	1					2	35
445291	Baked Goods Stores					1						1
445292	Confectionery and Nut Stores										1	1
445299	All Other Specialty Food Stores		5	1		1		1				8
446110	Pharmacies and Drug Stores		6					19			1	26
446120	Cosmetics, Beauty Supplies, and Perfume Stores		6					1				7
446130	Optical Goods Stores							1				1
446191	Food (Health) Supplement Stores									2		2
446199	All Other Health and Personal Care Stores		1					2				3
447100	Unclassified		2									2
447110	Gasoline Stations with Convenience Stores	45	124	71		8	2				4	254
447190	Other Gasoline Stations	33	177	8	2	9	1	4	2		2	238
448110	Men's Clothing Stores	1						1				2
448120	Women's Clothing Stores							5				5
448130	Children's and Infants' Clothing Stores										2	2
448140	Family Clothing Stores		2					1		1	2	6
448310	Jewelry Stores							2				2
451110	Sporting Goods Stores			1								1

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
451120	Hobby, Toy, and Game Stores			3				1			12	16
451211	Book Stores		1					1				2
451212	News Dealers and Newsstands			1								1
452111	Unclassified		1					9		1		11
452112	Unclassified		1					30				31
452210	Department Stores		2	1				4				7
452311	Warehouse Clubs and Supercenters		1				3	1				5
452319	All Other General Merchandise Stores		1									1
452910	Unclassified		6			2	1	12				21
452990	Unclassified							21				21
453110	Florists		1					7				8
453220	Gift, Novelty, and Souvenir Stores		1					1				2
453310	Used Merchandise Stores		1							1		2
453998	All Other Miscellaneous Store Retailers (except Tobacco Stores)		2	1				8			1	12
454310	Fuel Dealers	1	4	2								7
454390	Other Direct Selling Establishments		3							8		11
481111	Scheduled Passenger Air Transportation		10			4		1	2			17
481112	Scheduled Freight Air Transportation		2									2
481211	Nonscheduled Chartered Passenger Air Transportation		5									5
481219	Other Nonscheduled Air Transportation									1	2	3
484110	General Freight Trucking, Local		6	3				2		1	1	13
484121	General Freight Trucking, Long-Distance, Truckload		19									19

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
484230	Specialized Freight (except Used Goods) Trucking, Long-Distance										1	1
485111	Mixed Mode Transit Systems		3					1		1		5
485113	Bus and Other Motor Vehicle Transit Systems		4							2		6
485210	Interurban and Rural Bus Transportation		2					1				3
485310	Taxi Service									3	7	10
485410	School and Employee Bus Transportation			1								1
486110	Pipeline Transportation of Crude Oil		1						1			2
486210	Pipeline Transportation of Natural Gas		1					1	3	9		14
487110	Scenic and Sightseeing Transportation, Land		1									1
488111	Air Traffic Control		24	1				2	5	3	1	36
488119	Other Airport Operations	1	12	1	3			3	1	35	1	57
488190	Other Support Activities for Air Transportation		4					3				7
488210	Support Activities for Rail Transportation		2					1		1		4
488310	Port and Harbor Operations	1						2				3
488320	Marine Cargo Handling		3									3
488410	Motor Vehicle Towing		2					2			1	5
488510	Freight Transportation Arrangement			1							3	4
488991	Packing and Crating		7									7
488999	All Other Support Activities for Transportation		3	1								4
491110	Postal Service							2				2

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
492110	Couriers and Express Delivery Services		1									1
493110	General Warehousing and Storage		29	6			1	6	5	1	2	50
493190	Other Warehousing and Storage		2						1		2	5
511110	Newspaper Publishers		4					3			1	8
511120	Periodical Publishers					1						1
511210	Software Publishers										1	1
512110	Motion Picture and Video Production		2	1				3	1	3	2	12
512120	Motion Picture and Video Distribution							1		1	1	3
512131	Motion Picture Theaters (except Drive-Ins)							1				1
512191	Teleproduction and Other Postproduction Services		2					2				4
512199	Other Motion Picture and Video Industries							1				1
512250	Record Production and Distribution			1							1	2
515111	Radio Networks		3	2								5
515120	Television Broadcasting							2		1	2	5
515210	Cable and Other Subscription Programming		1	1				2		4	2	10
517110	Unclassified		1									1
517311	Wired Telecommunications Carriers		1					3		1		5
517312	Wireless Telecommunications Carriers (except Satellite)		2			2						4
517911	Telecommunications Resellers		1					3		1		5
517919	All Other Telecommunications		2					2		2		6
518210	Data Processing, Hosting, and Related Services										1	1



**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
519120	Libraries and Archives		2					10				12
519130	Internet Publishing and Broadcasting and Web Search Portals							1				1
522110	Commercial Banking		2	1				7		1		11
522130	Credit Unions		3					1		1	2	7
522292	Real Estate Credit							1				1
522293	International Trade Financing							1				1
522298	All Other Nondepository Credit Intermediation	1										1
522320	Financial Transactions Processing, Reserve, and Clearinghouse Activities			1								1
523120	Securities Brokerage		1									1
523130	Commodity Contracts Dealing		1									1
523910	Miscellaneous Intermediation	3	6	3				5			3	20
523920	Portfolio Management			2				1				3
523930	Investment Advice		1	1				6				8
523991	Trust, Fiduciary, and Custody Activities			1								1
524113	Direct Life Insurance Carriers							2				2
524114	Direct Health and Medical Insurance Carriers		2					9		3	1	15
524126	Direct Property and Casualty Insurance Carriers		2					4				6
524127	Direct Title Insurance Carriers										1	1
524210	Insurance Agencies and Brokerages		1	1							1	3
525920	Trusts, Estates, and Agency Accounts							1				1
525990	Other Financial Vehicles		1							1	2	4

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
531110	Lessors of Residential Buildings and Dwellings		3	7				14		1	11	36
531120	Lessors of Nonresidential Buildings (except Miniwarehouses)	1	11					25			2	39
531130	Lessors of Miniwarehouses and Self-Storage Units									1		1
531190	Lessors of Other Real Estate Property							1		3		4
531210	Offices of Real Estate Agents and Brokers		34	14	4	4		47		4	5	112
531312	Nonresidential Property Managers	3	7	8				8			1	27
532111	Passenger Car Rental		3									3
532120	Truck, Utility Trailer, and RV (Recreational Vehicle) Rental and Leasing	1									1	2
532210	Consumer Electronics and Appliances Rental			18							1	19
532289	All Other Consumer Goods Rental		4					3				7
532299	Unclassified										1	1
532310	General Rental Centers										1	1
532412	Construction, Mining, and Forestry Machinery and Equipment Rental and Leasing		4									4
532490	Other Commercial and Industrial Machinery and Equipment Rental and Leasing		1	1						3	1	6
541110	Offices of Lawyers		4	3				3			1	11
541191	Title Abstract and Settlement Offices							2		1		3
541211	Offices of Certified Public Accountants									1		1

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
541213	Tax Preparation Services					1						1
541310	Architectural Services		1	1							1	3
541330	Engineering Services	3	14	16			2	12	2	1	7	57
541380	Testing Laboratories		3		1			1				5
541430	Graphic Design Services		2					2				4
541511	Custom Computer Programming Services		1	2						2		5
541512	Computer Systems Design Services		2					3				5
541611	Administrative Management and General Management Consulting Services	1	6	3		1	2	8	1	3		25
541612	Human Resources Consulting Services		1							1		2
541613	Marketing Consulting Services		2				1					3
541618	Other Management Consulting Services		2			1		1		4	40	48
541620	Environmental Consulting Services		19	1						17	6	43
541690	Other Scientific and Technical Consulting Services		2	3						1	2	8
541711	Unclassified		3									3
541712	Unclassified							1		5		6
541713	Research and Development in Nanotechnology		5					2				7
541714	Research and Development in Biotechnology (except Nanobiotechnology)									1		1
541715	Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)			4				1				5

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
541720	Research and Development in the Social Sciences and Humanities							2				2
541810	Advertising Agencies		2			2						4
541860	Direct Mail Advertising		2									2
541890	Other Services Related to Advertising		2									2
541910	Marketing Research and Public Opinion Polling							1				1
541921	Photography Studios, Portrait										2	2
541940	Veterinary Services							1				1
541990	All Other Professional, Scientific, and Technical Services		6				3	3		15	31	58
551112	Offices of Other Holding Companies		2	1				2			3	8
561110	Office Administrative Services	2	15	5		2		17	1		4	46
561210	Facilities Support Services		5							64	2	71
561311	Employment Placement Agencies	1	1					2				4
561320	Temporary Help Services									11		11
561421	Telephone Answering Services										1	1
561431	Private Mail Centers			1								1
561450	Credit Bureaus							1				1
561491	Repossession Services									1		1
561499	All Other Business Support Services	2	14	4		4		8		4	1	37
561599	All Other Travel Arrangement and Reservation Services		1					1				2
561622	Locksmiths									1		1
561720	Janitorial Services		4			1		3		18	13	39
561730	Landscaping Services		1			4		1			1	7

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
561790	Other Services to Buildings and Dwellings		5	1							2	8
561910	Packaging and Labeling Services		1			1						2
561920	Convention and Trade Show Organizers							1			1	2
561990	All Other Support Services	3	23	1	2			6		3	4	42
562111	Solid Waste Collection		3									3
562112	Hazardous Waste Collection										2	2
562211	Hazardous Waste Treatment and Disposal	2	28			2		6			2	40
562212	Solid Waste Landfill		13			8	4	5		2		32
562219	Other Nonhazardous Waste Treatment and Disposal		8			1						9
562910	Remediation Services		26							51	29	106
562920	Materials Recovery Facilities		14			6						20
562998	All Other Miscellaneous Waste Management Services		1								4	5
611110	Elementary and Secondary Schools		13				1	37		5	1	57
611210	Junior Colleges		4			1		14		4		23
611310	Colleges, Universities, and Professional Schools		18	5		6		32	1	7	1	70
611610	Fine Arts Schools							2				2
611620	Sports and Recreation Instruction		1								1	2
611691	Exam Preparation and Tutoring		1									1
611699	All Other Miscellaneous Schools and Instruction									1	2	3
611710	Educational Support Services		1									1
621111	Offices of Physicians (except Mental Health Specialists)		2	2				18		2	3	27

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
621112	Offices of Physicians, Mental Health Specialists		1	1				1				3
621210	Offices of Dentists		3	1				2			2	8
621391	Offices of Podiatrists		1									1
621399	Offices of All Other Miscellaneous Health Practitioners									1		1
621410	Family Planning Centers									1		1
621491	HMO Medical Centers							5				5
621498	All Other Outpatient Care Centers		3					4				7
621511	Medical Laboratories		2					5			1	8
621512	Diagnostic Imaging Centers							1				1
621610	Home Health Care Services									1		1
621910	Ambulance Services							2				2
621991	Blood and Organ Banks							1			2	3
621999	All Other Miscellaneous Ambulatory Health Care Services		10	1				5				16
622110	General Medical and Surgical Hospitals		25	10		1		37	2	8	2	85
622210	Psychiatric and Substance Abuse Hospitals		5			1		2		1		9
622310	Specialty (except Psychiatric and Substance Abuse) Hospitals		1					2				3
623110	Nursing Care Facilities (Skilled Nursing Facilities)		4	1							2	7
623312	Assisted Living Facilities for the Elderly									2		2
623990	Other Residential Care Facilities		2	3				3				8
624110	Child and Youth Services		1					2				3

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
624120	Services for the Elderly and Persons with Disabilities							1				1
624190	Other Individual and Family Services	2	1							16		19
624310	Vocational Rehabilitation Services		3							1		4
624410	Child Day Care Services				1			1				2
711110	Theater Companies and Dinner Theaters		2							1	18	21
711190	Other Performing Arts Companies		1					2				3
711211	Sports Teams and Clubs							3				3
711310	Promoters of Performing Arts, Sports, and Similar Events with Facilities		1					3				4
711410	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures		2					1				3
711510	Independent Artists, Writers, and Performers		1									1
712110	Museums							7		3		10
713110	Amusement and Theme Parks	11	12			4		2	4	3		36
713910	Golf Courses and Country Clubs		5							2	2	9
713930	Marinas		1									1
713940	Fitness and Recreational Sports Centers		4					5				9
713990	All Other Amusement and Recreation Industries		1							1		2
721110	Hotels (except Casino Hotels) and Motels		8	6				54		15	13	96
721191	Bed-and-Breakfast Inns							3				3
721214	Recreational and Vacation Camps (except Campgrounds)										1	1

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
722320	Caterers							1		2	2	5
722330	Mobile Food Services									1	1	2
722410	Drinking Places (Alcoholic Beverages)	1	2							4	5	12
722511	Full-Service Restaurants	1	3					3		76	42	125
722513	Limited-Service Restaurants	4	4	1		4		1		28	45	87
811111	General Automotive Repair		36	18	1	20		4			14	93
811112	Automotive Exhaust System Repair		1									1
811118	Other Automotive Mechanical and Electrical Repair and Maintenance		4	2							2	8
811121	Automotive Body, Paint, and Interior Repair and Maintenance	6	111	158		8		4			48	335
811191	Automotive Oil Change and Lubrication Shops		1									1
811192	Car Washes	2	4	1							1	8
811198	All Other Automotive Repair and Maintenance		4									4
811211	Consumer Electronics Repair and Maintenance	1	1									2
811213	Communication Equipment Repair and Maintenance		6									6
811219	Other Electronic and Precision Equipment Repair and Maintenance		3					3		1		7
811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance		2								1	3
811412	Appliance Repair and Maintenance		3					21			2	26



**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
811420	Reupholstery and Furniture Repair	2									1	3
811490	Other Personal and Household Goods Repair and Maintenance		2	1								3
812112	Beauty Salons		2					1				3
812113	Nail Salons		1									1
812199	Other Personal Care Services					1					1	2
812210	Funeral Homes and Funeral Services		2					1			2	5
812220	Cemeteries and Crematories		8			2						10
812300	Unclassified		1					1				2
812310	Coin-Operated Laundries and Drycleaners		1								2	3
812320	Drycleaning and Laundry Services (except Coin-Operated)		67	29	1	2		8			42	149
812331	Linen Supply		19				3					22
812332	Industrial Launderers							8				8
812930	Parking Lots and Garages		3	3					2			8
812990	All Other Personal Services		1									1
813110	Religious Organizations		6	2				11			1	20
813212	Voluntary Health Organizations							1				1
813319	Other Social Advocacy Organizations									1	6	7
813410	Civic and Social Organizations							4		1	2	7
813930	Labor Unions and Similar Labor Organizations		1									1
813990	Other Similar Organizations (except Business, Professional, Labor, and Political Organizations)		2	3	3			1			3	12
921110	Executive Offices		7				1	14		10	1	33
921130	Public Finance Activities							4				4

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

Compiled NAICS Codes	Compiled NAICS Description	Permit to Construct	Permit to Operate	Change of Operator	Denial	Cancelled	ERC	Plans	RECLAIM/TV	Area Source/Registration	Permit Not Renewed	Grand Total
921190	Other General Government Support	3	13			1		14	1	30	3	65
922110	Courts							3			4	7
922120	Police Protection		4					15				19
922140	Correctional Institutions		2					14		2		18
922160	Fire Protection		4	1				3		7		15
922190	Other Justice, Public Order, and Safety Activities							2				2
923120	Administration of Public Health Programs		1					1				2
923130	Administration of Human Resource Programs (except Education, Public Health, and Veterans' Affairs Programs)							3				3
924110	Administration of Air and Water Resource and Solid Waste Management Programs		2					2		1		5
924120	Administration of Conservation Programs		3									3
925120	Administration of Urban Planning and Community and Rural Development							1			1	2
926120	Regulation and Administration of Transportation Programs		7					2		1		10
926130	Regulation and Administration of Communications, Electric, Gas, and Other Utilities					5		1	2			8
926150	Regulation, Licensing, and Inspection of Miscellaneous Commercial Sectors										1	1
927110	Space Research and Technology		6			2		3	2			13
928110	National Security	4	11			4			3			22
928120	International Affairs		2			1						3

**Table 2 - Permits Dispositioned by NAICS Code - CY 2019**

<b>Compiled NAICS Codes</b>	<b>Compiled NAICS Description</b>	<b>Permit to Construct</b>	<b>Permit to Operate</b>	<b>Change of Operator</b>	<b>Denial</b>	<b>Cancelled</b>	<b>ERC</b>	<b>Plans</b>	<b>RECLAIM/TV</b>	<b>Area Source/Registration</b>	<b>Permit Not Renewed</b>	<b>Grand Total</b>
<b>999990</b>	Unclassified	9	47	12		1	1	24		5	11	110
<b>999999</b>	Unclassified		27	26	1			5		12		71
<b>Grand Total</b>		<b>441</b>	<b>3002</b>	<b>918</b>	<b>36</b>	<b>449</b>	<b>65</b>	<b>1250</b>	<b>205</b>	<b>1060</b>	<b>889</b>	<b>8315</b>

\*Numbers with asterisks represent steps made in the Permit Process that were done in Calendar Year 2019 but was not the last step completed that year.

**Annualized Publication of Emission Reduction Credit (ERC)  
And Short Term Emission Reduction Credit (STERC)  
Transactions for Fiscal Year 2018-19<sup>5</sup>  
(California Health and Safety Code Section 40452)**

Pursuant to paragraph (c) of Section 40452 of the California Health and Safety Code, this report summarizes data on emission offset transactions and applications, by pollutant, during the previous fiscal year. Note that during Fiscal Year 2018-19, no applications were denied for a permit for a new source for the reason of failure to provide the required emission offsets.

Table 2 summarizes privately held Emission Reduction Credit (ERC) and Short Term Emission Reduction Credit (STERC) transactions for Fiscal Year 2018-19, including totals, by pollutant, of the number of emission offset transactions and the quantity of emission offsets transferred in units of pounds per day and tons per year. Table 2 summarizes ERC banking applications processed during Fiscal Year 2018-19, including the number of newly generated STERCs by pollutant in units of pounds per day and tons per year.

Tables 3 and 4 provide details on the amount of each emission offset transaction and processed ERC banking application, respectively.

**Table 2: Emission Offset Transactions – Fiscal Year 2018-19**

Criteria Pollutant	Number of Emission Offset Transfer Transactions <sup>6</sup>				Quantity of Emission Offsets Transferred <sup>7</sup> (lb/day)				Annualized Quantity of Emission Offsets Transferred <sup>3</sup> (ton/year <sup>8</sup> )			
	ERC	STERC <sup>9</sup>	STERC <sup>10</sup>	TOTAL	ERC	STERC <sup>5</sup>	STERC <sup>6</sup>	TOTAL	ERC	STERC <sup>5</sup>	STERC <sup>6</sup>	TOTAL
ROG	27	10	0	37	740	241	0	981	135.2	43.8	0	179
NOX	4	1	0	5	25	1	0	26	4.5	0.2	0	4.7
SOX	0	0	0	0	0	0	0	0	0	0	0	0
CO	0	0	0	0	0	0	0	0	0	0	0	0
PM10	1	0	0	1	3	0	0	3	0.5	0	0	0.5

**Table 3: Emission Offset Applications – Fiscal Year 2018-19**

Criteria Pollutant	Number of Banking Applications Resulting in the Issuance of New STERCs <sup>11</sup>	Quantity of Emission Reductions Achieved (STERCs) <sup>12</sup> (lb/day)	Annualized Quantity of Emission Reductions Achieved <sup>8</sup> (ton/year <sup>13</sup> )
ROG	2	77	14.0
NOX	0	0	0
SOX	0	0	0
CO	0	0	0

<sup>5</sup> This report does not include RECLAIM Trading Credit (RTC) transactions.

<sup>6</sup> Includes all emission offset certificates that transferred ownership.

<sup>7</sup> Includes the total amount of emission offsets transferred.

<sup>8</sup> Sum of individual transactions in Table 3.

<sup>9</sup> STERC transfer transactions including the long term emission offset, those that have an ending year of 9999.

<sup>10</sup> STERC transfer transactions not including the long term emission offset in which the emission offset with the greatest year is treated like a long term emission offset.

<sup>11</sup> Includes all emission offset applications resulting in the generation of new certificates.

<sup>12</sup> Includes the total amount of emission offsets generated.

<sup>13</sup> Sum of individual transactions in Table 4.

**Annual Publication of Emission Reduction Credit (ERC) and Short Term Emission Reduction Credit (STERC) Transactions and Applications for Fiscal Year 2018-19**

Criteria Pollutant	Number of Banking Applications Resulting in the Issuance of New STERCs <sup>11</sup>	Quantity of Emission Reductions Achieved (STERCs) <sup>12</sup> (lb/day)	Annualized Quantity of Emission Reductions Achieved <sup>8</sup> (ton/year <sup>13</sup> )
PM10	7	513	93.8

**Table 4: Emission Offset Transaction Summary – Fiscal Year 2018-19  
Sorted by Pollutant and Amount**

SCAQMD NO.	POLLUTANT	AMOUNT (LB/DAY)	AMOUNT (TON/YR)	TYPE	START YEAR	END YEAR
SC1819-001	ROG	6	1.1	ERC	N/A	N/A
SC1819-002	ROG	18	3.3	ERC	N/A	N/A
SC1819-003	ROG	13	2.4	ERC	N/A	N/A
SC1819-004	ROG	500	91.3	ERC	N/A	N/A
SC1819-005	ROG	1	0.2	ERC	N/A	N/A
SC1819-006	ROG	2	0.4	ERC	N/A	N/A
SC1819-007	ROG	3	0.5	ERC	N/A	N/A
SC1819-008	ROG	3	0.5	ERC	N/A	N/A
SC1819-009	ROG	2	0.4	ERC	N/A	N/A
SC1819-010	ROG	12	2.2	ERC	N/A	N/A
SC1819-011	ROG	23	4.2	ERC	N/A	N/A
SC1819-012	ROG	3	0.5	STERC	2018	9999
SC1819-013	ROG	0	0	STERC	2019	2019
SC1819-014	ROG	0	0	STERC	2020	2020
SC1819-015	ROG	15	2.7	STERC	2021	9999
SC1819-016	ROG	0	0	STERC	2019	2019
SC1819-017	ROG	0	0	STERC	2020	2020
SC1819-018	ROG	21	3.8	STERC	2021	9999
SC1819-019	ROG	0	0	STERC	2019	2019
SC1819-020	ROG	0	0	STERC	2020	2020
SC1819-021	ROG	72	13.1	STERC	2021	9999
SC1819-022	ROG	0	0	STERC	2019	2019
SC1819-023	ROG	0	0	STERC	2020	2020
SC1819-024	ROG	7	1.3	STERC	2021	9999
SC1819-025	ROG	0	0	STERC	2019	2019
SC1819-026	ROG	0	0	STERC	2020	2020
SC1819-027	ROG	4	0.7	STERC	2021	9999
SC1819-028	ROG	0	0	STERC	2019	2019
SC1819-029	ROG	0	0	STERC	2020	2020
SC1819-030	ROG	25	4.6	STERC	2021	9999
SC1819-031	ROG	0	0	STERC	2019	2019
SC1819-032	ROG	0	0	STERC	2020	2020
SC1819-033	ROG	85	15.5	STERC	2021	9999
SC1819-034	ROG	0	0	STERC	2019	2019
SC1819-035	ROG	0	0	STERC	2020	2020
SC1819-036	ROG	4	0.7	STERC	2021	9999
SC1819-037	ROG	6	1.1	ERC	N/A	N/A
SC1819-038	ROG	1	0.2	ERC	N/A	N/A
SC1819-039	ROG	11	2	ERC	N/A	N/A

**Annual Publication of Emission Reduction Credit (ERC) and Short Term Emission Reduction Credit (STERC) Transactions and Applications for Fiscal Year 2018-19**

SCAQMD NO.	POLLUTANT	AMOUNT (LB/DAY)	AMOUNT (TON/YR)	TYPE	START YEAR	END YEAR
SC1819-040	ROG	1	0.2	ERC	N/A	N/A
SC1819-041	ROG	10	1.8	ERC	N/A	N/A
SC1819-042	ROG	3	0.5	ERC	N/A	N/A
SC1819-043	ROG	14	2.6	ERC	N/A	N/A
SC1819-044	ROG	38	6.9	ERC	N/A	N/A
SC1819-045	ROG	12	2.2	ERC	N/A	N/A
SC1819-046	ROG	5	0.9	STERC	2019	9999
SC1819-047	ROG	1	0.2	ERC	N/A	N/A
SC1819-048	ROG	15	2.7	ERC	N/A	N/A
SC1819-049	ROG	14	2.6	ERC	N/A	N/A
SC1819-050	ROG	2	0.4	ERC	N/A	N/A
SC1819-051	ROG	2	0.4	ERC	N/A	N/A
SC1819-052	ROG	1	0.2	ERC	N/A	N/A
SC1819-053	ROG	26	4.7	ERC	N/A	N/A
<b>Total</b>		<b>981</b>	<b>179</b>		<b>N/A</b>	

SCAQMD NO.	POLLUTANT	AMOUNT (LB/DAY)	AMOUNT (TON/YR)	TYPE	START YEAR	END YEAR
SC1819-054	NOX	1	0.2	STERC	2016	9999
SC1819-055	NOX	1	0.2	ERC	N/A	N/A
SC1819-056	NOX	5	0.9	ERC	N/A	N/A
SC1819-057	NOX	15	2.7	ERC	N/A	N/A
SC1819-058	NOX	4	0.7	ERC	N/A	N/A
<b>Total</b>		<b>26</b>	<b>4.7</b>		<b>N/A</b>	

SCAQMD NO.	POLLUTANT	AMOUNT (LB/DAY)	AMOUNT (TON/YR)	TYPE	START YEAR	END YEAR
N/A	SOX	No Records				
<b>Total</b>		<b>0</b>	<b>0</b>		<b>N/A</b>	

SCAQMD NO.	POLLUTANT	AMOUNT (LB/DAY)	AMOUNT (TON/YR)	TYPE	START YEAR	END YEAR
N/A	CO	No Records				
<b>Total</b>		<b>0</b>	<b>0</b>		<b>N/A</b>	

SCAQMD NO.	POLLUTANT	AMOUNT (LB/DAY)	AMOUNT (TON/YR)	TYPE	START YEAR	END YEAR
SC1819-059	PM10	3	0.5	ERC	N/A	N/A
<b>Total</b>		<b>3</b>	<b>0.5</b>		<b>N/A</b>	

**Annual Publication of Emission Reduction Credit (ERC) and Short Term Emission Reduction Credit (STERC) Transactions and Applications for Fiscal Year 2018-19**

**Table 5: Emission Offset Application Summary – Fiscal Year 2018-19  
Sorted by Pollutant and Amount**

SCAQMD NO.	POLLUTANT	AMOUNT <sup>10</sup> (LB/DAY)	AMOUNT <sup>10</sup> (TON/YR)	TYPE	START YEAR	END YEAR
SC1819-060	ROG	0	0	STERC	2018	2018
SC1819-061	ROG	0	0	STERC	2019	2019
SC1819-062	ROG	0	0	STERC	2020	2020
SC1819-063	ROG	0	0	STERC	2021	2021
SC1819-064	ROG	0	0	STERC	2022	2022
SC1819-065	ROG	0	0	STERC	2023	2023
SC1819-066	ROG	0	0	STERC	2024	2024
SC1819-067	ROG	56	10.2	STERC	2025	9999
SC1819-068	ROG	0	0	STERC	2018	2018
SC1819-069	ROG	0	0	STERC	2019	2019
SC1819-070	ROG	0	0	STERC	2020	2020
SC1819-071	ROG	0	0	STERC	2021	2021
SC1819-072	ROG	0	0	STERC	2022	2022
SC1819-073	ROG	0	0	STERC	2023	2023
SC1819-074	ROG	0	0	STERC	2024	2024
SC1819-075	ROG	21	3.8	STERC	2025	9999
<b>Total</b>		<b>77</b>	<b>14.0</b>		<b>N/A</b>	

SCAQMD NO.	POLLUTANT	AMOUNT <sup>10</sup> (LB/DAY)	AMOUNT <sup>10</sup> (TON/YR)	TYPE	START YEAR	END YEAR
SC1819-076	PM10	0	0	STERC	2018	2018
SC1819-077	PM10	0	0	STERC	2019	2019
SC1819-078	PM10	0	0	STERC	2020	2020
SC1819-079	PM10	0	0	STERC	2021	2021
SC1819-080	PM10	0	0	STERC	2022	2022
SC1819-081	PM10	0	0	STERC	2023	2023
SC1819-082	PM10	0	0	STERC	2024	2024
SC1819-083	PM10	144	26.3	STERC	2025	9999
SC1819-084	PM10	0	0	STERC	2018	2018
SC1819-085	PM10	0	0	STERC	2019	2019
SC1819-086	PM10	0	0	STERC	2020	2020
SC1819-087	PM10	0	0	STERC	2021	2021
SC1819-088	PM10	0	0	STERC	2022	2022
SC1819-089	PM10	0	0	STERC	2023	2023
SC1819-090	PM10	0	0	STERC	2024	2024
SC1819-091	PM10	168	30.7	STERC	2025	9999
SC1819-092	PM10	0	0	STERC	2018	2018
SC1819-093	PM10	0	0	STERC	2019	2019
SC1819-094	PM10	0	0	STERC	2020	2020
SC1819-095	PM10	0	0	STERC	2021	2021
SC1819-096	PM10	0	0	STERC	2022	2022

**Annual Publication of Emission Reduction Credit (ERC) and Short Term Emission Reduction Credit (STERC) Transactions and Applications for Fiscal Year 2018-19**

SCAQMD NO.	POLLUTANT	AMOUNT <sup>10</sup> (LB/DAY)	AMOUNT <sup>10</sup> (TON/YR)	TYPE	START YEAR	END YEAR
SC1819-097	PM10	0	0	STERC	2023	2023
SC1819-098	PM10	0	0	STERC	2024	2024
SC1819-099	PM10	116	21.2	STERC	2025	9999
SC1819-100	PM10	0	0	STERC	2018	2018
SC1819-101	PM10	0	0	STERC	2019	2019
SC1819-102	PM10	0	0	STERC	2020	2020
SC1819-103	PM10	0	0	STERC	2021	2021
SC1819-104	PM10	0	0	STERC	2022	2022
SC1819-105	PM10	0	0	STERC	2023	2023
SC1819-106	PM10	0	0	STERC	2024	2024
SC1819-107	PM10	1	0.2	STERC	2025	9999
SC1819-108	PM10	0	0	STERC	2018	2018
SC1819-109	PM10	0	0	STERC	2019	2019
SC1819-110	PM10	0	0	STERC	2020	2020
SC1819-111	PM10	0	0	STERC	2021	2021
SC1819-112	PM10	0	0	STERC	2022	2022
SC1819-113	PM10	0	0	STERC	2023	2023
SC1819-114	PM10	0	0	STERC	2024	2024
SC1819-115	PM10	60	11	STERC	2025	9999
SC1819-116	PM10	4	0.7	STERC	2018	2018
SC1819-117	PM10	0	0	STERC	2019	2019
SC1819-118	PM10	0	0	STERC	2020	2020
SC1819-119	PM10	0	0	STERC	2021	2021
SC1819-120	PM10	0	0	STERC	2022	2022
SC1819-121	PM10	0	0	STERC	2023	2023
SC1819-122	PM10	0	0	STERC	2024	2024
SC1819-123	PM10	4	0.7	STERC	2025	9999
SC1819-124	PM10	0	0	STERC	2018	2018
SC1819-125	PM10	0	0	STERC	2019	2019
SC1819-126	PM10	0	0	STERC	2020	2020
SC1819-127	PM10	0	0	STERC	2021	2021
SC1819-128	PM10	0	0	STERC	2022	2022
SC1819-129	PM10	0	0	STERC	2023	2023
SC1819-130	PM10	0	0	STERC	2024	2024
SC1819-131	PM10	20	3.7	STERC	2025	9999
<b>Total</b>		<b>513</b>	<b>93.8</b>	<b>N/A</b>		

<sup>10</sup> Only long term emission offsets, those that have an ending year of 9999, are quantified to avoid over counting.



**CHAPTER III**  
**FISCAL YEAR 2020-2021 BUDGET**

*Due to the bulk of these material, Chapter III is available online at <http://www.aqmd.gov/docs/default-source/finance-budgets/fy-2020-21/fy-2020-21-budget-5-6-2020.pdf>. Anyone who would like to obtain a hard copy may do so by contacting South Coast AQMD's Public Information Center at (909)396-2001.*

**CHAPTER IV**  
**CLEAN FUELS PROGRAM 2019 ANNUAL REPORT AND 2020 PLAN UPDATE**

*Due to the bulk of these material, Chapter IV is available online at <https://www.aqmd.gov/docs/default-source/technology-research/annual-reports-and-plan-updates/2019-annual-report-2020-plan-update.pdf> Anyone who would like to obtain a hard copy may do so by contacting South Coast AQMD's Public Information Center at (909)396-2001.*

**CHAPTER V  
ANNUAL RECLAIM AUDIT REPORT  
FOR 2018 COMPLIANCE YEAR**

*Due to the bulk of these material, Chapter V is available online at <http://www.aqmd.gov/docs/default-source/reclaim/reclaim-annual-report/2018-reclaim-report.pdf>. Anyone who would like to obtain a hard copy may do so by contacting South Coast AQMD's Public Information Center at (909)396-2001.*

South Coast Air Quality Management District

# Budget

Fiscal Year  
2020-2021





**SOUTH COAST**

**AIR QUALITY MANAGEMENT DISTRICT**

**BUDGET**  
**FISCAL YEAR 2020-2021**

Prepared by Finance  
Sujata Jain, Chief Financial Officer



**SOUTH COAST**  
**AIR QUALITY MANAGEMENT DISTRICT**



**SOUTH COAST**

**AIR QUALITY MANAGEMENT DISTRICT**

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**SOUTH COAST**

**AIR QUALITY MANAGEMENT DISTRICT**

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

**GOVERNING BOARD**

WILLIAM A. BURKE, Ed.D.  
Chairman  
Speaker of the Assembly Appointee

BEN BENOIT  
Vice Chair  
Cities of Riverside County Representative

KATHRYN BARGER  
County of Los Angeles Representative

LISA BARTLETT  
County of Orange Representative

JOE BUSCAINO  
City of Los Angeles Representative

MICHAEL A. CACCIOTTI  
Cities of Los Angeles County Representative  
Eastern Region

VANESSA DELGADO  
Senate Rules Committee Appointee

GIDEON KRACOV  
Governor's Appointee

LARRY McCALLON  
Cities of San Bernardino County Representative

JUDITH MITCHELL  
Cities of Los Angeles County Representative  
Western Region

V. MANUEL PEREZ  
County of Riverside Representative

CARLOS RODRIGUEZ  
Cities of Orange County Representative

JANICE RUTHERFORD  
County of San Bernardino Representative

WAYNE NASTRI  
Executive Officer



**SOUTH COAST**

**AIR QUALITY MANAGEMENT DISTRICT**



# South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4178  
(909) 396-2000 • www.aqmd.gov

May 1, 2020

South Coast Air Quality Management District Board and Stakeholders

## Transmittal of the Executive Officer's Fiscal Year 2020-21 Budget and Work Program

This document represents South Coast Air Quality Management District's (South Coast AQMD) proposed General Fund Budget and Work Program for FY 2020-21. The budget was developed in accordance with statutory requirements and in consultation with South Coast AQMD's executive and program staff.

The greatest uncertainties facing South Coast AQMD's budgetary outlook stem from the potential for major economic disruption due to the COVID-19 global pandemic. In these challenging times, we recognize the hardships that many are experiencing. We are making accommodations in many program areas and remain committed to protecting public health and helping business. South Coast AQMD staff will monitor the financial impacts and, in the event, that there are major changes in the economic landscape, we would make adjustments to the FY 2020-21 Budget being proposed.

This budget includes a multi-year financial summary of all revenues, expenditures and staffing used by each of South Coast AQMD's programs in the delivery of essential services to clean the air and to protect the health of all residents in the South Coast Air District through practical and innovative strategies. The proposed budget for FY 2020-21 is a balanced budget with expenditures and revenues of \$173.0 million and 946 positions.

The proposed FY 2020-21 level of expenditures, up one percent from the FY 2019-20 adopted budget, includes increased costs for retirement, salaries due to labor negotiation agreements approved in FY 2017-18 and salaries associated with new positions. There is a net increase of seven FTEs from the FY 2019-20 adopted budget. This includes the previously approved FY 2019-20 mid-year actions adding five positions in the Science and Technology Advancement Office for Rule 1180 implementation, one position in Legislative and Public Affairs/Media Office for Environmental Justice and one Financial Analyst position in Finance.

The FY 2020-21 proposed revenue budget of \$173.0 million, up one percent from the FY 2019-20 adopted budget, includes full realization of the Rule 1180 fees implemented in FY 2019-20 and steady progress on South Coast AQMD's implementation of the Volkswagen Mitigation Action and AB 617 programs. At \$100.9 million or 58.3 percent of the projected revenue budget, stationary source revenues account for the largest source of revenue, and in light of the recent COVID-19 developments, could be precarious. Over the past two decades, total permit fees (including permit processing, annual operating permit, and annual emissions-based fees) collected from stationary sources has increased by about 52.5 percent from \$66.8 million in FY 1991-92 to \$101.9 million (estimated) in FY 2019-20. When adjusted for inflation however, stationary source revenues have decreased by 11 percent over this same period.

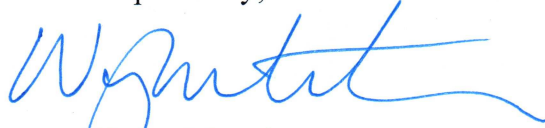
While significant efforts are put forth to develop a detailed budget for the next fiscal year, including a five-year projection, uncertain political and economic issues create challenges. These challenges include global economic impacts and uncertainty sparked by the COVID-19 outbreak and resulting fluctuations in the financial market which will determine the performance of South Coast AQMD's retirement investments and thus impact pension liability; changes in federal and state grant revenue funding levels; increased infrastructure costs due to an aging headquarters building; and Penalties and Settlement revenue that varies annually. South Coast AQMD staff will monitor funding sources, our retirement plan, and actual financial results on a continuous basis and is prepared to make timely resource allocation adjustments as warranted. Additionally, the proposed budget includes an assigned/unassigned general fund balance of 32 percent of FY 2020-21 revenues to provide a reasonable financial safety net.

The public and the business community have multiple opportunities to participate in the budget development process. This includes meetings of the Budget Advisory Committee which is made up of representatives from the business and environmental communities, a public consultation meeting to discuss the proposed budget and work program, and two meetings of the Governing Board. The public consultation meeting and Governing Board meetings are noticed to the public through direct mail and emails to permitted facilities and other stakeholders, print media, and through the South Coast AQMD website.

In summary, I am proposing a balanced budget for FY 2020-21 that allows South Coast AQMD programs to operate efficiently, transparently, and in a manner sensitive to public agencies, businesses and the public, while providing continued emission reductions and health benefit improvements. The proposed FY 2020-21 Budget and Work Program serves to ensure the continued strength and stability of the South Coast

AQMD as we make progress toward attaining the federal and state clean air mandates and further protect public health.

Respectfully,

A handwritten signature in blue ink, appearing to read 'Wayne Natri', with a long horizontal flourish extending to the right.

Wayne Natri,  
Executive Officer

SJ:DRP





**SOUTH COAST**

**AIR QUALITY MANAGEMENT DISTRICT**



GOVERNMENT FINANCE OFFICERS ASSOCIATION

*Distinguished  
Budget Presentation  
Award*

PRESENTED TO

**South Coast Air Quality Management District  
California**

For the Fiscal Year Beginning

**July 1, 2019**

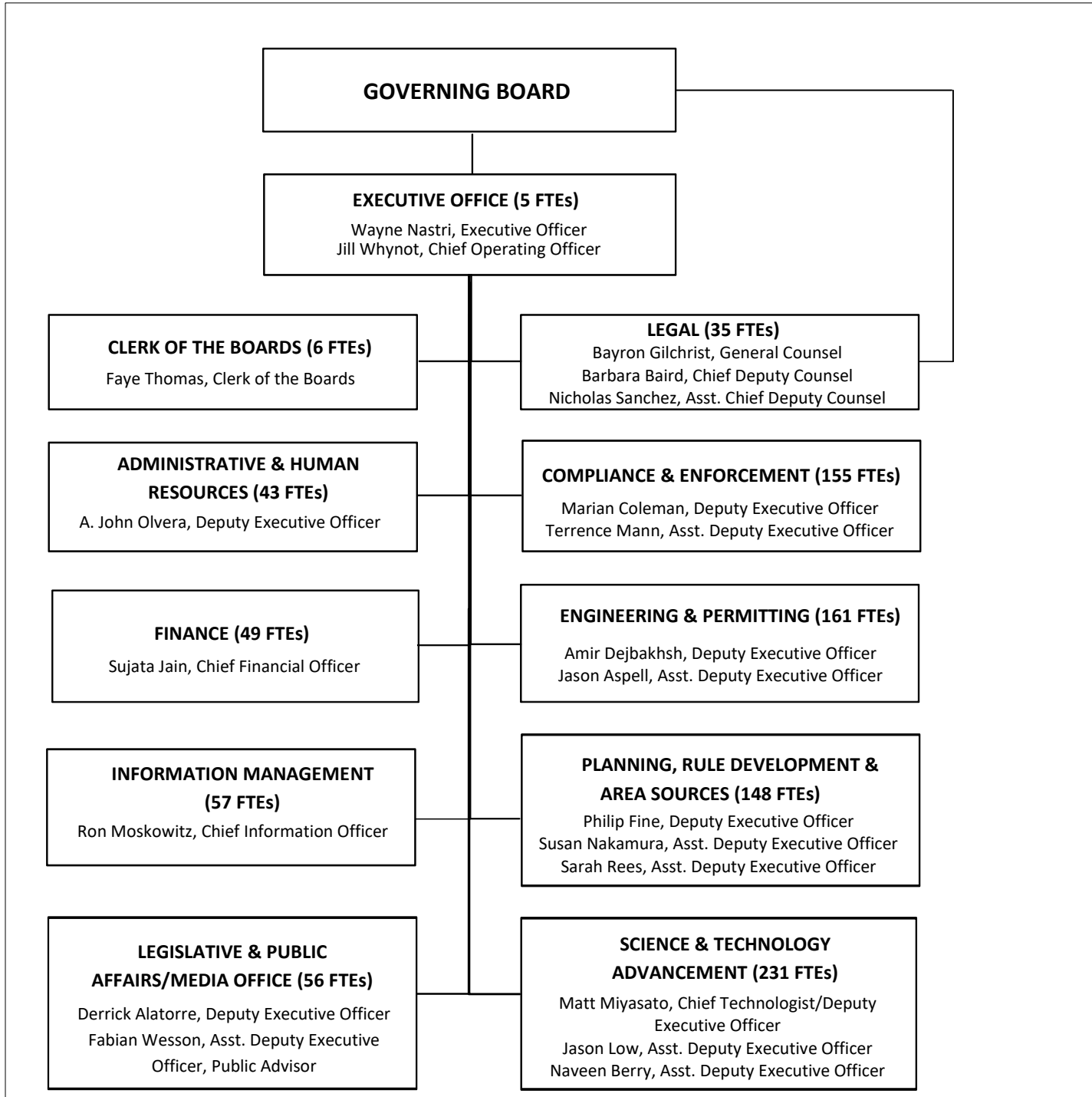
*Christopher P. Morill*

Executive Director

The Government Finance Officers Association of the United States and Canada (GFOA) presented a Distinguished Budget Presentation award to South Coast Air Quality Management District, California for its Annual Budget for the fiscal year beginning July 1, 2019. In order to receive this award, a government unit must publish a budget document that meets program criteria as a policy document, as a financial plan, as an operations guide, and as a communications device.

This award is valid for a period of one year only. We believe our budget continues to conform to program requirements and we are submitting it to GFOA to determine its eligibility for another award.

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
(946 FTEs)**



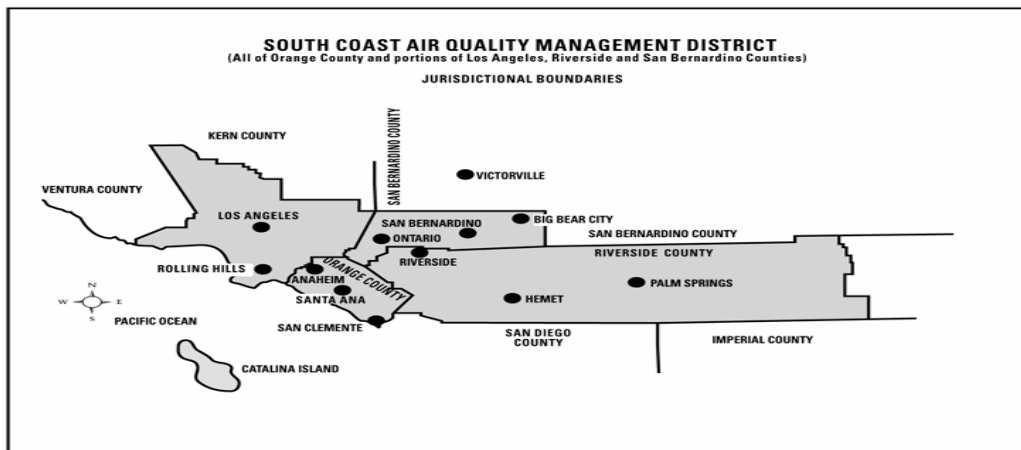
# SUMMARY

## Preface

This document represents the proposed FY 2020-21 Budget and Work Program of the South Coast Air Quality Management District (South Coast AQMD). The proposed budget is available for public review and comment during the month of April. A public consultation meeting is scheduled to discuss the proposed budget and proposed fees changes on April 7, 2020. In addition, a workshop for the Governing Board is scheduled on April 10, 2020. A final Proposed Budget and Work Program, which may include changes based on input from the public and Board, will be presented for adoption at a public hearing on May 1, 2020.

## Introduction

The South Coast Air Quality Management District (South Coast AQMD) began operation on February 1, 1977 as a regional governmental agency established by the California Legislature pursuant to the Lewis Air Quality Management Act. The South Coast AQMD encompasses all of Orange County and parts of Los Angeles, San Bernardino and Riverside Counties. It succeeded the Southern California Air Pollution Control District (APCD) and its predecessor four county APCDs, of which the Los Angeles County APCD was the oldest in the nation, having been formed in 1947. The South Coast AQMD Governing Board is composed of 13 members, including four members appointed by the Boards of Supervisors of the four counties in South Coast AQMD's jurisdiction, six members appointed by cities in the South Coast AQMD's jurisdiction and three members appointed by the Governor, the Speaker of the State Assembly and the Rules Committee of the State Senate, respectively. The members appointed by the Boards of Supervisors and cities consist of one member of the Board of Supervisors of Los Angeles, Orange, Riverside, and San Bernardino Counties, respectively, and a mayor or member of the city council of a city within Orange, Riverside, and San Bernardino Counties. Los Angeles County cities have three representatives, one each from the western and eastern portions and one member representing the City of Los Angeles.

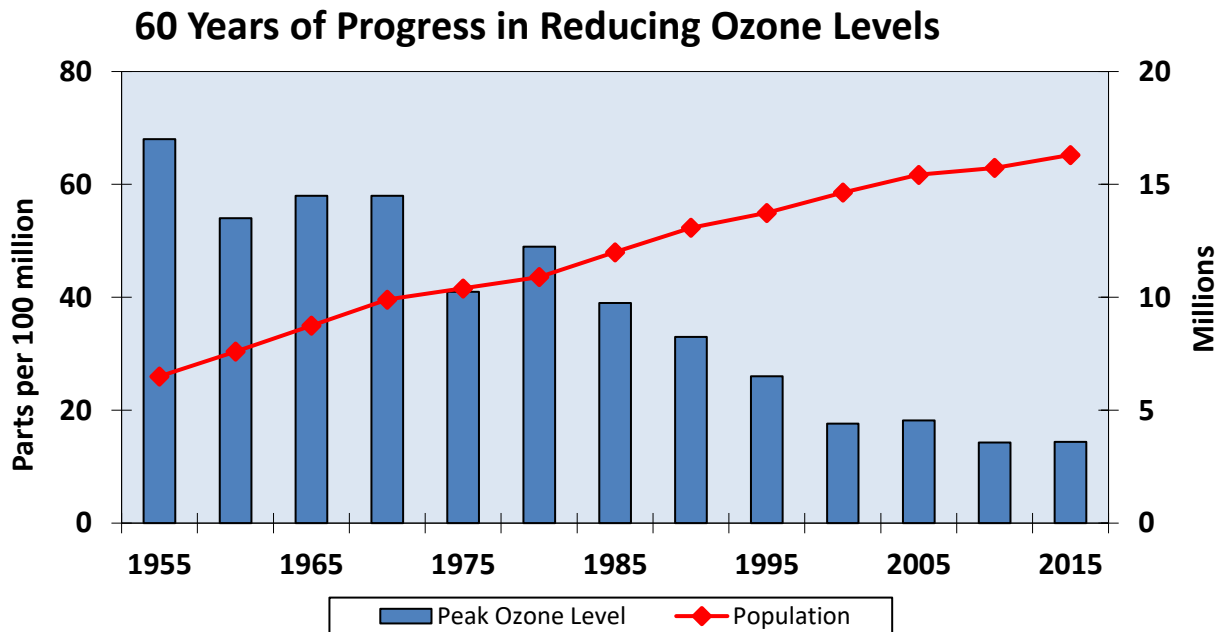


## Air Quality History

The South Coast Air Basin (Basin) has suffered unhealthy air since its rapid population growth and industrialization during World War II. While air quality has improved, the residents of the Basin still breathe some of the most polluted air in the nation.

The 69-year history of the region's air pollution control efforts is, in many ways, one of the world's key environmental success stories. Peak ozone levels have been cut by almost three-fourths since air monitoring began in the 1950s. Population exposure was cut in half during the 1980s alone.

Since the late 1940s when the war on smog began to 2017, the region's population has more than tripled from 4.8 million to 17.1 million; the number of motor vehicles has increased almost six-fold from 2.3 million to 13.8 million; and the area has grown into one of the most prosperous regions of the world. This phenomenal economic growth illustrates that pollution control and strong economic growth can coincide.



## Mission

South Coast AQMD's mission is to clean the air and protect the health of all residents in the South Coast Air District through practical and innovative strategies. This mission is pursued through a comprehensive program of planning, regulation, education, enforcement, compliance incentives, technical innovation and promoting public understanding of air quality issues. The South Coast

AQMD has implemented a policy of working with regulated businesses to ensure their participation in making the rules which will impact them. This cooperative approach has resulted in greater business support of rulemaking efforts for air that is more healthful to breathe.

To carry out its mission, South Coast AQMD develops a set of Goals and Priority Objectives which are evaluated and revised annually and presented as part of the budget proposal. The following proposed goals have been identified as being critical to meeting South Coast AQMD's Mission for FY 2020-21:

- I. Achieve Clean Air Standards.
- II. Enhance Public Education and Equitable Treatment for All Communities.
- III. Operate Efficiently and Transparently.

These goals are the foundation for South Coast AQMD's Work Program categories. Each goal is supported by multiple activities, which target specific areas of program performance.

## **Air Quality**

### Overview

The four-county Southern California region, designated for air quality purposes as the South Coast Air Basin (Basin), has some of the highest air pollution levels in the United States. The federal government has designated seven pollutants that are pervasive enough to warrant federal health standards, called National Ambient Air Quality Standards (NAAQS). Known as "criteria pollutants," these are: ozone (O<sub>3</sub>); nitrogen dioxide (NO<sub>2</sub>); particulates (PM<sub>10</sub>); fine particulates (PM<sub>2.5</sub>); carbon monoxide (CO); lead (Pb); and sulfur dioxide (SO<sub>2</sub>).

In addition, the State of California through the California Air Resources Board (CARB) sets ambient air quality standards for these same pollutants. California's standards are in some cases tighter than the U.S. Environmental Protection Agency's (U.S. EPA) standards, reflecting the conclusion on CARB's part that some of the federal standards are not adequate to protect public health in this region. Toxic compounds also are a potential problem. More toxic pollution is emitted into the air in the Basin than in any other region in California. The Basin's large number of motor vehicles and minor sources, including small businesses and households using ozone-forming consumer products and paints, compound the problem.

### Air Quality Trends

While our air quality continues to improve, the Basin remains one of the most unhealthful areas in the nation in terms of air quality. Ozone levels have fallen by more than three-quarters since peaks in the mid-1950s. U.S. EPA revised and strengthened the 8-hour ozone NAAQS, effective December 28, 2015, from concentrations exceeding 75 parts-per-billion (ppb) to concentrations exceeding 70 ppb. In 2019, the new 2015 8-hour ozone NAAQS was exceeded in the Basin on 128 days and the former 1997 ozone NAAQS was exceeded on 73 days. The 2015 ozone NAAQS was exceeded in the Basin on 141 days in 2018 and 145 days in 2017. Note that all the air quality

values for 2019 in this report are preliminary values that are subject to change during the validation process. Though the trend in ozone exceedance days has been decreasing over the past few decades, year-to-year variability can mask the underlying trends when focusing on short time periods. Year-to-year variability can be caused by enhanced photochemical ozone formation due to persistent weather patterns that limit vertical mixing and warm the lower atmosphere. Changes in the relative emissions of volatile organic compounds (VOCs) or oxides of nitrogen (NO<sub>x</sub>) can also affect the chemistry of ozone formation and lead to marginal short-term increases in ozone concentrations as NO<sub>x</sub> is reduced. While the ozone control strategy continued to reduce precursor emissions from man-made sources in the Basin, emissions of natural ozone precursors are not controllable. Ozone-forming emissions transported from frequent summer wildfires throughout California and year-to-year changes in the VOC emissions from vegetation resulting from dry and wet rainy-seasons affect ozone concentrations. The maximum observed ozone levels also show some year-to-year variability but have generally decreased over the years. The highest 8-hour ozone level in the 2019 data was 118 ppb, compared to 125 ppb in 2018 and 136 ppb in 2017.

PM<sub>2.5</sub> levels have decreased dramatically in the Basin since 1999; however, design value concentrations are still above the current annual 24-hour NAAQS. Effective March 18, 2013, U.S. EPA strengthened the annual average PM<sub>2.5</sub> standard from 15.0 µg/m<sup>3</sup> to 12.0 µg/m<sup>3</sup>, while retaining the 24-hour PM<sub>2.5</sub> NAAQS of 35 µg/m<sup>3</sup>. In 2018, the 24-hour PM<sub>2.5</sub> NAAQS was exceeded on 19 days in the South Coast Air Basin. In 2019, there were 12 exceedance days, based on preliminary filter data. Because the highest PM<sub>2.5</sub> concentrations typically occur during the rainy-season, design values are heavily dependent on the frequency of wintertime storm systems, which increase ventilation and remove PM when rainfall is present. PM<sub>2.5</sub> concentrations are also significantly influenced by wildfire smoke, which can be transported across wide distances. Smoke from historically large wildfires throughout California in December 2017 and November 2018 contributed to several exceedances of the 24-hour standard all throughout the South Coast Air Basin. Although the 2017-2019 24-hr design value still exceeds the federal standard, the average of the 2018 and 2019 98<sup>th</sup> percentile concentrations (two-thirds of the data used to calculate the 2018-2020 design value) are below the federal standard at all locations. The Basin's peak annual average PM<sub>2.5</sub> level in 2019 of 12.8 µg/m<sup>3</sup> (preliminary data) at the Ontario-60 near road site was lower than the 2018 value, 14.5 µg/m<sup>3</sup>, which occurred at the same site.

In 2006, the U.S. EPA rescinded the annual federal standard for PM<sub>10</sub> but retained the 24-hour standard. The U.S. EPA re-designated the Basin as attainment of the health-based standard for PM<sub>10</sub>, effective July 26, 2013. Apart from three high wind events in 2015 and 2016 and two high wind events in 2019, ambient levels of PM<sub>10</sub> in the Basin have continued to meet the federal 24-hour PM<sub>10</sub> NAAQS through 2019.

In November 2008, the U.S. EPA revised the lead NAAQS from a 1.5 µg/m<sup>3</sup> quarterly average to a rolling 3-month average of 0.15 µg/m<sup>3</sup> and added new near-source monitoring requirements. The Los Angeles County portion of the Basin has been designated non-attainment for lead due to monitored concentrations near one facility. However, starting with the 3-year 2012-2014 design

value, the Basin has met the lead standard through 2018. 2019 concentrations are yet not available at the time of publication. A re-designation request to the U.S. EPA is pending.

Nitrogen dioxide, sulfur dioxide, and carbon monoxide levels have improved in the Basin and are in full attainment of the NAAQS. In 2007, the U.S. EPA formally re-designated the Basin to attainment of the carbon monoxide NAAQS. Maximum levels of carbon monoxide in the Basin have been consistently less than one-third of the federal standards since 2004. In 2010, the U.S. EPA revised the NO<sub>2</sub> 1-hour standard to a level of 100 ppb and the SO<sub>2</sub> 1-hour standard to a level of 75 ppb. In 2019, all sites in the Basin remained in attainment of these NAAQS based on preliminary data.

### Mandates

South Coast AQMD is governed and directed by a comprehensive federal law (Federal Clean Air Act) and several state laws that provide the regulatory framework for air quality management in the Basin. These laws require South Coast AQMD to take prescribed steps to improve air quality.

South Coast AQMD is responsible for stationary sources such as factories. CARB and U.S. EPA are primarily responsible for motor vehicles. South Coast AQMD and CARB share responsibilities with respect to area sources. South Coast AQMD and the Southern California Association of Governments (SCAG) share some responsibilities with CARB regarding certain aspects of mobile source emissions related to transportation and land use. Control of emissions from sources such as airports, harbors, and trains are shared by U.S. EPA, CARB and South Coast AQMD. Without adequate efforts by CARB and U.S. EPA to control emission sources under their sole authority, it is impossible for the region to reach federal clean air standards.

The following is a more specific summary of the laws governing South Coast AQMD.

#### Federal Law:

Federal Clean Air Act (CAA): The CAA requires attainment of National Ambient Air Quality Standards (NAAQS) for criteria air pollutants, i.e. pollutants causing human health impacts due to their release from numerous sources. The following criteria pollutants have been identified: ozone, particulate matter (PM<sub>10</sub>), carbon monoxide, lead, nitrogen dioxide, and sulfur dioxide. Current deadlines vary by pollutant and severity of pollution in the region.

State Implementation Plans: The CAA requires each state to develop a State Implementation Plan (SIP) to attain the NAAQS by the applicable attainment deadlines. SIPs must be approved by U.S. EPA as containing sufficient measures to timely attain NAAQS and meet other requirements described below. SIPs must contain air pollution measures in adopted, "regulatory" form within one year after approval by U.S. EPA. Upon approval by U.S. EPA, SIP requirements can be enforced against regulated sources by U.S. EPA and by any citizen. South Coast AQMD must develop and submit to CARB for review, followed by submittal to U.S. EPA, an element of the SIP referred to as the South Coast AQMD Air Quality Management Plan (AQMP) demonstrating how the Basin will achieve the NAAQS.



Among the numerous other CAA requirements are: a mandate that the region achieve a three percent annual reduction in emissions of ozone precursors (VOC and NOx); a requirement that new sources over 10 tons per year of VOC or NOx, and modifications to such sources, achieve lowest achievable emission rate and offset their emission increases by equal reductions elsewhere in the region and transportation control measures to reduce vehicle trips.

To date, the South Coast AQMD's Governing Board has adopted AQMPs in 1989, 1991, 1994, 1997, 1999 (amendments to the plan adopted in 1997), 2003, 2007, 2012 and 2017. The 2016 AQMP was approved in March 2017.

Sanctions, Federal Implementation Plans, and Conformity Findings: The CAA mandates that sanctions be imposed on an area if a suitable SIP is not adopted and approved by U.S. EPA. These sanctions can include loss of key federal funds and more stringent requirements on new or expanding industries. Specific requirements for South Coast AQMD's AQMP include stringent requirements plus Lowest Achievable Emission Rate (LAER) and offsets for major new sources. Federal law also requires an operating permit program for major stationary sources, known as Title V, which must be supported by permit fees. In addition, air toxics regulations adopted by U.S. EPA pursuant to Title III must be implemented by South Coast AQMD.

Motor Vehicle Emission Controls: The CAA initially required U.S. EPA to adopt emission limitations for motor vehicles. The 1990 Amendments require U.S. EPA to adopt regulations to achieve further reductions in emissions from motor vehicles, as well as from other mobile sources such as locomotives. States are preempted from adopting emission limitations for motor vehicles and certain other mobile sources. Exception: California can adopt motor vehicle standards, and standards for some --but not all-- other mobile sources, and other states can adopt the California standards.

Hazardous Air Pollutants: In addition to criteria pollutants, the CAA regulates "hazardous air pollutants," i.e., those which can cause cancer or other severe localized health effects due to emissions from a single facility. U.S. EPA is required to adopt regulations mandating that new and existing sources emitting 10 tons per year or more of such pollutants employ Maximum Achievable Control Technology (MACT) according to specified schedules. U.S. EPA is to consider further reductions in the future to eliminate any remaining unacceptable residual risk.

#### California Law:

The California Clean Air Act (CCAA): The CCAA establishes numerous requirements for Air District air quality plans to attain state ambient air quality standards for criteria air contaminants. For example, a plan must contain measures adequate to achieve five percent per year emission reductions or must contain all feasible measures and an expeditious adoption schedule. For Air Districts with serious air pollution, its attainment plan should include the following: no net increase in emissions from new and modified stationary sources; and best available retrofit technology for existing sources.

Toxic Air Contaminants: The Air Toxic Hot Spots Act (Health & Safety Code §§ 44300, et seq.) requires facilities emitting specified quantities of pollutants to conduct risk assessments describing the health impacts to neighboring communities created by their emissions of numerous specified hazardous compounds. If an Air District determines the health impact to be significant, neighbors must be notified. In addition, state law requires the facility to develop and implement a plan to reduce the health impacts to below significance, generally within five years. Additional control requirements for hazardous emissions from specific industries are established by the state and enforced by Air Districts.

AB 617: A requirement for Air Districts to conduct air monitoring and adopt a Community Emissions Reduction Plan for communities designated by CARB under the AB 617 statewide program.

State law also includes the following measures:

- Tanner Air Toxics Process (AB 1807) which requires CARB to adopt air toxic control measures to limit emissions of toxic air contaminants from classes of industrial facilities. Local Air Districts are required to enforce these regulations or adopt equally or more stringent regulations of their own;
- Health & Safety Code §42705.5 which requires Air Districts to deploy a community air monitoring system in selected locations and Section 42706.5 which requires Air Districts to design, develop, install, operate and maintain refinery-related community air monitoring systems;
- Authority for South Coast AQMD to adopt a command-and-control regulatory structure requiring Best Available Retrofit Control Technology (BARCT);
- A requirement for South Coast AQMD to establish an expedited schedule for implementing BARCT at pre-determined greenhouse cap and trade facilities;
- A requirement for South Coast AQMD to establish a program to encourage voluntary participation in projects to increase the use of clean-burning fuels; and
- A requirement for South Coast AQMD to adopt and enforce rules to ensure no net emission increases from stationary sources.

### Air Quality Control

Developing solutions to the air quality problem involve highly technical processes and a variety of resources and efforts to meet the legal requirements of California and federal laws.

Monitoring: The first step in air quality control is to determine the smog problem by measuring air pollution levels. South Coast AQMD currently operates 45 monitoring stations in the South Coast Air Basin and a portion of the Salton Sea Air Basin in Coachella Valley. These range from fully equipped stations that measure levels of all criteria pollutants, as well as some air toxic pollutant levels, to those which measure a specific pollutant in critical areas. These measurements provide the basis of our knowledge about the nature of the air pollution problem and the data for planning and compliance efforts to address the problem.

Pollution Sources: South Coast AQMD, in cooperation with CARB and SCAG, estimates the sources of emissions causing the air pollution problem. Nature itself causes a portion of the emissions and must be considered. In general, South Coast AQMD estimates stationary and natural sources of emissions, SCAG develops the information necessary to estimate population and traffic, and CARB develops the information necessary to estimate mobile and area source emissions using the SCAG traffic data. This data is then consolidated in South Coast AQMD's AQMP for use in developing the necessary control strategies.

Air Quality Modeling: Using air quality, meteorological and emissions models, South Coast AQMD planners simulate air pollution to demonstrate attainment of the air quality standards and the impacts of sources to local and regional air quality. Due to the nature of air pollution, air quality models can be very complex. Some pollutants are not emitted directly into the air but are products of photochemical reactions in the atmosphere. For example, VOCs mix with nitrogen dioxide (NO<sub>2</sub>) and react in sunlight to form ozone; similarly, nitrogen oxide gases from tailpipes and smokestacks can be transformed into nitrates or particulates (PM<sub>2.5</sub> and PM<sub>10</sub>). The planners thus must consider transport, land use characteristics and chemical reactions of emissions in the atmosphere to evaluate air quality impacts. Using model output, planners can look at different control scenarios to determine the best strategies to reduce air pollution for the lowest cost.

The considerable data required for these analyses is collected on an ongoing basis by South Coast AQMD staff. Modeling data is prepared and delivered using a geographic information system (GIS). GIS capability is used to prepare and produce data and spatial analysis maps for various needs by South Coast AQMD including rulemaking and California Environmental Quality Act (CEQA) document development.

Planning: With emissions data and an air quality model in place, planners can develop possible control strategies and scenarios. South Coast AQMD focuses most of its effort on stationary source controls. As mentioned earlier, strategies to reduce vehicle miles traveled (VMT) are developed primarily by SCAG, while mobile source control standards are developed primarily by CARB.

Once a plan of emission controls to achieve the NAAQS is outlined, South Coast AQMD is required to hold multiple public meetings to present the proposed control strategies and receive public input. South Coast AQMD also conducts a socioeconomic analysis of the strategies. South Coast AQMD maintains an ongoing and independent advisory group of outside experts for both its air quality modeling and socioeconomic assessment methodologies.

To meet federal air quality standards, the AQMPs and SIP submittals, including the 2016 AQMP, called for significant emissions reductions from projected baseline emissions in order to meet the NAAQS by the federal attainment deadlines (2019 for the 2006 24-hour PM<sub>2.5</sub> NAAQS, 2025 for the 2012 annual PM<sub>2.5</sub> NAAQS, 2023 for the 1979 1-hour ozone NAAQS, 2024 for the 1997 8-hour ozone NAAQS, and 2032 for the 2008 8-hour ozone NAAQS). These combined reductions, while meeting most NAAQS, will still not result in attainment of all California State ambient air

quality standards or the revised 2015 8-hour ozone NAAQS. The 2012 AQMP addressed the 24-hour PM2.5 NAAQS. The 2016 AQMP addresses the 2008 8-hour ozone NAAQS and the 2012 annual PM2.5 NAAQS and demonstrates compliance with the requirements for being a “serious” non-attainment area for the 24-hour PM2.5 NAAQS requirements. South Coast AQMD will continue to improve the emissions inventories and modeling techniques in order to address the 2015 8-hour NAAQS for the next AQMP revision which has an anticipated adoption in the 2022 timeframe.

**Rulemaking:** The regulatory process, known as rulemaking, takes the concepts of control measures outlined in the AQMP and turns them into proposed rule language. This process involves the following: extensive research on technology; site inspections of affected industries to determine feasibility; typically, a year or more of public task force and workshop meetings; in-depth analyses of environmental, social and economic impacts; and thorough review with appropriate Governing Board Committees.

This extensive process of public and policymaker participation encourages consensus in development of rule requirements so that affected sources have an opportunity for input into the rules that will regulate their operations. Once the requirements are developed, the proposed rule, along with an Environmental Assessment and a socioeconomic report, is presented to South Coast AQMD’s Governing Board at a public hearing. Public testimony is presented and considered by the Board before any rule is adopted. The adopted or amended rules are then submitted to CARB and U.S. EPA for their approval. It is not uncommon for rulemaking to include follow-up implementation studies. These studies may extend one or more years past rule adoption/amendment and prior to rule implementation. Such studies are typically submitted to the Governing Board or appropriate Governing Board Committee.

**Enforcement and Education:** South Coast AQMD issues permits to construct and operate equipment to companies to ensure equipment is operated in compliance with adopted rules. Follow-up inspections are made to ensure that equipment is being operated under permit conditions.

**Technical Innovation:** In the late 1980s, South Coast AQMD recognized that technological innovation, as well as rule enforcement, would be necessary to achieve clean air standards. Thus, the Technology Advancement Office was created to look for and encourage technical innovation to reduce emissions. The California State Legislature supported this effort by providing a \$1 surcharge on every DMV registration fee paid within the Basin. These funds have been matched at a ratio of approximately three-to-one with funds from the private sector to develop new technologies such as low-emission vehicles, low-NO<sub>x</sub> burners for boilers and water heaters, zero-pollution paints and solvents, fuel cells and other innovations.

An additional \$4 vehicle registration fee was authorized by the state legislature in 1990. These fees are administered through South Coast AQMD with \$1.20 going to South Coast AQMD for mobile source emissions reductions, \$1.60 subvended directly to cities and counties to support their air quality programs, and \$1.20 to the Mobile Source Air Pollution Reduction Review

Committee (MSRC). The MSRC is an outside panel established by state law whose function is to make the decisions on the actual projects to be funded from that portion of the revenue.

Public Education: South Coast AQMD's efforts to clean up the air will be successful only to the extent that the public understands air quality issues and supports and participates in cleanup effort. Thus, South Coast AQMD strives to involve and inform the public through the Legislative and Public Affairs/Media Office, public meetings, publications, the press, public service announcements, and social media.

## **Budget Synopsis**

South Coast AQMD's annual budget is adopted for the General Fund for a fiscal year that runs from July 1 through June 30. The period covered by the FY 2020-2021 budget is from July 1, 2020 to June 30, 2021. The General Fund budget is the agency's operating budget and is structured by Office and account. The accounts are categorized into three Major Objects: Salaries and Employee Benefits, Services and Supplies, and Capital Outlays. The budget is supplemented with a Work Program containing nine program categories which estimate staff resources and expenditures along program and activity lines. Each category consists of a number of Work Programs, or activities. A Work Program Output Justification form is completed for each Work Program which identifies performance goals, quantifiable outputs, legal mandates, activity changes and revenue categories.

The annual expenditure and revenue budget for the General Fund is adopted on a modified accrual basis. All annual expenditure appropriations lapse at fiscal year-end if they have not been expended or encumbered. Throughout the year, budget amendments may be necessary to accommodate additional revenues and expenditure needs. Any amendments due to budget increases or transfers between expenditure accounts in different Major Objects must be approved by South Coast AQMD's Governing Board. They are submitted to the Governing Board for approval at a monthly Board meeting in the format of a board letter which documents the need for the request and the source of funding for the expenditure. Budget amendments resulting from transfers between expenditure accounts within the same Major Object are approved at the Office level.

South Coast AQMD does not adopt annual budgets for its Special Revenue Funds. Special Revenue Funds are used to record transactions applicable to specific revenue sources that are legally restricted for specific purposes. All transactions in Special Revenue Funds are approved by the Governing Board on an as-needed basis. South Coast AQMD's Comprehensive Annual Financial Report includes the General Fund and Special Revenue Funds.

### **Budget Process**

The South Coast AQMD budget process begins with the Chief Financial Officer issuing instructions and guidelines to the Offices. Under the guidance of the Executive Officer, the Chief Operating

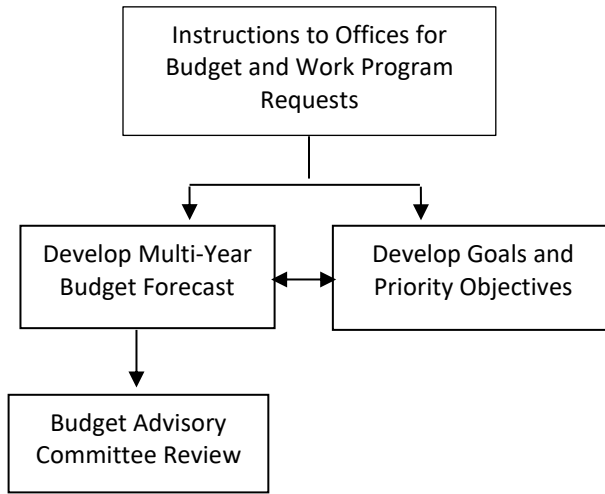
Officer and the Chief Financial Officer the Offices also begin establishing Goals and Priority Objectives for the fiscal year. The proposed annual budget and multi-year forecast is then developed by the Offices, Finance, Executive Council, Chief Operating Officer and the Executive Officer based on the Goals and Priority Objectives as well as guidelines issued by the Executive Officer. Each Office submits requests for staffing, select Salary accounts, Services and Supplies accounts, and the Capital Outlays account. The remaining salary and benefit costs are developed by Finance. Capital expenditure requests are reviewed by an in-house committee who prioritizes the requests. Revenue projections are developed by Finance based on input received from the appropriate Offices and incorporate any proposed changes to Regulation III - Fees. This information is integrated into an initial budget request, including a multi-year forecast, and then fine-tuned under the direction of the Chief Operating Officer and the Executive Officer to arrive at a proposed budget. The public, business community, and other stakeholders have several opportunities to participate in the budget process, up to and at the budget adoption hearing by the Governing Board, including:

- Two meetings of the Budget Advisory Committee whose members include various stakeholder representatives.
- One public consultation meeting to discuss the automatic CPI increase and proposed amendments to Regulation III – Fees and a second public consultation meeting to discuss the proposed budget and the automatic CPI increase. (Staff initially planned to propose amendments to Regulation III – Fees. On March 25, 2020, those proposed amendments were withdrawn. Staff is also recommending that this year’s automatic CPI increase be refunded to fee payors via a credit on their bills.)
- a public hearing on the Proposed Budget and Work Program

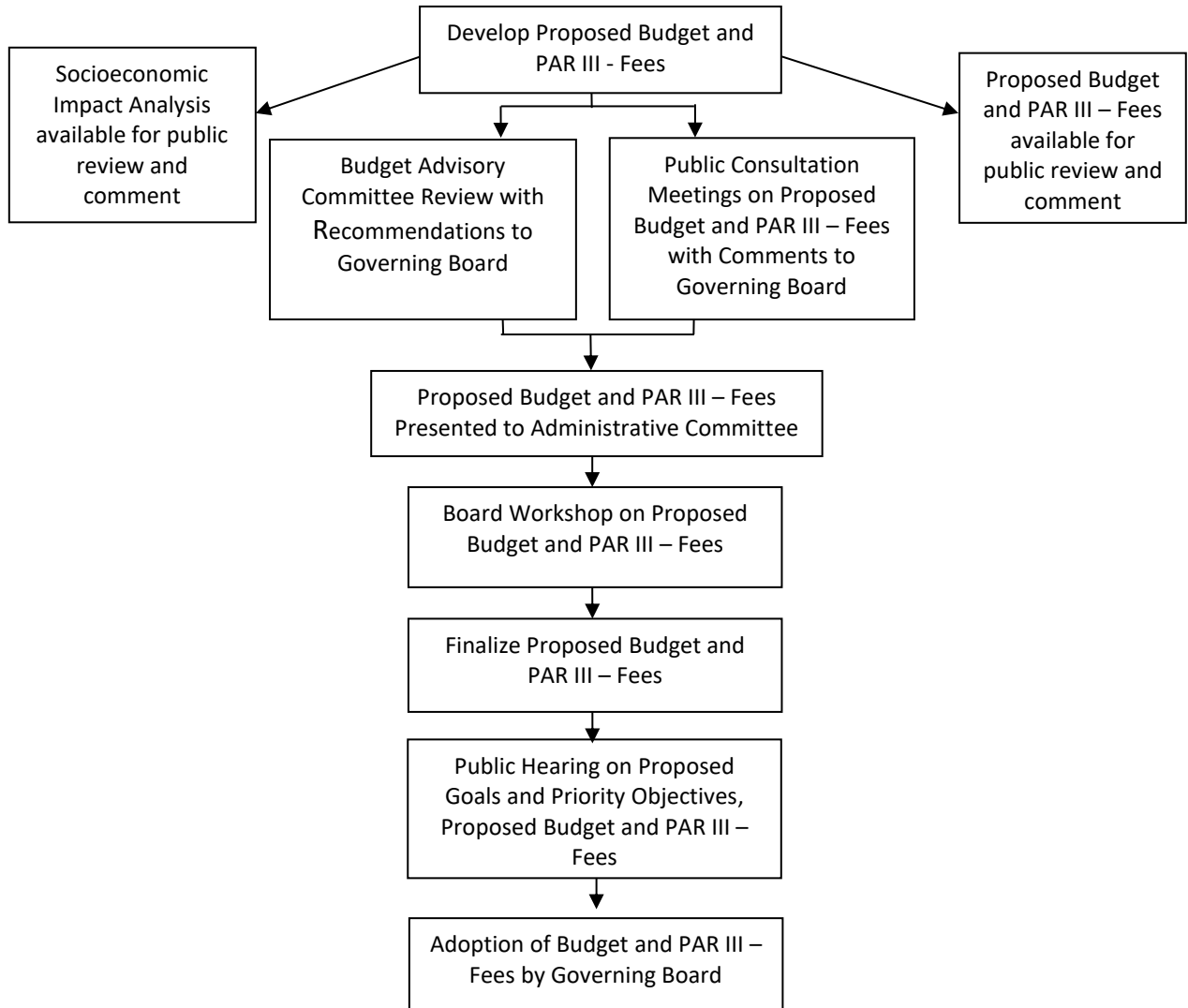
The proposed budget is presented to South Coast AQMD’s Governing Board at a budget workshop and to South Coast AQMD’s Administrative Committee. Any public comments and Budget Advisory Committee recommendations are submitted to the Governing Board by April 15 of each year. The proposed budget is adopted by the Governing Board and is in place on July 1 for the start of the new fiscal year.

The following flow charts represent the typical major milestones and budget processes that take place in developing South Coast AQMD’s annual budget. (Although Regulation III is mentioned because it is typically part of the budget process, staff is not proposing any amendments to Regulation III – Fees.)

### Preliminary Budget Process



### Annual Budget Process



<b>FY 2021 Budget Timeline</b>	
Budget submissions received from Offices	Jan 17, 2020
Budget Advisory Committee meeting	Jan 17, 2020
Proposed budget available for public review	March 31, 2020
Budget Advisory Committee meeting on proposed budget	April 3, 2020
Public Consultation Meeting on proposed budget	April 7, 2020
Proposed budget presented to Administrative Committee	April 10, 2020
Governing Board Budget Study Session	April 10, 2020
Public comments and Budget Advisory Committee recommendations submitted to Governing Board	April 15, 2020
Public Hearing & Governing Board adoption of budget	May 1, 2020

## **Proposed Budget & Work Program**

### Budget Overview

The budget for FY 2020-21 is a balanced budget with revenues/transfers in and expenditures/transfers out of \$173.0 million. To compare against prior years, the following table shows South Coast AQMD's amended budget and actual expenditures for FY 2018-19, adopted and amended budgets for FY 2019-20 and proposed budget for FY 2020-21.

<b>Description</b>	<b>FY 2018-19 Amended</b>	<b>FY 2018-19 Actual</b>	<b>FY 2019-20 Adopted</b>	<b>FY 2019-20 Amended<sup>1</sup></b>	<b>FY 2020-21 Proposed</b>
Staffing	938	-	939	947	946
Revenue/Transfers In	\$170.7	\$167.3	\$170.9	\$185.3	\$173.0
Expenditures/Transfers Out	\$180.4	\$164.1	\$170.9	\$191.7	\$173.0

<sup>1</sup> Includes Board approved changes through February 2020

The FY 2020-21 proposed budget reflects a decrease of \$18.7 million in expenditures/transfers out from the FY 2019-20 amended budget and an increase of \$2.1 million in expenditures/transfers out from the budget adopted for FY 2019-20. The increase in expenditures/transfers out from the FY 2019-20 adopted budget can be attributed to increases in retirement costs, Services and Supplies, and Capital Outlays. The FY 2020-21 proposed budget of 946 positions has a net decrease of one position over the FY 2019-20 amended budget with the deletion of one position in Information Management.



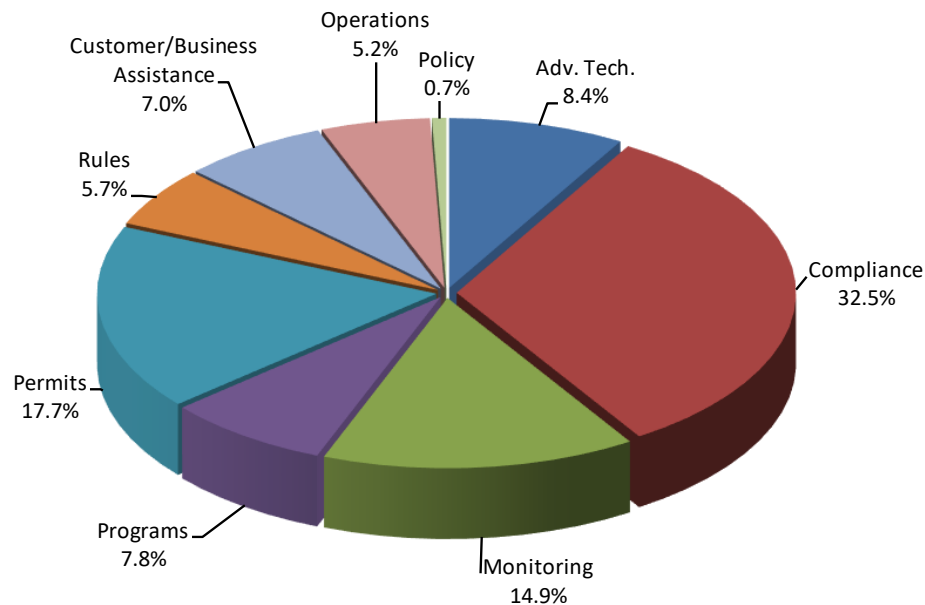
## Expenditures

### Work Program

South Coast AQMD expenditures are organized into nine Work Program Categories: Advance Clean Air Technology; Ensure Compliance with Clean Air Rules; Customer Service and Business Assistance; Develop Programs to Achieve Clean Air; Develop Rules to Achieve Clean Air; Monitoring Air Quality; Operational Support; Timely Review of Permits; and Policy Support. Each category consists of Work Programs, or activities, which are classified according to the nature of the activity being performed.

Each Work Program ties to the goals and objectives of the agency and identifies resources, performance measures/outputs and legal mandates. A complete description of each program category along with a detailed work program sort by program is included in the Goals and Priority Objectives and Work Program section. The pie chart that follows represents the budgeted expenditures by Program Category for FY 2020-21.

**Work Program Category Expenditures**



The following table compares South Coast AQMD Work Program expenditures by category for the FY 2019-20 adopted budget and FY 2020-21 proposed budget.

<b>Work Program Categories</b>	<b>FY 2019-20 Adopted Budget</b>	<b>FY 2020-21 Proposed Budget</b>
Advance Clean Air Technology	\$ 14,407,609	\$14,581,483
Customer Service and Business Assistance	11,670,353	12,035,187
Develop Programs to Achieve Clean Air	13,522,293	13,561,091
Develop Rules to Achieve Clean Air	10,774,511	9,871,502
Ensure Compliance with Clean Air Rules	55,331,881	56,299,951
Monitoring Air Quality	23,964,705	25,853,696
Operational Support	8,680,764	9,037,236
Policy Support	1,361,283	1,174,207
Timely Review of Permits	31,183,326	30,574,628
<b>Total</b>	<b>\$170,896,725</b>	<b>\$172,988,981</b>

Note: Fully burdened expenditures based on the Cost Allocation Schedule

#### Account Categories

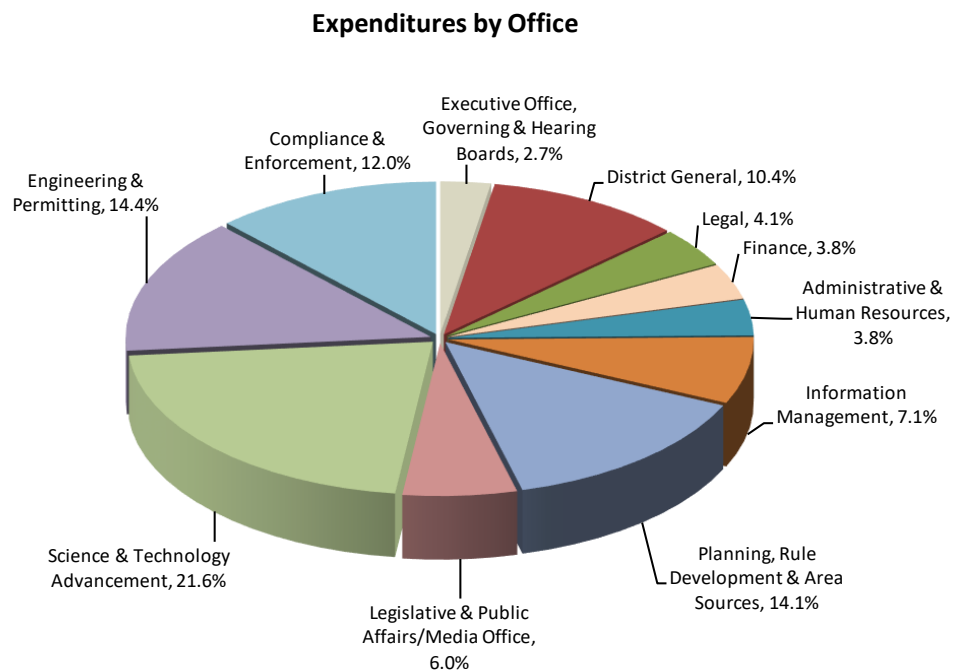
The following table compares the FY 2019-20 adopted budget and the FY 2019-20 amended budget to the proposed budget for FY 2020-21 by account category. The FY 2019-21 amended budget includes the Board-approved mid-year adjustments through March 2020.

<b>Account Description</b>	<b>FY 2019-20 Adopted Budget</b>	<b>FY 2019-20 Amended Budget<sup>1</sup></b>	<b>FY 2020-21 Proposed Budget</b>
Salaries/Benefits	\$141,667,712	\$142,242,416	\$140,750,642
Insurance	1,317,400	1,357,400	1,449,140
Rents	511,823	1,267,574	805,123
Supplies	2,880,142	4,610,640	3,265,442
Contracts and Services	10,230,004	10,984,162	10,656,863
Maintenance	1,825,343	3,544,533	1,813,343
Travel/Auto Expense	931,323	1,188,527	945,323
Utilities	1,959,620	1,774,818	1,989,620
Communications	707,800	975,289	907,800
Capital Outlays	395,000	13,259,724	926,000
Other	1,438,583	1,756,154	1,444,783
Debt Service	6,190,622	6,190,624	7,193,549
Transfers Out	841,353	2,525,592	841,353
<b>Total</b>	<b>\$170,896,725</b>	<b>\$191,677,453</b>	<b>\$172,988,981</b>

<sup>1</sup> Includes Board approved changes through February 2020

As mentioned previously, the proposed budget for FY 2020-21 represents an approximately \$18.7 million decrease in expenditures from the FY 2019-20 amended budget. The FY 2019-20 amended budget includes mid-year increases associated with the following: monitoring equipment and staff for the implementation of the Rule 1180 Community and Enhanced Monitoring Program, Headquarters Building elevator modernization project, legal counsel for specialized, environmental, and other litigation, the purchase of office data cable infrastructure for the Headquarters building, legislative representation in Sacramento, outreach efforts for the high school air quality education program, staff, services and supplies and capital budget for critical projects and programs, funding for critical building infrastructure projects, funding for the Health Effects Research Fund, the purchase of fleet vehicles, upgrade to the Headquarters building security server and related equipment, and grant-related expenditures offset by revenue.

The following pie chart represents budgeted expenditures by Office for FY 2020-21.

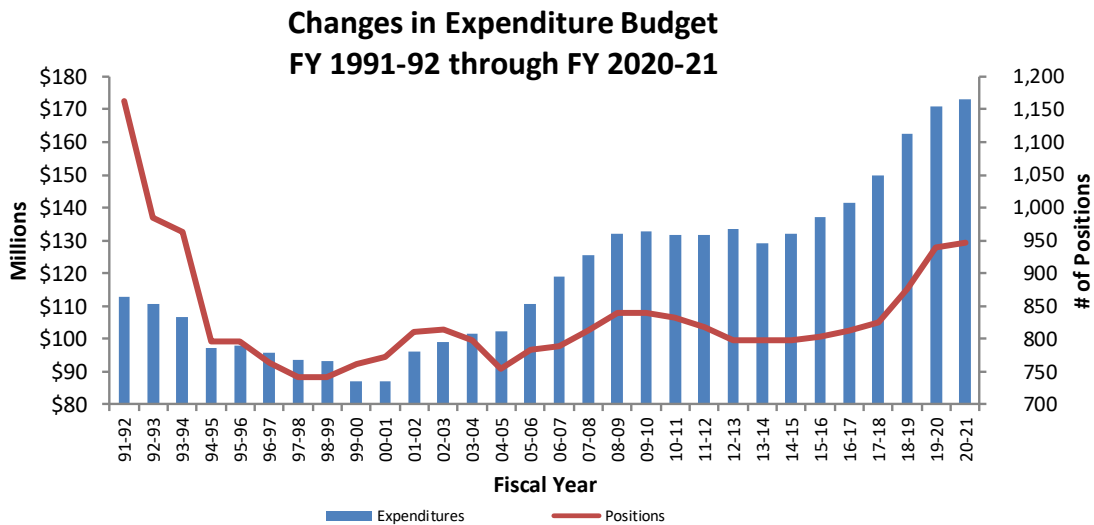


**Budget Strategy**

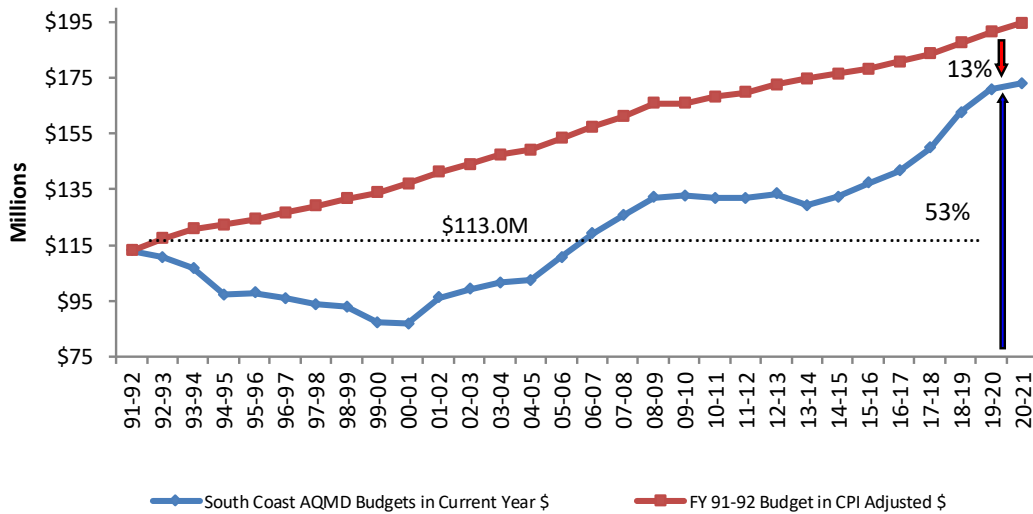
Over the years, South Coast AQMD has focused on streamlining many of its operations while still meeting its program commitments despite new federal and state mandates and increased workload complexity. The focus has been, and continues to be, on reducing or maintaining expenditure levels in the Major Object of Services and Supplies and maximizing the efficient use

of staff resources to enable select vacant positions to remain vacant, be deleted or be unfunded whenever possible. However, In FY 2017-18, South Coast AQMD’s workload increased substantially when the agency began to receive funding from the California Resource Board under AB 617 to reduce exposure in neighborhoods most impacted by air pollution as well as funding under the AB 134 Community Air Protection Fund. In FY 2019-20, South Coast AQMD began receiving funding through the California Resource Board under the Volkswagen Mitigation Settlement Agreement which has also increased the agency’s workload. An additional 83 new positions funded by AB 617, 11 positions funded by AB 134 and 5 positions funded by the Volkswagen Mitigation Settlement Agreement have been added, along with various services, supplies and capital equipment, to support these programs. Nonetheless, South Coast AQMD’s focus continues to be on the efficient use of its resources to keep expenditure and staffing levels as low as possible. In addition, the budgeted vacancy rate is reviewed and adjusted, as necessary, as part of the annual budget process. In light of the COVID-19 pandemic, the vacancy rate proposed for FY 2020-21 is 13%, up from the FY 2019-20 amended budget rate of 9%. These efforts have resulted in reduced program costs overall and a balanced budget for FY 2020-21. The following charts show South Coast AQMD’s staffing and budget levels starting in FY 1991-92 when staffing was at 1,163 FTEs. The proposed budget for FY 2020-21 reflects a staffing level of 946 FTEs. This staffing level is 19% (217 FTEs) below the FY 1991-92 level.

The FY 2020-21 proposed budget is 53% higher when compared to the FY 1991-92 adopted budget of \$113 million. However, after adjusting the FY 1991-92 adopted budget for CPI over the last 29 years, the FY 2020-21 proposal is 13% lower.



### Inflation Impact on South Coast AQMD Budgets FY 1991-92 through FY 2020-21



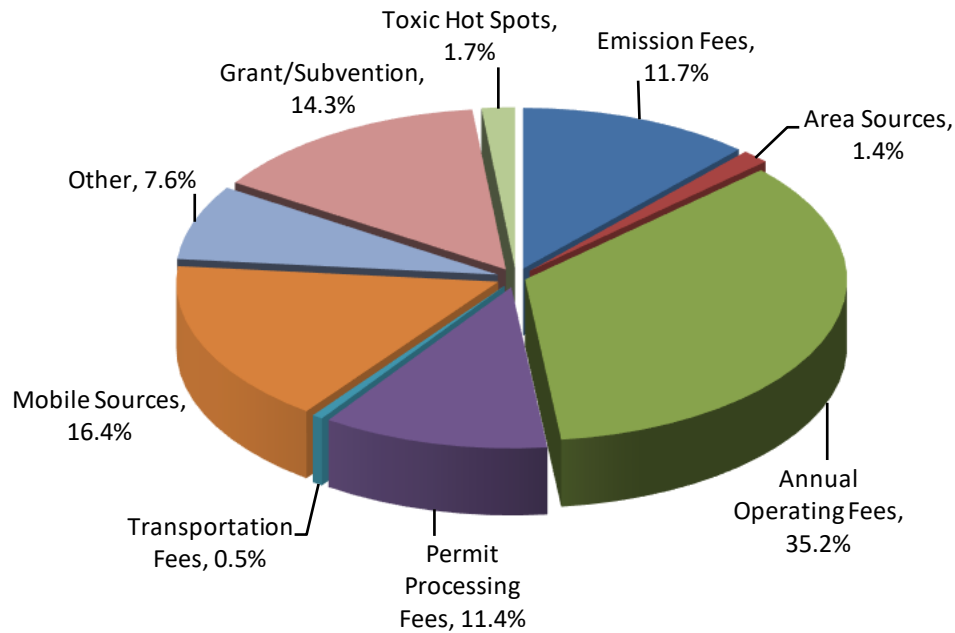
Note: CPI adjustment based on California Consumer Price Index for the preceding Calendar Year

## Revenues

### Revenue Categories

Each year, in order to meet its financial needs, the South Coast AQMD Governing Board adopts a budget supported by a system of annual operating and emission fees, permit processing fees, toxic “Hot Spots” fees, area sources fees, source test/analysis fees, and transportation plan fees. In FY 2020-21, these fees are projected to generate approximately \$107.5 million or 62% of South Coast AQMD revenues; of this \$107.5 million, \$100.9 million or 58% of South Coast AQMD’s projected revenues are from stationary sources. Other sources, which include penalties/settlements, Hearing Board fees, interest, and miscellaneous income, are projected to generate approximately 7% of total revenues in FY 2020-21. The remaining 31% of revenue is projected to be received in the form of federal and state grants, California Air Resource Board (CARB) subvention, and California Clean Air Act motor vehicle fees. Beginning in Fiscal Year 1978-79 Budget, the South Coast AQMD became a fee supported agency no longer receiving financial support from property taxes. The following pie chart represents revenues by Major Category for then proposed FY 2020-21 budget.

## Revenues by Major Category



The following table compares the FY 2019-20 adopted revenue budget and the FY 2019-20 amended revenue budget to the proposed revenue budget for FY 2020-21. The FY 2019-20 amended revenue budget includes Board-approved mid-year changes through February 2020.

Revenue Description	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget <sup>1</sup>	FY 2020-21 Proposed Budget
Annual Operating Emission Fees	\$ 20,675,800	\$ 20,675,800	\$ 20,300,062
Annual Operating Permit Renewal Fees	59,351,020	59,351,020	60,881,370
Permit Processing Fees	20,643,870	20,643,870	19,744,260
Portable Equipment Registration Program	1,000,000	1,000,000	1,000,000
Area Sources	2,277,000	2,277,000	2,000,000
Grants/Subvention	21,155,180	27,582,771	24,706,150
Mobile Sources	28,129,833	28,129,833	28,438,765
Transportation Programs	963,900	963,900	950,500
Toxic Hot Spots	2,647,420	2,647,420	2,891,580
Other <sup>2</sup>	9,763,002	9,763,002	8,898,894
Transfers In	4,289,700	12,301,980	3,177,400
<b>Total</b>	<b>\$170,896,725</b>	<b>\$185,336,596</b>	<b>\$172,988,981</b>

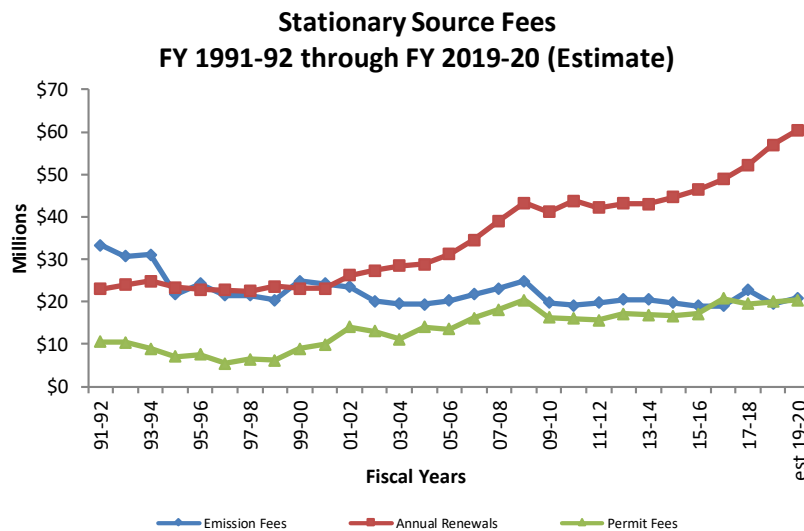
<sup>1</sup> Includes Board approved changes through February 2020  
<sup>2</sup> Includes revenues from Interest, Lease Income, Source Testing, Hearing Board, Penalties/Settlements, Subscriptions, and Other

Over the past two decades, total permit fees (including permit processing, annual operating permit, and annual emissions-based fees) collected from stationary sources has increased by about 53% from \$66.8 million in FY 1991-92 to \$101.9 million (estimated) in FY 2019-20. When adjusted for inflation however, stationary source revenues have decreased by 11% over this same period.

Mobile source revenues that are subvned to the South Coast AQMD by the Department of Motor Vehicles (DMV) are projected to decrease slightly from the FY 2019-20 budgeted amounts based on vehicle registration information from the DMV and recent revenue received. In addition, this category reflects reimbursements of incentive programs (Clean Fuels, Carl Moyer, Prop 1B, VW Mitigation and AB 134) whose contract activities and revenues are recorded in special revenue funds (outside the General Fund). These incentive program costs incurred by the General Fund are reimbursed to the General Fund from the various special revenue funds (subject to any administrative caps) and are reflected under the Mobile Source revenue category.

Revenues from the federal government, (Environmental Protection Agency, Department of Homeland Security, and Department of Energy) are projected to decrease slightly in FY 2020-21 from FY 2019-20 budgeted levels reflecting the anticipated level of federal funding from one-time and on-going grants in support of air quality efforts. State Subvention funding is expected to remain at the current level for FY 2020-21. In addition, funding recognized from CARB for the AB 617 Community Air Protection Program is expected to increase from the FY 2019-20 budgeted level.

The following graph tracks actual stationary source revenues by type of fee from FY 1991-92 (when CPI limits were placed on South Coast AQMD fee authority) to estimated revenues for FY 2019-20.



## Debt Structure

### Pension Obligation Bonds

These bonds were issued jointly by the County of San Bernardino and the South Coast AQMD in December 1995. In June 2004 the South Coast AQMD went out separately and issued pension obligation bonds to refinance its respective obligation to the San Bernardino County Employee's Retirement Association (SBCERA) for certain amounts arising as a result of retirement benefits accruing to members of the Association.

The annual payment requirements under these bonds are as follows:

<b>Year Ending June 30</b>	<b>Principal</b>	<b>Interest</b>	<b>Total</b>
2021	\$3,840,443	\$3,353,106	\$7,193,549
2022	4,006,881	3,186,361	7,193,242
2023	3,780,000	348,736	4,128,736
2024	4,010,000	118,897	4,128,897
Total	\$15,637,324	\$7,007,100	\$22,644,424

## Fund Balance

South Coast AQMD is projecting an Unreserved (Unassigned) Fund Balance for June 30, 2021 of \$49,437,308 in addition to the following Reserved and Unreserved Designated Fund Balances for FY 2020-21.

<b>Classification</b>	<b>Reserves/Unreserved Designations</b>	<b>Amount</b>
Committed	Reserve for Encumbrances	\$ 16,238,000
Nonspendable	Reserve for Inventory of Supplies	80,000
	Unreserved Designations:	
Assigned	For Enhanced Compliance Activities	883,018
Assigned	For Other Post Employment Benefit (OPEB) Obligations	2,952,496
Assigned	For Permit Streamlining	234,159
Assigned	For Self-Insurance	2,000,000
Assigned	For Unemployment Claims	80,000
	Total Reserved & Unreserved Designations	\$ 22,467,673

Reserves are portions of the fund balance set aside for future use and are therefore not available for appropriation. These funds are made-up of encumbrances which represent the estimated amount of current and prior years' purchase orders and contract commitments at year-end and



inventory which represents the value at cost of office, computer, cleaning and laboratory supplies on hand at year-end.

Unreserved Designations in the fund balance indicate plans for use of financial resources in future years. The Designation for Enhanced Compliance Activities provides funding for inspection/compliance efforts. The Designation for Other Post Employment Benefit Obligations (OPEB) provides funding to cover the current actuarial valuation of the inherited OPEB obligation for long-term healthcare costs from the County of Los Angeles resulting from the consolidation of the four county Air Pollution Control Districts (APCDs). The Designation for Permit Streamlining was established to fund program enhancements to increase permitting efficiency and customer service. South Coast AQMD is self-insured for general liability, workers' compensation, automobile liability, premises liability, and unemployment.

### **Long-Term Projection**

South Coast AQMD continues to face a number of challenges in the upcoming years, including the economic impact from the COVID-19 pandemic, continued higher operating costs, the need for major information technology and building infrastructure improvement projects with the aging of our headquarters building, and growing program commitments while meeting air quality goals and permit processing targets. Recruiting, training and retaining the high level of technical staffing expertise necessitated by the Community Air Protection Program established in 2017 under AB 617, the Volkswagen Mitigation Settlement Projects, the Refinery Fenceline Air Monitoring Plans under Rule 1180, and additional incentive funding under AB 134, as well as for South Coast AQMD's ongoing projects and programs, will continue to be a challenge further complicated by COVID-19 and the retirement of current, long-term staff.

Increasing retirement costs and any future actions SBCERA may take due to financial market fluctuations which could significantly impact South Coast AQMD's level of expenditures remains a primary uncertainty. Any legislative action that may impact the level of federal and state funding from grant awards, particularly AB 617 funding, and subvention funds is another unknown that must be considered as South Coast AQMD plans for the future. Cost recovery within the constraints of Proposition 26 is an additional uncertainty as South Coast AQMD strives to balance program operating expenses with revenues collected from fees.

In order to face these challenges, South Coast AQMD has a five year plan in place that provides for critical infrastructure improvement projects, maintains a stable vacancy rate in order to maximize cost efficiency, better aligns program revenues with costs, and strives to keep the percentage of unreserved fund balance to revenue within the Governing Board policy of 20%.

The following chart, outlining South Coast AQMD's financial projection over this time period, shows the agency's commitment to meet these challenges and uncertainties while protecting the health of the residents within the South Coast AQMD boundaries and remaining sensitive to

business. Starting in FY 2023-24, South Coast AQMD will realize a \$3.1M savings in Pension Obligation Bond payments.

<b>Fiscal 2019-20 Estimate and Five Year Projection</b>						
<b>(\$ in Millions)</b>						
	<b>FY 19-20 Estimate</b>	<b>FY 20-21 Proposed</b>	<b>FY 21-22 Projected</b>	<b>FY 22-23 Projected</b>	<b>FY 23-24 Projected</b>	<b>FY 24-25 Projected</b>
STAFFING		946	946	946	946	946
REVENUES/TRANSFERS IN*	\$181.3	\$173.0	\$177.8	\$177.7	\$179.0	\$183.5
EXPENDITURES/TRANSFERS OUT	\$184.4	\$173.0	\$182.9	\$187.4	\$187.6	\$184.3
Change in Fund Balance	-\$3.1	-	-\$5.1	-\$9.7	-\$8.6	-\$1.0
UNRESERVED FUND BALANCE (at year-end)	\$55.6	\$55.6	\$50.5	\$40.8	\$32.2	\$31.2
% of REVENUE	31%	32%	28%	23%	18%	17%
* FY 2020-21 does not include a projected CPI fee increase of 2.8% due to COVID-19; FY 2021-22 has a projected CPI increase of 3.2% and restoration of the FY 20-21 CPI fee increase; FY 2022-23, FY 2023-24, and FY 2024-25 have a projected CPI increase of 3.1% for each FY.						

As part of the Five Year Projection, South Coast AQMD has identified projected building maintenance and capital outlay improvement projects for its headquarters building. These projects are outlined in the following chart. In addition, the Infrastructure Improvement Special Revenue Fund was created with unanticipated one-time revenues from the General Fund for some of the capital outlay building-related improvement projects.

<b>GENERAL FUND POTENTIAL BUILDING MAINTENANCE and CAPITAL OUTLAY PROJECTS FY 2020-21 through 2024-25</b>
Child Care Building Roof Replacement and Playground Renovation
Patio Crack and Joint Sealing
Carpet Installation 3rd & 4th Floor
Atrium and Building Expansion Joint Waterproofing
Concrete Repair in East Courtyard & Pedestrian Areas
Irrigation System Renovation
Building Window and Structural Joint Sealing
Saw Tooth Lab Roof Refurbishment
Restroom and Copy/Coffee Sink and Counter Tops Replacement
Parking Lot Repair and Reseal
Retrofit Can Lighting (LED)
Door Replacement 2 North (Administration)
Landscape Renovation
Roofing Surface Recoating (Sure Coat Systems)
Building Interior Painting and Wallpaper
VCT Tiles Replacement (Various Areas)
Restroom Panels Refurbishment/Replacement
Vinyl Wall Covering Replacement (Various Areas)
Air Handler Mechanical Systems Upgrade /Fan Wall Installation
Building Energy Management System Upgrade
Building Lighting Controls Upgrade
Leibert AC Units-Computer Room Replacement
Air Handler Mechanical Systems/Fan Wall Install Upgrade
Fire Life Safety System Upgrade
Pneumatic Controls to DDC (Direct Digital Control) Conversion
Automatic Transfer Switch Upgrade
Aging Kitchen Equipment Replacement
Computer Room UPS System Upgrade
Parking Lot Lights to LED Conversion
Fluorescent Office Lighting to LED Conversion
Emergency Generator Upgrade
EVES Charger and Support System Upgrade

**SUMMARY OF FISCAL YEAR 2020-21 PROPOSED BUDGET**

	<b>FY 2019-20 Adopted Budget</b>	<b>FY 2019-20 Amended Budget <sup>1</sup></b>	<b>FY 2019-20 Estimate <sup>2</sup></b>	<b>FY 2020-21 Proposed</b>
<b>Funding Sources</b>				
Revenue	\$ 166,607,025	\$ 173,034,616	\$ 179,495,060	\$ 169,811,581
Transfers-In	4,289,700	12,301,980	1,814,783	3,177,400
<b>Total Funding Sources</b>	<b>\$ 170,896,725</b>	<b>\$ 185,336,596</b>	<b>\$ 181,309,843</b>	<b>\$ 172,988,981</b>
<b>Funding Uses</b>				
Salaries & Employee Benefits	\$ 141,667,712	\$ 142,242,416	\$ 135,502,331	\$ 140,750,642
Services & Supplies	27,992,660	33,637,556	33,129,368	30,470,986
Capital Outlays	395,000	13,271,889	13,271,889	926,000
Transfers-Out	841,353	2,525,592	2,525,592	841,353
<b>Total Funding Uses</b>	<b>\$ 170,896,725</b>	<b>\$ 191,677,453</b>	<b>\$ 184,429,180</b>	<b>\$ 172,988,981</b>

<b>Fund Balances - Reserves &amp; Unreserved Designations</b>	<b>Classification</b>	<b>Projected June 30, 2020</b>	<b>Projected June 30, 2021</b>
Reserve for Encumbrances	Committed	\$ 16,238,000	\$ 17,402,000
Reserve for Inventory of Supplies	Nonspendable	80,000	80,000
Designated for Enhanced Compliance Activities	Assigned	883,018	883,018
Designated for Other Post Employment Benefit (OPEB) Obligations	Assigned	2,952,496	2,952,496
Designated for Permit Streamlining	Assigned	234,159	234,159
Designated for Self-Insurance	Assigned	2,000,000	2,000,000
Designated for Unemployment Claims	Assigned	80,000	80,000
<b>Total Reserves &amp; Unreserved Designations</b>		<b>\$ 22,467,673</b>	<b>\$ 23,631,673</b>
Unassigned Fund Balance	Unassigned	\$ 49,437,308	\$ 49,454,308
<b>Total Fund Balances</b>		<b>\$ 71,904,981</b>	<b>\$ 73,085,981</b>

<sup>1</sup> The FY 19-20 Amended Budget includes mid-year changes through February 2020.

<sup>2</sup> Includes estimated encumbrances of \$12,800,000 which will be applicable to the fiscal year ending June 30, 2020.

**ANALYSIS OF PROJECTED JUNE 30, 2020 FUND BALANCE**

Fund Balances as of June 30, 2019	
Reserves	\$ 12,359,666
Designated	6,149,673
Unassigned	52,514,979
Total Fund Balances, June 30, 2019	\$ 71,024,318
Add Excess Fiscal Year 2019-20 Revenues over Expenditures	
Revenues	\$ 181,309,843
Expenditures <sup>1</sup>	169,103,588
Sub-Total	\$ 12,206,255
Deduct Decrease in Encumbrances Open on June 30, 2020	(8,800,000)
Deduct Projected FY 2019-20 Transfers Out to Other Funds	(2,525,592)
Total Projected Fund Balances, June 30, 2020	\$ 71,904,981
Fund Balances (Projected) at June 30, 2020	
Reserve for Encumbrances	\$ 16,238,000
Reserve for Inventory of Supplies	80,000
Designated for Enhanced Compliance Activities	883,018
Designated for Other Post Employment Benefit (OPEB) Obligations	2,952,496
Designated for Permit Streamlining	234,159
Designated for Self-Insurance	2,000,000
Designated for Unemployment Claims	80,000
Unassigned	49,437,308
Total Projected Fund Balances, June 30, 2020	\$ 71,904,981
Note: This analysis summarizes the estimated amount of funds that will be carried into FY 2020-21.	
<sup>1</sup> Expenditures do not include estimated \$12,800,000 encumbrances for the Fiscal Year ended June 30, 2020.	

**SCHEDULE OF AVAILABLE FINANCING AND PROPOSED FISCAL YEAR 2020-21  
RESERVES AND DESIGNATIONS**

Fund Balances	\$ 71,904,981	
Emission Fees	20,300,062	
Annual Renewal Fees	60,881,370	
Permit Processing Fees	19,744,260	
Portable Equipment Registration Program	1,000,000	
State Subvention	3,939,220	
State Grant	14,685,000	
Federal Grant	6,081,930	
Interest Revenue	871,330	
Lease Revenue	169,480	
Source Test/Analysis Fees	730,000	
Hearing Board Fees	210,000	
Penalties and Settlements	4,750,000	
Area Sources	2,000,000	
Transportation Programs	950,500	
Mobile Sources/Clean Fuels	29,489,697	
Air Toxics "Hot Spots"	2,891,580	
Other Revenues/Transfers In	4,294,552	
Total Funds		\$ 244,893,962
Less Proposed Fiscal Year 2019-20 Reserves and Designations		
Reserve for Encumbrances	\$ 17,402,000	
Reserve for Inventory of Supplies	80,000	
Designated for Enhanced Compliance Activities	883,018	
Designated for Other Post Employment Benefit (OPEB) Obligations	2,952,496	
Designated for Permit Streamlining	234,159	
Designated for Self-Insurance	2,000,000	
Designated for Unemployment Claims	80,000	
Total Proposed Reserves and Designations		\$ 23,631,673
Available Financing		\$ 221,262,289

**ANALYSIS OF PROJECTED JUNE 30, 2021 FUND BALANCE**

<b>Fund Balances as of June 30, 2020</b>		
Reserves	\$	16,318,000
Designated		6,149,673
Unassigned		49,437,308
<b>Total Fund Balances, June 30, 2020</b>	<b>\$</b>	<b>71,904,981</b>
<b>Add Excess Fiscal Year 2020-21 Revenues over Expenditures</b>		
Revenues	\$	172,988,981
Expenditures <sup>1</sup>		160,168,981
<b>Sub-Total</b>	<b>\$</b>	<b>12,820,000</b>
<b>Deduct Decrease in Encumbrances Open on July 1, 2020</b>		<b>(11,639,000)</b>
<b>Total Projected Fund Balances, June 30, 2021</b>	<b>\$</b>	<b>73,085,981</b>
<b>Fund Balances (Projected) Fiscal Year 2020-21</b>		
Reserve for Encumbrances	\$	17,402,000
Reserve for Inventory of Supplies		80,000
Designated for Enhanced Compliance Activities		883,018
Designated for Other Post Employment Benefit (OPEB) Obligations		2,952,496
Designated for Permit Streamlining		234,159
Designated for Self-Insurance		2,000,000
Designated for Unemployment Claims		80,000
Unassigned		49,454,308
<b>Total Projected Fund Balances, June 30, 2021</b>	<b>\$</b>	<b>73,085,981</b>
<sup>1</sup> Expenditures do not include estimated \$12,820,000 encumbrances for the Fiscal Year ended June 30, 2021.		

<b>Revenue Comparison</b>				
<b>Revenue Account</b>	<b>FY 2018-19 Actual</b>	<b>FY 2019-20 Adopted Budget</b>	<b>FY 2019-20 Estimated</b>	<b>FY 2020-21 Proposed</b>
Emission Fees	\$ 19,542,162	\$ 20,675,800	\$ 20,940,607	\$ 20,300,062
Annual renewal Fees	55,786,911	59,351,020	59,124,837	60,881,370
Permit Processing Fees	20,030,306	20,643,870	20,398,683	19,744,260
Portable Equipment Registration Program	1,241,720	1,000,000	1,404,698	1,000,000
State Subvention	3,924,547	3,924,550	3,939,219	3,939,220
State Grant	13,862,588	11,090,280	15,517,427	14,685,000
Federal Grant	7,563,375	6,140,350	7,819,555	6,081,930
Interest Revenue	1,976,414	1,718,490	1,312,732	871,330
Lease Revenue	162,879	176,960	167,272	169,480
Source Test/Analysis Fees	574,007	755,550	301,634	730,000
Hearing Board Fees	187,308	217,350	385,283	210,000
Penalties and Settlements	7,196,194	5,000,000	12,667,949	4,750,000
Area Sources	2,257,755	2,277,000	2,277,000	2,000,000
Transportation Programs	977,223	963,900	1,346,805	950,500
Mobile Sources/Clean Fuels	22,221,267	28,129,833	27,069,593	29,489,697
Air Toxics "Hot Spots"	2,184,155	2,647,420	2,666,911	2,891,580
Other Revenues/Transfers In	7,657,704	6,184,352	3,969,639	4,294,552
<b>Total Revenue</b>	<b>\$ 167,346,517</b>	<b>\$ 170,896,725</b>	<b>\$ 181,309,843</b>	<b>\$ 172,988,981</b>



## EXPLANATION OF REVENUE SOURCES

### **Annual Operating Emissions Fees**

The Lewis-Presley Air Quality Management Act (Health & Safety Code Section 40400-40540) authorizes the South Coast AQMD to collect fees for permitted sources to recover the costs of District programs related to these sources. (Health & Safety Code 40410(b)). South Coast AQMD initiated an annual operating emissions fees program in January 1978. As the program currently exists, all permitted facilities pay a flat fee for up to four tons of emissions. In addition to the flat fee, facilities that emit four tons or greater (from both permitted and unpermitted equipment) of any organic gases, specific organics, nitrogen oxides, sulfur oxides, or particulate matter, or 100 tons per year or greater of carbon monoxide, also pay fees based on the facility's total emissions. These facilities pay for emissions from permitted equipment as well as emissions from unpermitted equipment and processes which are regulated, but for which permits are not required, such as solvent use. In addition, a fee-per-pound is assessed on ozone depleters (ammonia, chlorofluorocarbons, 1,1,1 trichloroethane) over thresholds as well as base toxics fees, device fees, and cancer-potency weighted fees for the following toxic air contaminants: asbestos; benzene; cadmium; carbon tetrachloride; chlorinated dioxins and dibenzofurans; ethylene dibromide; ethylene dichloride; ethylene oxide; formaldehyde; hexavalent chromium; methylene chloride; nickel; perchloroethylene; 1,3-butadiene; inorganic arsenic; beryllium; polynuclear aromatic hydrocarbons (PAHs); vinyl chloride; lead; 1,4-dioxane; trichloroethylene; and diesel particulate. The rates are set forth in South Coast AQMD Rule 301.

FY 2020-21 Proposed Budget: The non-RECLAIM emissions are based on Annual Emission Report (AER) data for Calendar Year 2017. The RECLAIM NOx and SOx emission projection is based on holdings according to the RECLAIM Trading Credit (RTC) listing. The flat emission fees are projected based on the number of active facilities with at least one permit. The proposed budget does not take into account a CPI increase. Even though most Reg III fees are being adjusted for CPI, staff has recommended that those CPI increases be credited back to the fee payors at the time of billing.

### **Annual Operating Permit Renewal**

State law authorizes South Coast AQMD to have an annual permit renewal program and authorizes fees to recover the costs of the program (Health & Safety Code Section 42300; 40510(b)). The annual operating permit renewal program, initiated by the South Coast AQMD in February 1977, requires that all active permits be renewed on an annual basis upon payment of annual renewal fees. The annual renewal rates are established in South Coast AQMD Rule 301 and are based on the type of equipment, which is related to the complexity of related compliance activity. For basic equipment (not control equipment) the operating fee schedule also corresponds to some extent to the emission potential of the equipment. Along with annual operating emissions fees, annual operating permit renewal fees are intended to recover the costs of programs such as South Coast AQMD's compliance program, planning, rule making, monitoring, testing, source education, public outreach, civil enforcement, including the South Coast AQMD's Hearing Board, and stationary and area source research projects. Also included in this category are the Refinery Related Community Air Monitoring System Annual Operating and Maintenance Fees (Rule 301(aa)).

## EXPLANATION OF REVENUE SOURCES

*FY 2020-21 Proposed Budget:* The projection is based on an estimated number of permits at the various equipment fee schedules as well as the Refinery Related Community Air Monitoring System Annual Operating and Maintenance Fees (Rule 301(aa)). The proposed budget does not take into account a CPI increase. Even though most Reg III fees are being adjusted for CPI, staff has recommended that those CPI increases be credited back to the fee payors at the time of billing.

### **Permit Processing Fees**

Under the Health & Safety Code 42300, South Coast AQMD may adopt and implement a program requiring that a permit be obtained from South Coast AQMD to construct or operate any equipment which emits or controls air pollution in South Coast AQMD's jurisdictional boundaries before the construction or operation of the equipment. South Coast AQMD has adopted rules requiring such permits, to ensure that equipment in South Coast AQMD's jurisdictional boundaries is in compliance with South Coast AQMD Rules and Regulations but exempts certain equipment which is deemed to have de minimis emissions (Rule 219). Permit fees are authorized by state law to recover the reasonable costs of the permit program involving permitting, planning, enforcement, and monitoring related activities. Permit processing fees support the permit processing program and the fee rate schedules for the different equipment categories are based on the average time it takes to process and issue a permit. Each applicant, at the time of filing, pays a permit processing fee which partially recovers the costs for normal evaluation of the application and issuance of the permit to construct and permit modifications. This category also includes fees charged to partially recover the costs of evaluation of plans, including but not limited to Rule 403 dust control plans, and Rule 1118 flare monitoring plans. The permit processing fees also cover the administrative cost to process Change of Operator applications, applications for Emission Reduction Credits, and Administrative Changes to permits. This category also includes a number of specific fees such as Title V permit processing fees, RECLAIM permit processing fees, CEQA and air quality modeling fees, and public noticing fees. Finally, this category includes some fees that are related to specific activity such as asbestos notification and Rule 222 'registration in lieu of permit.'

Included in this year's budget is a new permit fee to recover the cost associated with revising and reissuing permits to facilities exiting the RECLAIM program in accordance with the South Coast AQMD's Governing Board resolution. Currently, RECLAIM facilities, including both Title V and non-Title V facilities, are subject to a South Coast AQMD-issued facility permit. The facility permit identifies conditions associated with compliance with the RECLAIM program. The process of exiting the RECLAIM program requires a re-evaluation of existing facility permits, with case-by-case analysis of each device (piece of equipment) for incorporation of Non-RECLAIM regulatory limits, monitoring, recordkeeping and reporting requirements, emission factors, emission limits, and removing permit conditions and requirements related to RECLAIM that are no longer applicable. This is a one-time fee for the proposed transition process associated with exiting the RECLAIM program.

*FY 2020-21 Proposed Budget:* The projection is based on the anticipated number and type of applications that will be processed. The proposed budget does not take into account a CPI increase. Even though most Reg III fees are being adjusted for CPI, staff has recommended that those CPI increases be credited back to the fee payors at the time of billing.

## EXPLANATION OF REVENUE SOURCES

### **Portable Equipment Registration Program (PERP)**

The California Air Resources Board (CARB) provides revenues to local air districts to offset the costs of inspecting equipment registered under CARB's Portable Equipment Registration Program (PERP). Fees for inspection of PERP-registered engines by South Coast AQMD field staff are collected by CARB at the time of registration and passed through to South Coast AQMD on an annual basis. Fees for inspection of all other PERP-registered equipment are billed at an hourly rate set forth in South Coast AQMD Rule 301, as determined by CARB and collected by South Coast AQMD at the time the inspection is conducted.

*FY 2020-21 Proposed Budget:* The revenue projection is based on the anticipated number of inspections.

### **Area Sources**

Emissions fees and quantity-based fees from architectural coatings revenue covers architectural coatings fair share of emissions supported programs. South Coast AQMD Rule 314 covers emission-based fees and quantity-based fees. Fees on area sources are authorized by Health & Safety Code §40522.5. Architectural coatings are assessed annually based on quantity (gallons) distributed or sold for use in South Coast AQMD's jurisdiction. This revenue allows South Coast AQMD to recover the costs of staff working on compliance, laboratory support, architectural coatings emissions data, rule development, and architectural coatings revenue collection.

*FY 2020-21 Proposed Budget:* Fees are based on the annual quantity and emissions of architectural coatings distributed or sold into or within and for use in the South Coast AQMD for the previous calendar year. Emissions are decreasing while sales volume is increasing. The proposed budget does not take into account a CPI increase. Even though most Reg III fees are being adjusted for CPI, staff has recommended that those CPI increases be credited back to the fee payors at the time of billing.

### **California Air Resources Board Subvention**

Under Health and Safety Code Section 39800-39811, the State appropriates monies each year to CARB to subvene to the air quality districts engaged in the reduction of air contaminants pursuant to the basin wide air pollution control plan and related implementation programs. South Coast AQMD has received subvention funds since its inception beginning in 1977.

*FY 2020-21 Proposed Budget:* The current amount of \$3.9 million is included in the FY 2020-21 proposed budget.

### **State Grant**

Under AB 617, recently adopted by the state legislature, CARB funding is distributed to air districts to implement the Community Air Protection Program which includes monitoring and developing emissions reductions plans in disadvantaged communities with high cumulative exposure to air toxics.

*FY 2020-21 Proposed Budget:* The proposed budget includes the anticipated reimbursement from CARB funding for staff time, services and supplies, and equipment needed to implement the program.

### **Federal Grants/Other Federal Revenue**

South Coast AQMD receives funding from EPA Section 103 and 105 grants to help support the South Coast AQMD in its administration of active air quality control and monitoring programs where the South Coast AQMD is required to perform specific agreed-upon activities. Other EPA and Department of Energy (DOE) grants provide funding for various air pollution reduction projects. A

## EXPLANATION OF REVENUE SOURCES

Department of Homeland Security (DHS) grant funds a special particulate monitoring program. When stipulated in the grant agreement, the General Fund is reimbursed for administrative costs associated with grant-funded projects. Most federal grants are limited to specific purposes, but EPA Section 105 grants are available for the general support of air quality-related programs.

*FY 2020-21 Proposed Budget:* The revenue projection is based on funding levels from current federal grants.

### **Interest**

Revenue from this source is the result of investing South Coast AQMD's General Fund cash balances.

*FY 2020-21 Proposed Budget:* The revenue projection is based on average cash balances and anticipated interest rates.

### **Leases**

Revenue in this category is a result of leasing available space at South Coast AQMD's Headquarters facility.

*FY 2020-21 Proposed Budget:* The projection is based on the existing lease agreements

### **Source Test/Sample Analysis Fees**

Revenue in this category includes fees for source tests, test protocol and report reviews, continuous emissions monitoring systems (CEMS) evaluations and certifications, laboratory approval program (LAP) evaluations, and laboratory sample analyses. The revenue recovers a portion of the costs of performing tests, technical evaluations, and laboratory analyses.

*FY 2020-21 Proposed Budget:* The revenue projection is based on the anticipated number of tests and analyses. The proposed budget does not take into account a CPI increase. Even though most Reg III fees are being adjusted for CPI, staff has recommended that those CPI increases be credited back to the fee payors at the time of billing.

### **Hearing Board**

Hearing Board revenue is from the filing of petitions for variances and appeals, excess emissions fees, and daily appearance fees. The revenue recovers a portion of the costs associated with these activities. Petitions for Orders for Abatement, which go before the Hearing Board, are filed by South Coast AQMD; therefore, there are no Hearing Board fees/revenue related to these proceedings.

*FY 2020-21 Proposed Budget:* The estimate is based on the projected number of hearings to be held and cases to be heard. The proposed budget does not take into account a CPI increase. Even though most Reg III fees are being adjusted for CPI, staff has recommended that those CPI increases be credited back to the fee payors at the time of billing.

### **Penalties/Settlements**

The revenue from this source is derived from cash settlements for violations of permit conditions, South Coast AQMD Rules, or state law. This revenue source is available for the general support of the South Coast AQMD's programs.

*FY 2020-21 Proposed Budget:* It is anticipated that revenue in this category will be approximately \$5.0 million.

## EXPLANATION OF REVENUE SOURCES

### Mobile Sources

Mobile Sources revenue is composed of six components: AB2766 revenue and administrative/program cost reimbursements from five programs: Carl Moyer, AB 134, Proposition 1B, MSRC and Volkswagen Environmental Mitigation Trust.

#### AB2766:

Section 9250.17 of the Vehicle Code gives the Department of Motor Vehicles (DMV) the authority and responsibility to collect and forward to South Coast AQMD four dollars for every vehicle registered in South Coast AQMD's jurisdictional boundaries. Thirty percent of the money (\$1.20 per vehicle) collected is recognized in South Coast AQMD's General Fund as mobile sources revenue and is used for programs to reduce air pollution from motor vehicles and to carry out related planning, monitoring, enforcement, and technical studies authorized by, or necessary to implement, the California Clean Air Act of 1988 or the South Coast AQMD Air Quality Management Plan. A proportionate share of programs that are not associated with any individual type of source (e.g., air quality monitoring) is supported by these revenues. The remaining monies are used to pay for projects to reduce air pollution from mobile vehicles: 40% (\$1.60 per vehicle) to the Air Quality Improvement Special Revenue Fund to be passed through to local governments and 30% (\$1.20 per vehicle) to the Mobile Source Air Pollution Reduction Fund (MSRC) to pay for projects recommended by the MSRC and approved by the South Coast AQMD Governing Board (see MSRC below).

#### Carl Moyer Program:

The Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) provides funding from the state of California for the incremental cost of cleaner heavy-duty vehicles, off-road vehicles and equipment, marine, and locomotive engines. The General Fund receives reimbursements from the Carl Moyer Fund for staff time and other program implementation/administration costs up to specified limits.

#### AB 134:

AB 134 increases funding for the Carl Moyer program. The General Fund will receive reimbursements from the AB 134 Special Revenue Fund (up to 6.25 percent) for administrative costs incurred to implement the program.

#### Proposition 1B:

The Proposition 1B Program is a \$1 billion bond program approved by California voters in November 2006. This incentive program is designed to reduce diesel emissions and public health risks from goods movement activities along California's trade corridors. The General Fund receives reimbursements from the Proposition 1B Funds for staff time and other program implementation/administration costs up to specified limits.

#### MSRC:

MSRC revenue reflects the reimbursement from the Mobile Source Air Pollution Reduction Special Revenue Fund for the cost of staff support provided to the MSRC in administering a mobile source program. These administrative costs are limited by State law and the MSRC adopts a budget for staff support each year.

#### Volkswagen Environmental Mitigation Trust:

The Volkswagen Mitigation Trust was established as part of a settlement with Volkswagen for their role in utilizing illegal defeat devices in certain 2.0- and 3.0-liter VW vehicles that resulted in excess emissions. The Beneficiary Mitigation Plan identifies five funding categories that are intended to mitigate the excess NOx emissions caused by VW vehicles. South Coast AQMD has been identified by CARB as the administrator of two project funding categories: Zero Emission Class 8 Freight and Port Drayage Trucks; and Combustion Freight and Marine Projects. The General Fund receives

## EXPLANATION OF REVENUE SOURCES

reimbursements from the Volkswagen Environmental Mitigation Fund for staff time and other program implementation/administration costs up to specified limits.

*FY 2020-21 Proposed Budget:* Revenue projections are based on vehicle registration data from the DMV, other state revenue received, and anticipated reimbursable implementation/administration costs for the Carl Moyer, AB 134, Prop 1B, MSRC and Volkswagen Environmental Mitigation Trust programs.

### **Clean Fuels**

The General Fund receives reimbursements from the Clean Fuels Program Special Revenue Fund for staff time and other program implementation/administration costs necessary to implement the Clean Fuels Program.

Section 9250.11 of the Vehicle Code gives the DMV authority to collect and forward to South Coast AQMD money for clean fuels technology advancement programs and transportation control measures related to motor vehicles, according to the plan approved pursuant to Health & Safety Code §40448.5. One dollar is collected by the DMV for every vehicle registered in South Coast AQMD's jurisdictional boundaries, forwarded to South Coast AQMD, and deposited in the Clean Fuels Program Special Revenue Fund.

Clean fuels fees from stationary sources are recorded in a separate revenue account within the Clean Fuels Program Special Revenue Fund. Fees authorized by Health & Safety Code §40512 are collected from sources that emit 250 tons or more per year of Nitrogen Oxides (NOx), Sulfur Oxides (SOx), Reactive Organic Compounds (ROC), or Particulate Matter (PM). The fees collected are used to develop and implement activities that promote the use of clean-burning fuels. These activities include assessing the cost effectiveness of emission reductions associated with clean fuels development and use of new clean fuels technologies, and other clean fuels related projects. The General Fund receives reimbursements from the Clean Fuels Program Fund for staff time and other program implementation/administration costs necessary to implement a Clean Fuels Program.

*FY 2020-21 Proposed Budget:* Revenue projections are based on anticipated reimbursable staff and other program costs to implement the Clean Fuels Program.

### **Transportation Programs**

In accordance with federal and state Clean Air Act requirements, South Coast AQMD's Rule 2202 – On-Road Vehicle Mitigation Options provides employers with various options to either reduce mobile source emissions generated from employee commutes or implement mobile source emission reduction programs. Employers with 250 or more employees at a worksite are subject to Rule 2202 and are required to submit an annual registration to implement an emission reduction program that will obtain emission reductions equivalent to a worksite specific emission reduction target. The revenue from this category is used to recover a portion of the costs associated with filing, processing, reviewing, and auditing the registrations and the ridesharing programs. Fees for indirect sources, which are sources that attract mobile sources, such as the large employers covered by Rule 2202, are authorized by Health & Safety Code §40522.5.

*FY 2020-21 Proposed Budget:* The projection is based on the anticipated number of registrations. The proposed budget does not take into account a CPI increase. Even though most Reg III fees are being adjusted for CPI, staff has recommended that those CPI increases be credited back to the fee payors at the time of billing.

## EXPLANATION OF REVENUE SOURCES

### **Toxic "Hot Spots"**

Health and Safety Code Section 44380 requires South Coast AQMD to assess and collect fees from facilities that emit toxic compounds. Fees collected are used to recover state and South Coast AQMD costs to collect and analyze data regarding air toxics and their effect on the public. Costs recovered include a portion of the administrative, outreach, plan processing, and enforcement costs to implement this program. Staff has also noticed a large number of Air Toxics Inventory Reports (ATIR) and Health Risk Assessments (HRA) which require substantial modifications or revisions that the facility is unable to perform without errors or delays. Therefore, the amendments to Rule 307.1 also include cost recovery for these efforts.

*FY 2020-21 Proposed Budget:* The revenue projection is based on estimated General Fund reimbursements from the Air Toxics Fund for staff time and other program and administrative expenditures.

### **Other**

Miscellaneous revenue includes revenue attributable to professional services South Coast AQMD renders to other agencies, reimbursements from special revenue funds (non-mobile source), vanpool revenue, fees from fitness center memberships, and Public Records Act requests.

*FY 2020-21 Proposed Budget:* The revenue projections are based on historical trend information and anticipated receipts.

**South Coast AQMD  
Line Item Expenditure**

Major Object / Account # / Account Description		FY 2018-19 Actuals	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate *	FY 2020-21 Adopted Budget
<b>Salary &amp; Employee Benefits</b>						
51000-52000	Salaries	\$ 79,695,616	\$ 89,957,250	\$ 90,529,957	\$ 87,080,951	\$ 87,848,897
53000-55000	Employee Benefits	44,680,603	51,710,462	51,712,459	48,420,893	52,901,746
Sub-total Salary & Employee Benefits		\$ 124,376,218	\$ 141,667,712	\$ 142,242,416	\$ 135,501,844	\$ 140,750,642
<b>Services &amp; Supplies</b>						
67250	Insurance	\$ 1,718,104	\$ 1,317,400	\$ 1,357,400	\$ 1,357,400	\$ 1,449,140
67300	Rents & Leases Equipment	266,701	212,280	284,007	284,007	\$ 212,280
67350	Rents & Leases Structure	333,478	299,543	1,003,408	1,003,408	592,843
67400	Household	636,596	817,322	815,072	815,072	877,195
67450	Professional & Special Services	10,380,172	8,066,737	8,433,101	8,329,101	8,340,974
67460	Temporary Agency Services	1,157,934	744,049	1,085,138	1,085,138	766,048
67500	Public Notice & Advertising	414,098	439,966	485,166	485,166	510,966
67550	Demurrage	69,068	161,930	194,685	194,685	161,680
67600	Maintenance of Equipment	920,848	822,864	1,327,495	1,327,495	810,864
67650	Building Maintenance	996,352	1,002,479	2,222,300	2,222,300	1,002,479
67700	Auto Mileage	184,704	95,627	241,854	241,854	110,627
67750	Auto Service	520,618	471,000	473,197	473,197	470,000
67800	Travel	416,884	364,696	473,476	473,476	364,696
67850	Utilities	1,413,921	1,959,620	1,719,977	1,438,977	1,989,620
67900	Communications	639,215	707,800	977,289	977,289	907,800
67950	Interest Expense	3,637,290	3,503,982	3,503,983	3,503,983	3,353,106
68000	Clothing	78,287	53,805	54,302	54,302	53,508
68050	Laboratory Supplies	427,260	307,000	605,714	605,714	557,000
68060	Postage	378,198	465,803	415,559	415,559	468,158
68100	Office Expense	2,119,243	1,459,260	2,295,422	2,175,422	1,514,905
68200	Office Furniture	121,626	14,000	212,712	212,712	24,000
68250	Subscriptions & Books	228,505	178,517	261,821	261,821	178,574
68300	Small Tools, Instruments, Equipment	301,711	109,736	455,662	455,662	177,276
68400	Gas and Oil	299,038	292,021	292,021	292,021	292,021
69500	Training/Conference/Tuition/ Board Exp.	1,028,063	976,357	1,071,223	1,071,223	995,807
69550	Memberships	220,862	68,678	249,678	249,678	71,428
69600	Taxes	23,442	59,000	61,856	61,856	59,000
69650	Awards	56,951	79,023	76,219	76,219	69,023
69700	Miscellaneous Expenses	150,687	255,525	297,178	297,178	249,525
69750	Prior Year Expense	(24,248)	-	-	-	-
69800	Uncollectable Accounts Receivable	471,292	-	-	-	-
89100	Principal Repayment	2,553,110	2,686,640	2,686,641	2,686,641	3,840,443
Sub-total Services & Supplies		\$ 32,140,010	\$ 27,992,660	\$ 33,633,556	\$ 33,128,556	\$ 30,470,986
77000	<b>Capital Outlays</b>	\$ 4,669,722	\$ 395,000	\$ 13,271,889	\$ 13,271,889	\$ 926,000
79050	<b>Building Remodeling</b>	\$ -	\$ -	\$ -	\$ -	\$ -
99950	<b>Transfers Out</b>	\$ 2,904,582	\$ 841,353	\$ 2,525,592	\$ 2,525,592	\$ 841,353
<b>Total Expenditures</b>		\$ 164,090,532	\$ 170,896,725	\$ 191,673,453	\$ 184,427,881	\$ 172,988,981

\* Estimates based on July 2019 through February 2020 actual expenditures and February 2020 budget amendments.



## SALARIES &amp; EMPLOYEE BENEFITS

Acct. #	Account Description	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate	FY 2020-21 Proposed Budget	Increase/ (Decrease) <sup>(a)</sup>
<b>51000- 52000</b>	<b>SALARIES</b>	<b>\$89,957,250</b>	<b>\$90,529,957</b>	<b>\$87,080,951</b>	<b>\$87,848,897</b>	<b>(\$2,108,354)</b>
<p>These accounts include salaries and special pays such as: Call-Back, Hazard, Night Shift, Rideshare, Skill-Based, Stand-By and Overtime. The FY 2020-21 Proposed Budget reflects a 13 percent vacancy rate (actual vacant positions are currently at 13 percent). The FY 2020-21 Proposed Budget does not include overtime amounts for federal grant work that is not expected to be awarded until mid-year and will not be appropriated until the grants are awarded. The main reason for the decrease from the FY 2019-20 Adopted Budget is the implementation of a hiring freeze to mitigate the financial impacts of COVID-19. In addition, the proposed budget reflects 7 positions mid-year in FY 2019-20 for Rule 1180 (5 FTEs), Environmental Justice (1 FTE) and Grant (1 FTE) programs. Other changes from the FY 2019-20 Adopted Budget can be attributed to the costs associated with the final year of a three-year labor agreement that went into effect in the third quarter of FY 2017-18.</p>						
<b>53000</b>	<b>EMPLOYEE BENEFITS</b>	<b>\$3,774,162</b>	<b>\$3,774,162</b>	<b>\$3,632,196</b>	<b>\$3,748,101</b>	<b>(\$26,061)</b>
<p>This account includes the costs associated with State Disability Insurance, employer share of unemployment insurance, Social Security and Medicare. In addition, this account includes individual memberships and/or management physicals.</p>						
<b>54000</b>	<b>RETIREMENT</b>	<b>\$36,805,778</b>	<b>\$36,805,778</b>	<b>\$34,242,484</b>	<b>\$36,740,786</b>	<b>(\$64,992)</b>
<p>This account includes the employer's share of the employee retirement system contributions. The decrease from the FY 2019-20 Adopted Budget is based on the contribution rates provided by the San Bernardino County Retirement Association (SBCERA) and the implementation of a hiring freeze.</p>						
<b>55000</b>	<b>INSURANCE</b>	<b>\$11,130,521</b>	<b>\$11,132,519</b>	<b>\$10,546,143</b>	<b>\$12,412,859</b>	<b>\$1,282,338</b>
<p>This account includes employer's share of health, life, dental, vision care and accident insurance.</p>						

<sup>(a)</sup> FY 2020-21 Proposed Budget vs. FY 2019-20 Adopted Budget.

## SALARIES &amp; EMPLOYEE BENEFITS

South Coast AQMD Personnel Summary – Authorized/Funded Positions						
Positions as of	Mid-Year Adjustments		Positions as of	FY 2020-21 Request		Positions as of
June 30, 2019	Add	Delete	June 30, 2020	Add	Delete	July 1, 2020
939	20	(12)	947	1	(2)	946

Fiscal Year 2019-20 Mid-Year Changes in Authorized/Funded Positions				
Office	Position	Add	Delete	Total
Finance	Financial Analyst	1	-	1
Finance	Payroll Supervisor	1	-	1
Finance	Supervising Payroll Technician	-	(1)	(1)
Information Management	Senior Information Technology Specialist	1	-	1
Legislative & Public Affairs/Media Office	Air Quality Inspector	-	(2)	(2)
Legislative & Public Affairs/Media Office	Air Quality Specialist	2	-	2
Legislative & Public Affairs/Media Office	Radio Telephone Operator	-	(7)	(7)
Legislative & Public Affairs/Media Office	Senior Office Assistant	7	-	7
Legislative & Public Affairs/Media Office	Senior Public Information Specialist	1	-	1
Legislative & Public Affairs/Media Office	Supervising Office Assistant	1	-	1
Legislative & Public Affairs/Media Office	Supervising Radio Telephone Operator	-	(1)	(1)
Science & Technology Advancement	Air Quality Instrument Specialist II	1	-	1
Science & Technology Advancement	Air Quality Specialist	2	-	2
Science & Technology Advancement	Office Assistant	-	(1)	(1)
Science & Technology Advancement	Senior Air Quality Instrument Specialist	1	-	1
Science & Technology Advancement	Senior Office Assistant	2	-	2
<b>Total Mid-Year Changes</b>		<b>20</b>	<b>(12)</b>	<b>8</b>

Fiscal Year 2020-21 Proposed Personnel Actions				
Office	Position	Add	Delete	Total
Information Management	Information Technology Specialist II	-	(1)	(1)
Planning, Rule Development & Area Sources	Administrative Secretary	-	(1)	(1)
Planning, Rule Development & Area Sources	Secretary	1	-	1
Science & Technology Advancement	Deputy Executive Officer*	-	(1)	(1)
Science & Technology Advancement	Chief Technologist/Deputy Executive Officer*	1	-	1
<b>Total Fiscal Year 2020-21 Proposed Personnel Actions</b>		<b>2</b>	<b>(3)</b>	<b>(1)</b>

\* Title change only

**SERVICES & SUPPLIES**

<b>Acct. #</b>	<b>Account Description</b>	<b>FY 2019-20 Adopted Budget</b>	<b>FY 2019-20 Amended Budget</b>	<b>FY 2019-20 Estimate</b>	<b>FY 2020-21 Proposed Budget</b>	<b>Increase/ (Decrease)<sup>(a)</sup></b>
<b>67250</b>	<b>INSURANCE</b>	<b>\$1,317,400</b>	<b>\$1,357,400</b>	<b>\$1,357,400</b>	<b>\$1,449,140</b>	<b>\$131,740</b>
<p>This account is for insurance coverage for the following: commercial property (real and personal) with earthquake and flood coverage, boiler and machinery, public official liability, excess workers' compensation, and excess general liability. South Coast AQMD is self-insured for workers' compensation, general liability, and automobile liability. The amount requested reflects anticipated workers' compensation claims, insurance policy premiums, property losses above South Coast AQMD's insurance deductibles, and liability claim payments. The increase from the FY 2019-19 Adopted Budget is due to an increase in the insurance premiums.</p>						
<b>67300</b>	<b>RENTS &amp; LEASES EQUIPMENT</b>	<b>\$212,280</b>	<b>\$284,007</b>	<b>\$284,007</b>	<b>\$212,280</b>	<b>\$0</b>
<p>This account is for lease agreements and/or rental of office equipment such as communication devices for emergency response inspectors, laboratory and atmospheric measurement equipment for special projects, audio visual equipment for outside meetings, printing equipment, and photocopiers.</p>						
<b>67350</b>	<b>RENTS &amp; LEASES STRUCTURE</b>	<b>\$299,543</b>	<b>\$1,003,408</b>	<b>\$1,003,408</b>	<b>\$592,843</b>	<b>\$293,300</b>
<p>This account is for expenditures associated with structures and lot leases, and off-site storage rentals:                      Long Beach field office - \$316,543;                      Conference and meeting rooms - \$9,000;                      Air monitoring sites/Wind Stations - \$240,000;                      Public Meetings - \$8,000; and                      Bay Area office space - \$19,300</p> <p>Free and low-cost public facilities are used whenever possible for public workshops and informational meetings. The increase in FY 2020-21 reflects the decision to appropriate budget mid-year for the implementation of the Rule 1180 air monitoring program. The FY 2019-20 Proposed Budget does not include amounts for federally funded grant programs. An expenditure appropriation will occur mid-year when the grants are awarded.</p>						
<b>67400</b>	<b>HOUSEHOLD</b>	<b>\$817,322</b>	<b>\$815,072</b>	<b>\$815,072</b>	<b>\$877,195</b>	<b>\$59,873</b>
<p>This account is used for trash disposal, landscape maintenance, parking lot maintenance, janitorial supplies, and janitorial contracts. The increase from the FY 2019-20 Adopted Budget is due to an increase in the janitorial and landscaping contract.</p>						
<b>67450</b>	<b>PROFESSIONAL &amp; SPECIAL SERVICES</b>	<b>\$8,066,737</b>	<b>\$8,433,101</b>	<b>\$8,329,101</b>	<b>\$8,340,974</b>	<b>\$274,237</b>
<p>This account is for services rendered to South Coast AQMD by outside contractors. The FY 2020-21 Professional &amp; Special Services supporting detail is located at the end of this section. The increase from the FY 2019-20 Adopted Budget is a result of expenditures related to Rule 1180 air monitoring program and contractual increases in security services. The FY 2020-21 Proposed Budget also does not include amounts for federally funded grant programs. An expenditure appropriation will occur mid-year when the grants are awarded.</p>						

<sup>(a)</sup>FY 2020-21 Proposed Budget vs. FY 2019-20 Adopted Budget.

**SERVICES & SUPPLIES**

<b>Acct. #</b>	<b>Account Description</b>	<b>FY 2019-20 Adopted Budget</b>	<b>FY 2019-20 Amended Budget</b>	<b>FY 2019-20 Estimate</b>	<b>FY 2020-21 Proposed Budget</b>	<b>Increase/ (Decrease)<sup>(a)</sup></b>
<b>67460</b>	<b>TEMPORARY AGENCY SERVICES</b>	<b>\$744,049</b>	<b>\$1,085,138</b>	<b>\$1,085,138</b>	<b>\$766,048</b>	<b>\$21,999</b>
<p>Funds budgeted in this account are used for specialized temporary services that supplement staff in support of South Coast AQMD programs. Amounts are budgeted as a contingency for long-term absences and retirements/resignations. Also budgeted in this account is the student internship program that provides college students with the opportunity to gain experience in the workplace. The increase from the FY 2019-20 Adopted Budget reflects an anticipated increase in the use of temporary services. The FY 2020-21 Proposed Budget does not include amounts for federally funded grant programs. An expenditure appropriation will occur mid-year when the grants are awarded.</p>						
<b>67500</b>	<b>PUBLIC NOTICE &amp; ADVERTISING</b>	<b>\$439,966</b>	<b>\$485,166</b>	<b>\$485,166</b>	<b>\$510,966</b>	<b>\$71,000</b>
<p>This account is used for legally required publications such as Requests for Proposals, Requests for Quotations, personnel recruitment, public outreach, advertisement of South Coast AQMD Governing Board and Hearing Board meetings, and public notification of South Coast AQMD rulemaking activities. The increase from the FY 2019-20 Adopted Budget is due to an increase in AB 2588 required publications.</p>						
<b>67550</b>	<b>DEMURRAGE</b>	<b>\$161,930</b>	<b>\$194,685</b>	<b>\$194,685</b>	<b>\$161,680</b>	<b>(\$250)</b>
<p>This account is for various freight and cylinder charges as well as workspace reconfigurations and personnel moves. The decrease from the FY 2019-20 Adopted Budget is based on anticipated needs. The FY 2020-21 Proposed Budget does not include amounts for federally funded grant programs. An expenditure appropriation will occur mid-year when the grants are awarded.</p>						
<b>67600</b>	<b>MAINTENANCE OF EQUIPMENT</b>	<b>\$822,864</b>	<b>\$1,327,495</b>	<b>\$1,327,495</b>	<b>\$810,864</b>	<b>(\$12,000)</b>
<p>This account is for maintenance costs of South Coast AQMD equipment such as: mainframe computer hardware, phone switch, air monitoring equipment, print shop equipment, copiers, and audio-visual equipment. The decrease from the FY 2019-20 Adopted Budget is due to a one-time project budgeted in FY 2019-20. The FY 2020-21 Proposed Budget also does not include amounts for federally funded grant programs. An expenditure appropriation will occur mid-year when the grants are awarded.</p>						
<b>67650</b>	<b>BUILDING MAINTENANCE</b>	<b>\$1,002,479</b>	<b>\$2,222,300</b>	<b>\$2,222,300</b>	<b>\$1,002,479</b>	<b>\$0</b>
<p>This account reflects expenditures for maintaining South Coast AQMD offices and air monitoring stations. Also included are: a contingency amount for unplanned repairs; Gateway Association dues; elevator maintenance; energy management; and compressor services. The FY 2020-21 Proposed Budget does not include amounts for federally funded grant programs. An expenditure appropriation will occur mid-year when the grants are awarded.</p>						

<sup>(a)</sup>FY 2020-21 Proposed Budget vs. FY 2019-20 Adopted Budget.

**SERVICES & SUPPLIES**

<b>Acct. #</b>	<b>Account Description</b>	<b>FY 2019-20 Adopted Budget</b>	<b>FY 2019-20 Amended Budget</b>	<b>FY 2019-20 Estimate</b>	<b>FY 2020-21 Proposed Budget</b>	<b>Increase/ (Decrease)<sup>(a)</sup></b>
<b>67700</b>	<b>AUTO MILEAGE</b>	<b>\$95,627</b>	<b>\$241,854</b>	<b>\$241,854</b>	<b>\$110,627</b>	<b>\$15,000</b>
<p>This account is used to reimburse employees for the cost of using personal vehicles while on South Coast AQMD business. The requests include the mileage incurred for staff who are required to work on their scheduled days off and for employees who use their personal vehicles on South Coast AQMD-related business, conferences, and seminars and to attend various community, business and intergovernmental events. The increase from the FY 2019-20 Adopted Budget is a result of expenditures related to the Rule 1180 air monitoring program. The FY 2020-21 Proposed Budget also does not include amounts for federally funded grant programs. An expenditure appropriation will occur mid-year when the grants are awarded.</p>						
<b>67750</b>	<b>AUTO SERVICE</b>	<b>\$471,000</b>	<b>\$473,197</b>	<b>\$473,197</b>	<b>\$470,000</b>	<b>(\$1,000)</b>
<p>This account is used for the maintenance, towing, repair, and expired CNG tank replacement of South Coast AQMD fleet vehicles. The decrease from the FY 2019-20 Adopted Budget reflects an anticipated reduction in the use of auto services.</p>						
<b>67800</b>	<b>TRAVEL</b>	<b>\$364,696</b>	<b>\$473,476</b>	<b>\$473,476</b>	<b>\$364,696</b>	<b>\$0</b>
<p>This account is for business travel, including lodging and meals paid pursuant to the Administrative Code, for participation in legislative hearings and meetings involving state, federal, and inter-agency issues that affect air quality in the South Coast Air Basin. The FY 2020-21 Proposed Budget does not include amounts for federally funded grant programs. An expenditure appropriation will occur mid-year when the grants are awarded.</p>						
<b>67850</b>	<b>UTILITIES</b>	<b>\$1,959,620</b>	<b>\$1,719,977</b>	<b>\$1,438,977</b>	<b>\$1,989,620</b>	<b>\$30,000</b>
<p>This account is used to pay gas, water, and electricity costs at the South Coast AQMD's headquarters building, the Long Beach field office, and air monitoring stations. The increase from the FY 2019-20 Adopted Budget is a result of expenditures related to the Rule 1180 air monitoring program.</p>						
<b>67900</b>	<b>COMMUNICATIONS</b>	<b>\$707,800</b>	<b>\$977,289</b>	<b>\$977,289</b>	<b>\$907,800</b>	<b>\$200,000</b>
<p>This account includes telephone and fax service, leased computer lines, video conferencing, wireless internet access for inspectors in the field, radio, and microwave services. The increase from the FY 2019-20 Adopted Budget is a result of expenditures related to the Rule 1180 air monitoring program. The FY 2020-21 Proposed Budget also does not include amounts for federally funded grant programs. An expenditure appropriation will occur mid-year when the grants are awarded.</p>						
<b>67950</b>	<b>INTEREST EXPENSE</b>	<b>\$3,503,982</b>	<b>\$3,503,983</b>	<b>\$3,503,983</b>	<b>\$3,353,106</b>	<b>(\$150,876)</b>
<p>This account is for the interest due on the 1995 and 2004 Pension Obligation Bonds. The decrease from the FY 2019-20 Adopted Budget reflects scheduled payments for FY 2020-21.</p>						

<sup>(a)</sup>FY 2020-21 Proposed Budget vs. FY 2019-20 Adopted Budget.

**SERVICES & SUPPLIES**

<b>Acct. #</b>	<b>Account Description</b>	<b>FY 2019-20 Adopted Budget</b>	<b>FY 2019-20 Amended Budget</b>	<b>FY 2019-20 Estimate</b>	<b>FY 2020-21 Proposed Budget</b>	<b>Increase/ (Decrease)<sup>(a)</sup></b>
<b>68000</b>	<b>CLOTHING</b>	<b>\$53,805</b>	<b>\$54,302</b>	<b>\$54,302</b>	<b>\$53,508</b>	<b>(\$297)</b>
<p>This account is for the purchase of safety equipment and protective clothing used by source testing, laboratory, compliance, and stockroom personnel. The decrease from the FY 2019-20 Adopted Budget reflects the anticipated level of expenditures for FY 2020-21.</p>						
<b>68050</b>	<b>LABORATORY SUPPLIES</b>	<b>\$307,000</b>	<b>\$605,714</b>	<b>\$605,714</b>	<b>\$557,000</b>	<b>\$250,000</b>
<p>This account is used to purchase various supplies such as chemicals, calibration gases and glassware for laboratory services. The increase from the FY 2019-20 Adopted Budget is a result of expenditures related to the Rule 1180 air monitoring program. The FY 2020-21 Proposed Budget also does not include amounts for federally funded grant programs. An expenditure appropriation will occur mid-year when the grants are awarded.</p>						
<b>68060</b>	<b>POSTAGE</b>	<b>\$465,803</b>	<b>\$415,559</b>	<b>\$415,559</b>	<b>\$468,158</b>	<b>\$2,355</b>
<p>This account covers the cost of mailing out annual billings, permits, notifications to the Governing Board and Advisory groups, monthly newsletters, warrants, outreach materials to local governments, and Rule 2202 notifications. The FY 2020-21 Proposed Budget reflects the recent postal rate increases.</p>						
<b>68100</b>	<b>OFFICE EXPENSE</b>	<b>\$1,459,260</b>	<b>\$2,295,422</b>	<b>\$2,175,422</b>	<b>\$1,514,905</b>	<b>\$55,645</b>
<p>This account is used for the purchase of office supplies, computer hardware and software under \$5,000, photocopier supplies, print shop and graphic art supplies, and stationery and forms. The increase from the FY 2019-20 Adopted Budget reflects the expenditures related to the Rule 1180 air monitoring program. The FY 2020-21 Proposed Budget does not include amounts for federally funded grant programs. An expenditure appropriation will occur mid-year when the grants are awarded.</p>						
<b>68200</b>	<b>OFFICE FURNITURE</b>	<b>\$14,000</b>	<b>\$212,712</b>	<b>\$212,712</b>	<b>\$24,000</b>	<b>\$10,000</b>
<p>This account is for office furniture under \$5,000. The increase in the FY 2020-21 Proposed Budget reflects an anticipated increase in needs due to staffing changes.</p>						
<b>68250</b>	<b>SUBSCRIPTIONS &amp; BOOKS</b>	<b>\$178,517</b>	<b>\$261,821</b>	<b>\$261,821</b>	<b>\$178,574</b>	<b>\$57</b>
<p>This account is used to purchase reference materials, magazine subscriptions, books, and on-line database legal research services. The increase in the FY 2020-21 Proposed Budget reflects an anticipated increase in needs due to staffing changes.</p>						

<sup>(a)</sup>FY 2020-21 Proposed Budget vs. FY 2019-20 Adopted Budget.

SERVICES & SUPPLIES

Acct. #	Account Description	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate	FY 2020-21 Proposed Budget	Increase/ (Decrease) <sup>(a)</sup>
<b>68300</b>	<b>SMALL TOOLS, INSTRUMENTS, EQUIPMENT</b>	<b>\$109,736</b>	<b>\$455,662</b>	<b>\$455,662</b>	<b>\$177,276</b>	<b>\$67,540</b>
<p>This account covers the purchase of small tools and equipment for air monitoring stations, laboratory, and headquarters building maintenance. The increase from the FY 2019-20 Adopted Budget is a result of expenditures related to the Rule 1180 air monitoring program. The FY 2019-20 Proposed Budget also does not include amounts for federally funded grant programs. Expenditure appropriations will occur mid-year for these programs.</p>						
<b>68400</b>	<b>GAS &amp; OIL</b>	<b>\$292,021</b>	<b>\$292,021</b>	<b>\$292,021</b>	<b>\$292,021</b>	<b>\$0</b>
<p>This account is for the purchase of gasoline, oil, and alternative fuels for the South Coast AQMD fleet. The FY 2020-21 Proposed Budget reflects no change in anticipated needs.</p>						
<b>69500</b>	<b>TRAINING/CONF/ TUITION/BOARD EXP</b>	<b>\$976,357</b>	<b>\$1,071,223</b>	<b>\$1,071,223</b>	<b>\$995,807</b>	<b>\$19,450</b>
<p>This account is used for tuition reimbursement, conference and training registrations, certain costs associated with South Coast AQMD's Governing and Hearing Boards and advisory groups, and training-related travel expenditures. The FY 2020-21 Proposed Budget reflects an increase for offsite meetings and per-diem.</p>						
<b>69550</b>	<b>MEMBERSHIPS</b>	<b>\$68,678</b>	<b>\$249,678</b>	<b>\$249,678</b>	<b>\$71,428</b>	<b>\$2,750</b>
<p>This account provides for South Coast AQMD membership in in scientific, clean fuels, advanced technology, and related environmental business/policy organizations. Membership costs are anticipated to increase marginally from the FY 2019-20 Adopted Budget.</p>						
<b>69600</b>	<b>TAXES</b>	<b>\$59,000</b>	<b>\$61,856</b>	<b>\$61,856</b>	<b>\$59,000</b>	<b>\$0</b>
<p>This account is for unsecured property and use taxes, fuel taxes, and sales taxes. The FY 2020-21 Proposed Budget reflects no change in expenditures from the FY 2019-20 Adopted Budget.</p>						
<b>69650</b>	<b>AWARDS</b>	<b>\$79,023</b>	<b>\$76,219</b>	<b>\$76,219</b>	<b>\$69,023</b>	<b>(\$10,000)</b>
<p>This account covers employee service awards for continuous service, employee recognition programs, plaques/awards the South Coast AQMD may present to individuals/businesses/community groups for outstanding contributions towards air quality goals, and promotional items for community events. The decrease from the FY 2019-20 Adopted Budget reflects the anticipated level of expenditures for FY 2020-21.</p>						
<b>69700</b>	<b>MISCELLANEOUS EXPENSES</b>	<b>\$255,525</b>	<b>\$297,178</b>	<b>\$297,178</b>	<b>\$249,525</b>	<b>(\$6,000)</b>
<p>This account is to record expenditures that do not fall in any other account such as South Coast AQMD advisory group per diems, meeting and event expenses, and sponsorships. The decrease from the FY 2019-20 Adopted Budget reflects the anticipated level of expenditures for FY 2020-21.</p>						

<sup>(a)</sup>FY 2020-21 Proposed Budget vs. FY 2019-20 Adopted Budget.

SERVICES & SUPPLIES

	Account Description	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate	FY 2020-21 Proposed Budget	Increase/ (Decrease) <sup>(a)</sup>
<b>69750</b>	<b>PRIOR YEAR EXPENSE</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
This account is used to record actual expenditures attributable to prior year budgets. No amount is budgeted for this account due to the nature of the account.						
<b>69800</b>	<b>UNCOLLECTIBLE ACCOUNTS RECEIVABLE</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
No amount is budgeted for this account due to the nature of the account.						
<b>89100</b>	<b>PRINCIPAL REPAYMENT</b>	<b>\$2,686,640</b>	<b>\$2,686,641</b>	<b>\$2,686,641</b>	<b>\$3,840,443</b>	<b>\$1,153,803</b>
This account reflects the principal due on pension obligation bonds. The increase from the FY 2019-20 Adopted Budget reflects scheduled payments for FY 2020-21 and 2004 Pension Obligation Bonds payment.						

<sup>(a)</sup>FY 2020-21 Proposed Budget vs. FY 2019-20 Adopted Budget.



SERVICES & SUPPLIES

Proposed Fiscal Year 2020-21 Professional & Special Services Detail by Office			
Office	Program	Contract Description	Amount
District General	Dist. General Overhead	Administrative Fees for 1995 & 2004 Pension Obligation Bonds (POBs)	\$1,500
	Dist. General Overhead	Arbitration/Hearing Officer	9,400
	Dist. General Overhead	Benefits Administrator	13,000
	Dist. General Overhead	COBRA Administration Services	6,000
	Dist. General Overhead	Custodial Fees for 1995 & 2004 POBs	800
	Dist. General Overhead	Employee Assistance Program	13,995
	Dist. General Overhead	Employee Relations Litigation	200,000
	Dist. General Overhead	Health Reimbursement Arrangement Plan Administration	5,000
	Dist. General Overhead	Insurance Brokerage	52,000
	Dist. General Overhead	LACERA OPEB Actuary Services	20,000
	Dist. General Overhead	Modular Furniture Maintenance, Setup, and Moving Services	15,000
	Dist. General Overhead	Oracle Software Support	30,400
	Dist. General Overhead	PeopleSoft Maintenance	208,400
	Dist. General Overhead	Plans and Design Consulting Services	95,000
	Dist. General Overhead	Security Alarm Monitoring	2,168
	Dist. General Overhead	Security Guard Services	565,114
	Dist. General Overhead	Wellness Program	35,312
	<b>Sub-total District General</b>		
Governing Board	Operational Support	Board Member Assistant/Consultants	\$807,784
<b>Sub-total Governing Board</b>			<b>\$807,784</b>
Executive Office	Develop Programs	Professional & Special Services	\$75,000
<b>Sub-total Executive Office</b>			<b>\$75,000</b>
Finance	Operational Support	AB 2766 Audit of DMV Fee Recipients	\$10,000
	Operational Support	Bank Service Charges/Los Angeles County Treasurer Office	60,000
	Ensure Compliance	Bank Services Fund 15, Hot Spots Lockbox	15,000
	Operational Support	E-Check Fee	3,000
	Operational Support	Financial Audit	55,528
	Operational Support	Financial Consultant for Treasury Management	23,000
	Operational Support	LA County Treasurer Office - PGP Maintenance	1,650
	<b>Sub-total Finance</b>		
Legal	Ensure Compliance	Experts/Court Reporters/Attorney Services	\$30,000
	Ensure Compliance	Litigation Counsel	126,001
	Ensure Compliance	Software Maintenance & Licensing	40,000
	Operational Support	Specialized Legal Services	50,000
	<b>Sub-total Legal</b>		

SERVICES & SUPPLIES

Proposed Fiscal Year 2020-21 Professional & Special Services Detail by Office (cont.)			
Office	Program	Contract Description	Amount
<b>Administrative &amp; Human Resources</b>	Operational Support	In-house Training Classes	\$4,000
	Operational Support	Medical Services Provider	24,250
	Operational Support	NEOGOV Multiple Contracts	63,500
	Operational Support	Occupational Health Services	23,844
	Operational Support	Test Development	15,000
	Operational Support	Third-Party Claims Administrator for Workers Compensation	21,156
	<b>Sub-total Administrative &amp; Human Resources</b>		
<b>Clerk of the Boards</b>	Ensure Compliance	Court Reporting, Audio-visual, and/or Security Services	\$63,800
	Ensure Compliance	Outside Legal Contract	15,000
	Ensure Compliance	Professional Interpreter Services	6,400
	<b>Sub-total Clerk of the Boards</b>		
<b>Information Management</b>	Operational Support	Action Works Metro System Software Support	\$20,000
	Operational Support	Adobe Creative Cloud Software Support	2,500
	Operational Support	AER & R1113/314 Upgrade & Maintenance	15,000
	Operational Support	AIS (Address Information System) Five Digit Subscription	1,200
	Operational Support	Anti-Spam (MailShield) Maintenance/Support	15,000
	Operational Support	ArcGIS Online Annual Subscription	1,000
	Operational Support	Backup Software	50,000
	Operational Support	Backup Utility Maintenance	11,500
	Operational Support	CLASS System Maintenance	88,000
	Operational Support	Component One Software Support	1,200
	Operational Support	Computer-Based Training Software Support	1,800
	Operational Support	CourtView/DPO Maintenance	10,000
	Operational Support	Crystal Reports Software Support	22,000
	Operational Support	Disaster Recovery Software	60,000
	Operational Support	Dundas Chart Software Support	700
	Operational Support	Dynamic Web Twain License Renewal	5,700
	Operational Support	Email Recovery Software (PowerControls) Maint/Support	2,750
	Operational Support	Email Reporting	4,000
	Operational Support	ERwin ERX & BPwin SW Support	26,000
	Operational Support	Faxcom FaxServer Support	15,000
	Operational Support	Imaging Software Support	145,000
Operational Support	Infragistics Pro Software Support	1,000	
Operational Support	Ingres/OpenIngres Additional Licensing	72,000	
Operational Support	Ingres/OpenIngres Advanced Success Pack	140,000	
Operational Support	Installshield Software Support	3,800	

SERVICES & SUPPLIES

Proposed Fiscal Year 2020-21 Professional & Special Services Detail by Office (cont.)			
Office	Program	Contract Description	Amount
Information Management (cont.)	Operational Support	Internet Filtering (SmartFilter) Maintenance/Support	\$70,000
	Operational Support	Kronos Time Keeper	2,000
	Operational Support	Microsoft Developer Network - Application Development	15,196
	Operational Support	Microsoft Developer Network Premium Renewal	4,000
	Operational Support	Microsoft Technical Software Support (Server Applications)	15,000
	Operational Support	Microsoft Virtual Earth Maintenance/Support	15,000
	Operational Support	Network Analyzer (Sniffer) Maintenance/Support	4,500
	Operational Support	Network Backbone Support	15,000
	Operational Support	NT Software Support - Proactive	62,000
	Operational Support	Off-site Document Destruction Services	24,000
	Operational Support	Off-site Storage Nightly Computer Backup	22,000
	Operational Support	Online Filing Infrastructure	25,000
	Operational Support	PowerBuilder Software Support	24,000
	Operational Support	PreEmptive Analytics Software Support	7,000
	Operational Support	Proxy Reporting Support	3,250
	Operational Support	PVCS Software Support	4,900
	Operational Support	ScaleOut StateServer Maintenance	8,500
	Operational Support	Secure Service Digital ID Services	2,000
	Operational Support	Secure Service Digital ID DEC Internet Server	850
	Operational Support	Sitefinity CMS Software Support	9,500
	Operational Support	Software Support for EOS.Web Enterprise	6,300
	Operational Support	Software Support for On-Line Catalog	2,050
	Operational Support	South Coast AQMD Web App Modifications	20,000
	Operational Support	Swiftview Software Support	950
	Operational Support	Telephone Switchview Software Support	9,500
	Operational Support	Terminal Emulation (Reflection) Maintenance/Support	1,175
	Operational Support	Videoteleconferencing Maintenance & Support	20,000
	Operational Support	Virus Scan Support	15,000
	Operational Support	Visual Expert Software Support	6,000
	Operational Support	Web Consulting Support	64,300
	Operational Support	Web Core Technology Upgrade (.NET Upgrade)	10,000
	Operational Support	Website Evaluation & Improvement	200,000
	<b>Sub-total Information Management</b>		

SERVICES & SUPPLIES

Proposed Fiscal Year 2020-21 Professional & Special Services Detail by Office (cont.)			
Office	Program	Contract Description	Amount
Planning, Rule Development, & Area Sources	Ensure Compliance	AER Printing and Mailing	\$7,000
	Monitoring Air Quality	Air Quality Forecast and Alert Notification Support	50,000
	Develop Programs	California Emissions Estimator Model (CalEEMod) Upgrades/Support	25,000
	Develop Programs	CEQA for AQMD Projects	125,000
	Develop Programs	CEQA Special Studies	50,000
	Timely Review of Permits	Dispersion Modeling Support	25,000
	Monitoring Air Quality	Maintain Wind Stations and Analyze Data	60,000
	Monitoring Air Quality	MATES V	20,000
	Monitoring Air Quality	Meteorological Data Services	15,000
	Develop Rules	Mobile Source Related Data Licenses and Subscriptions	125,000
	Develop Rules	PM and Ozone Model Consulting	50,000
	Develop Programs	Rule 2202 Computer System Maintenance	15,000
	Develop Programs	Rule 2202 EMOvers System Maintenance	15,000
	Customer Service & Business Assistance	Rule 2202 ETC On-Line Training	10,000
	Ensure Compliance	Rules 1118 and 1118.1 Notifications	61,000
	Develop Programs	SIP, AQMP and Rule Printing	16,000
	Develop Programs	Software, Data Products, and Technical Support for Economic Modeling	150,000
	Develop Rules	Strategic and Logistical Support for Partnership Building in China	35,000
	Develop Rules	Technical Assessment in of Regional Modeling	20,000
	Ensure Compliance	Technology Assessment Studies	20,000
<b>Sub-total Planning, Rule Development &amp; Area Sources</b>			<b>\$894,000</b>
Legislative & Public Affairs/Media Office	Policy Support	After-hours Call Center Service	\$3,500
	Customer Service & Business Assistance	Clean Air Awards	12,600
	Customer Service & Business Assistance	Community Outreach	277,005
	Policy Support	Graphics & Printing	33,616
	Policy Support	Graphics, Printing & Outreach Materials	4,000
	Policy Support	Legislative Advocacy - Sacramento	365,000
	Policy Support	Legislative Advocacy - Washington DC	665,130
	Policy Support	Legislative Computer Services	10,000
	Customer Service & Business Assistance	Multi-Lingual Translation - Public Participation	20,000
	Policy Support	News Release Services	9,000
	Policy Support	Photographic and Video Services	55,000

SERVICES & SUPPLIES

<b>Proposed Fiscal Year 2020-21 Professional &amp; Special Services Detail by Office (cont.)</b>			
<b>Office</b>	<b>Program</b>	<b>Contract Description</b>	<b>Amount</b>
<b>Legislative &amp; Public Affairs/Media Office (cont.)</b>	Customer Service & Business Assistance	Promotion Marketing of Smart Phone Tools	\$50,000
	Policy Support	Radio/Television Monitoring	11,000
	<b>Sub-total Legislative &amp; Public Affairs/Media Office</b>		<b>\$1,515,851</b>
<b>Science &amp; Technology Advancement</b>	Ensure Compliance	Laboratory Analytical Services	\$15,000
	Ensure Compliance	Rule 1180	250,000
	Ensure Compliance	Source Testing Services	30,000
	Advanced Clean Air Technology	Technical Assistance, Expert Consultation, Outreach/Education – Clean Fuels	1,000,000
	Advanced Clean Air Technology	Technical Assistance, Expert Consultation, Outreach/Education – CMP, AB923	300,000
	Develop Programs	Technical Assistance, Expert Consultation, Outreach/Education – Prop 1B	75,000
	Ensure Compliance	Technical Support for Air Monitoring and Community Complaint Resolution	35,000
	<b>Sub-total Science &amp; Technology Advancement</b>		<b>\$1,705,000</b>
<b>Engineering &amp; Permitting</b>	Operational Support	Workspace Reconfiguration	\$2,500
<b>Sub-total Engineering &amp; Permitting</b>		<b>\$2,500</b>	
<b>Compliance &amp; Enforcement</b>	Ensure Compliance	Compliance Notice Printing	\$4,000
	Ensure Compliance	Lab Analysis Services for R1176 and other air samples	5,000
	Operational Support	Workspace Reconfiguration	3,500
	<b>Sub-total Compliance &amp; Enforcement</b>		<b>\$12,500</b>
<b>Total Professional &amp; Special Services</b>			<b>\$8,340,974</b>

**CAPITAL OUTLAYS, BUILDING REMODELING & TRANSFERS OUT**

Acct. #	Account Description	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate	FY 2020-21 Proposed Budget	Increase/ (Decrease) <sup>(a)</sup>
<b>77000</b>	<b>CAPITAL OUTLAYS</b>	<b>\$395,000</b>	<b>\$13,271,889</b>	<b>\$13,271,889</b>	<b>\$926,000</b>	<b>\$531,000</b>

This account is for tangible asset expenditures with a value of at least \$5,000 and a useful life of at least three years and intangible asset expenditures with a value of at least \$5,000 and a useful life of at least one year. The FY 2020-20 Proposed Budget reflects projects that are either offset by revenue or critical for operational support. Depending on funding availability, budget will be requested mid-year for additional projects. The FY 2020-21 Proposed Budget does not include amounts for federally funded grant programs. An expenditure appropriation will occur mid-year when the grants are awarded.

A listing by office of the proposed Capital Outlays for FY 2020-21 is provided at the end of this section.

<sup>(a)</sup>FY 2020-21 Proposed Budget vs. FY 2019-20 Adopted Budget.

Acct. #	Account Description	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate	FY 2020-21 Proposed Budget	Increase/ (Decrease) <sup>(a)</sup>
<b>79050</b>	<b>BUILDING REMODELING</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

This account is used for minor remodeling projects which become necessary as a result of reorganizations or for safety reasons. No projects are anticipated in Fiscal Year 2020-21.

<sup>(a)</sup>FY 2020-21 Proposed Budget vs. FY 2019-20 Adopted Budget.

Acct. #	Account Description	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate	FY 2020-21 Proposed Budget	Increase/ (Decrease) <sup>(a)</sup>
<b>99950</b>	<b>TRANSFERS OUT</b>	<b>\$841,353</b>	<b>\$2,525,592</b>	<b>\$2,525,592</b>	<b>\$841,353</b>	<b>\$0</b>

The FY 2020-21 Proposed Budget includes a transfer to the Health Effects Research Fund, pursuant to Governing Board policy.

<sup>(a)</sup>FY 2020-21 Proposed Budget vs. FY 2019-20 Adopted Budget.

CAPITAL OUTLAYS, BUILDING REMODELING & TRANSFERS OUT

Fiscal Year 2020-21 Capital Outlays Detail				
Office	Program	Category	Description	Amount
District General	Operational Support	N/A	<u>Unbudgeted Capital Outlay</u> - This amount is set aside for unanticipated needs or emergency situations to avoid interruption of operations.	\$75,000
<b>Sub-total District General</b>				<b>\$75,000</b>
Information Management	Operational Support	New	<u>Network Operations/Telecom</u> – Misc. Telecommunication Upgrade/Enhancement	\$35,000
<b>Sub-total Information Management</b>				<b>\$35,000</b>
Science & Technology Advancement	Advance Clean Air Technology	New	<u>Clean Fuels</u> – For advanced technology vehicles and infrastructure.	\$285,000
	Monitoring Air Quality	New	<u>R1180 Community Monitoring</u> - Air Monitoring Equipment	431,000
	Monitoring Air Quality	New	<u>R1180 Community Monitoring</u> - Vehicles	100,000
	<b>Sub-total Science &amp; Technology Advancement</b>			
<b>Total Capital Outlays</b>				<b>\$926,000</b>

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
PROPOSED GOALS AND PRIORITY OBJECTIVES  
FOR FY 2020-2021**

**MISSION STATEMENT**

“To clean the air and protect the health of all residents in the South Coast Air District through practical and innovative strategies.”

**GOALS AND PRIORITY OBJECTIVES**

The following Goals and Priority Objectives have been identified as being critical to meeting South Coast AQMD’s Mission in Fiscal Year 2020-21.

**GOAL I. Achieve Clean Air Standards.**

Priority Objective		Performance Indicator	Performance Measurement
1	Development and Implementation of Air Quality Management Plans	Adherence to development, adoption and implementation schedules for rules related to Air Quality Management Plans.	Complete 6 rule adoptions and/or actions that result in achievements towards 2016 AQMP emissions reductions. Hold at least 4 AQMP advisory group meetings for 2022 AQMP development.
2	Secure Incentive Funding for Emissions Reduction	Dollar amount of new funding sources for pollution reduction projects.	Secure \$250 million of new funding sources.
3	AB 617 Implementation in Communities	Conduct air monitoring and implement emission reduction plans for each of the three Year 1 communities and develop air monitoring and emission reduction plans for the 2 new communities.	Implementation of air monitoring and emission reduction plans for 3 Year-1 communities and development of these documents for 2 new communities.
4	Ensure Efficient Air Monitoring and Laboratory Operations	Achieve acceptable completion of valid data points out of the scheduled measurements in the South Coast AQMD air monitoring network for NAAQS pollutant before U.S. EPA deadline.	Achieve acceptable valid data completion submitted to U.S. EPA before deadline.
5	Ensure Timely Inspections of Facilities	Total number of Title V Inspections completed annually.	Complete 100% Title V Inspections.
6	Maintain progress in reducing the permit applications inventory	Number of pending permit applications.	Maintain pending permit applications inventory excluding Permits to Construct issued and RECLAIM transition applications at or near 3,000.
7	Support Development of Cleaner Advanced Technology	Amount of Clean Fuels Program projects funded.	Fund \$10 Million of Clean Fuels program projects with a 1:4 leveraging ratio.
8	Incentive Programs	% of grant money executed in contracts.	50% of grant money contracted within six months after receipt of funds.
9	Complete Final Report for the fifth Multiple Air Toxics Exposure Study	Written report of fixed-site monitoring data, emission inventory and health risk modeling.	Written report of fixed-site monitoring data, emission inventory and health risk modeling.



**GOAL II. Enhance Public Education and Equitable Treatment for All Communities.**

Priority Objective		Performance Indicator	Performance Measurement
1	Evaluation of Low Cost Air Quality Sensors	Evaluation and posting of results of low cost air quality sensors that have reached the market.	Evaluate and post results of 75% of sensors that have reached the market.
2	Outreach	Number of large community outreach events conducted in each County and effective information distribution for South Coast AQMD programs that achieve clean air.	Conduct/participate in 1 large community outreach event per quarter, including 1 in each County starting 6 months after it is safe to have large gatherings. Develop and implement SOPs to provide information to the public as quickly and accurately as possible.
3	Timely Investigation of Community Complaints	Initiate complaint investigation within 2 hours of complaint receipt.	During normal South Coast AQMD business hours, contact 90% of complainants within 2 hours of complaint receipt.
4	Social Media Efforts	Percentage increase in number of social media followers as well as increase audience engagement through impressions (views) of shared information via outreach on South Coast AQMD events, programs and major incidents. Contract with an outside consultant to form an internal committee to develop social media recommendations for Board approval.	15% to 20% increase in social media followers. Continue efforts to increase impressions and engagement on posts and/or campaigns with a monthly average goal of 2,400 Instagram impressions /8,000 impressions Facebook impressions/48,000 Twitter impressions on posts. Present recommendations to the Board.
5	School Educational Outreach	Number of high schools participating in the air quality education program in environmental justice communities. Develop materials for other grade levels	Provide curriculums to 100 high schools throughout the 4 Counties in environmental justice communities and teach at schools as requested when schools are back in session. Develop air quality teaching materials for schools.

**GOAL III. Operate Efficiently and Transparently.**

Priority Objective		Performance Indicator	Performance Measurement
1	Ensure Transparent Governance	Percentage of Committee and Board meeting agendas with materials made available to the public one week prior to the meeting.	100% of Committee and Board meeting agendas with materials made available to the public one week prior to the meeting.
2	Ensure Transparent Governance	Percentage of Stakeholder and Working Group meeting agendas with materials made available prior to the meeting.	100% of Stakeholder and Working Group meeting agendas with materials made available to the public three days prior to the meeting.
3	Maintain a Well Informed Staff	Number of all staff information sessions offered and conducted.	Offer and conduct 10 information sessions/training for all staff.
4	Partner with Public Agencies, Stakeholder Groups, & Business Community	Number of meetings with Permit Streamlining Task Force subcommittee and stakeholders. Participate in a regional public health task force.	Conduct 2 meetings of the Permit Streamlining Task Force subcommittee and stakeholders. Participate in a regional public health task force.
5	Timely Financial Monitoring	Timely budgetary financial reporting.	Submit quarterly budgetary financial reports to the Governing Board within 6 working days of the end of the quarter for quarters 1-3. Submit the 4 <sup>th</sup> quarter report within 6 working days of the end of July.

## **PROGRAM CATEGORIES**

### **ADVANCE CLEAN AIR TECHNOLOGY**

Identify technologies from anywhere in the world that may have application in reducing emissions from mobile and stationary sources in South Coast AQMD's jurisdiction. Suggest strategies to overcome any barriers and, when appropriate, implement those strategies.

- (A) Identify short-term and long-term technical barriers to the use of low-emission clean fuels and transportation technologies.
- (B) Promote development and assess the use of clean fuels and low-emitting technologies.
- (C) Work with industry to promote research and development in promising low-emission technologies and clean fuels.
- (D) Provide technical and program support to the Mobile Source Air Pollution Reduction Review Committee (MSRC).
- (E) Conduct source tests and analyses of samples to assess effectiveness of low-emissions technology.
- (F) Implement and administer state-funded programs such as the Carl Moyer program for retrofitting, re-powering, or replacing diesel engines with newer and cleaner engines and the Proposition 1B program that provides funding for projects to reduce air pollution associated with freight movement along California's trade corridors.

### **ENSURE COMPLIANCE WITH CLEAN AIR RULES**

Ensure compliance with South Coast AQMD rules for existing major and small stationary sources.

- (A) Verify compliance with South Coast AQMD rules through inspections, sample collections, Visible Emissions Evaluations, certification of Continuous Emission Monitoring Systems (CEMS), and emissions audits.
- (B) Issue Notices of Violation for major violations when discovered or a Notices to Comply for minor violations or to request records.
- (C) Respond to and resolve public complaints concerning air pollution.
- (D) Participate in Hearing Board cases, investigate breakdowns and notifications of demolitions or renovations of structures which may contain asbestos, conduct periodic monitoring, and observe source tests.
- (E) Respond to industrial and chemical emergencies when requested by other agencies.
- (F) Provide training classes for compliance with various South Coast AQMD rules such as Gasoline Transfer and Dispensing (Rule 461), Asbestos Demolition and Renovation (Rule 1403), Chrome Plating Operations (Rule 1469), Fugitive Dust Plans (Rule 403 & 403.1), Sump and Wastewater Separators (Rule 1176) and Combustion Gas Portable Analyzer Training & Certification (Rules 1146, 1146.1 & 1110.2).

## **PROGRAM CATEGORIES**

### **CUSTOMER SERVICE AND BUSINESS ASSISTANCE**

Support local government, businesses, and the general public.

- (A) Provide local government, business and the public with access and input into the regulatory and policy processes of South Coast AQMD.
- (B) Assist cities and others with AB 2766 projects.
- (C) Interact with local, state and federal agencies as well as others to share air quality information, resolve jurisdictional questions, and implement joint programs.
- (D) Support air pollution reduction through implementation of comprehensive public information and legislative and customer service programs.
- (E) Provide small business assistance services and support economic development and business retention activities.
- (F) Make presentations to and meet with regulated organizations, individuals, public agencies and the media.
- (G) Notify all interested parties of upcoming changes to air quality rules and regulations through public meetings, workshops, and printed and electronic information.
- (H) Resolve permit-related and fee-related problems and provide technical assistance to industry.
- (I) Respond to Public Records Act requests.
- (J) Produce brochures, newsletters, television, radio and print media information and materials, and digital information.
- (K) Respond to letters and Internet inquiries from the public and to media inquiries and requests.

### **DEVELOP PROGRAMS TO ACHIEVE CLEAN AIR**

Develop a regional Air Quality Management Plan (AQMP) to achieve federal and state ambient air quality standards and to meet all other requirements of the federal and California Clean Air Acts.

- (A) Analyze air quality data and provide an estimation of pollutant emissions by source category.
- (B) Develop pollutant control strategies and project future air quality using computer models and statistical analysis of alternative control scenarios.
- (C) Analyze issues pertaining to air toxics, acid deposition, and potential socioeconomic and environmental impacts (CEQA) of South Coast AQMD plans and regulations.
- (D) Conduct outreach activities to solicit public input on proposed control measures.
- (E) Implement Rule 2202 On-Road Motor Vehicle Mitigation Options and process employee commute reduction program submittals and registrations. Provide one-on-one assistance to employers to ensure compliance with the rule.

## PROGRAM CATEGORIES

### DEVELOP PROGRAMS TO ACHIEVE CLEAN AIR (Cont.)

- (F) Develop and update emissions inventories; conduct in-house auditing of annual emission reports; conduct field audits.

### DEVELOP RULES TO ACHIEVE CLEAN AIR

Develop emission reduction regulations for sulfur dioxide, nitrogen dioxide, organic gases, particulate matter, toxics, and other pollutants to implement the regional AQMP, Tanner Air Toxics Process (AB 1807), National Emission Standards for Hazardous Air Pollutants (NESHAPS), and Prevention of Significant Deterioration (PSD) requirements.

- (A) Provide an assessment of control technologies, evaluation of control cost, source testing and analysis of samples to determine emissions.
- (B) Test and analyze products and processes to demonstrate pollution reduction potential.
- (C) Solicit public input through meetings and workshops.
- (D) Prepare rules to provide flexibility to industry, ensure an effective permit program and increase rule effectiveness.
- (E) Evaluate effectiveness of area source rules, evaluate area source emission inventories, and propose new rules or amendments to improve implementation of area source programs, including the certification/registration of equipment, and as necessary pursuant to statewide regulatory requirements.
- (F) Implement the AQMP. Develop feasibility studies and control measures.
- (G) Conduct research and analyze health effects of air pollutants and assess the health implications of pollutant reduction strategies.

### MONITORING AIR QUALITY

Operate and maintain within South Coast AQMD's jurisdiction a network of air quality monitoring sites for ozone, nitrogen oxides, sulfur oxides, particulate matter, carbon monoxide and other pollutants to obtain data regarding public exposure to air contaminants.

- (A) Analyze, summarize, and report air quality information generated from the monitoring sites.
- (B) Provide continuous records for assessment of progress toward meeting federal and state air quality standards.
- (C) Develop and prepare meteorological forecasts and models.
- (D) Respond to emergency requests by providing technical assistance to first response public safety agencies.

## **PROGRAM CATEGORIES**

### **MONITORING AIR QUALITY (Cont.)**

- (E) Notify the public, media, schools, regulated industries and others whenever predicted or observed levels exceed the episode levels established under state law.
- (F) Conduct special studies such as MATES V, National Air Toxics Trends (NATTS), and Photochemical Assessment Monitoring Stations (PAMS).
- (G) Conduct measurement activities to identify and monitor potential sources of all toxics including high-risk facilities under the Community Air Toxics Initiative (CATI).
- (H) Evaluate and deploy low-cost sensors to monitor air pollution within communities of the South Coast Air Basin.
- (I) Assess the ability of optical remote sensing technology to characterize and quantify emissions from refineries and other sources, and to serve as a useful tool for enhancing existing leak detection and repair programs.

### **OPERATIONAL SUPPORT**

Provide operational support to facilitate overall air quality improvement programs.

- (A) Provide services that enable South Coast AQMD offices to function properly. Services include facility administration, human resources and financial services.
- (B) Provide information management services in support of all South Coast AQMD operations, including automation of permitting and compliance records, systems analysis and design, computer programming and operations, records management, and library services.
- (C) Provide legal support and representation on all policy and regulatory issues and all associated legal actions.

### **TIMELY REVIEW OF PERMITS**

Ensure timely processing of permits for new sources based on compliance with New Source Review and other applicable local, state and federal air quality rules and regulations.

- (A) Process applications for Permits to Construct and/or to Operate for new construction, modification and change of conditions for major and non-major sources.
- (B) Process Title V permits (Initial, Renewal, and Revisions) and facility permits for RECLAIM sources.
- (C) Process applications for Administrative Changes, Change of Operator, Plans, Emission Reductions Credits (ERCs) and RECLAIM Trading Credits (RTCs).

## PROGRAM CATEGORIES

### TIMELY REVIEW OF PERMITS (Cont.)

- (D) Continue efforts to streamline and expedite permit issuance through:
  - (1) Equipment certification/registration programs
  - (2) Streamlined standard permits
  - (3) Enhancement of permitting systems (including electronic permitting)
  - (4) Expedited Permit Processing Program
  - (5) Maintaining adequate staff resources
  - (6) Improved training
  - (7) Revisiting policies and rules

### POLICY SUPPORT

Monitor, analyze and attempt to influence the outcome of state and federal legislation.

- (A) Track changes to the state and federal budgets that may affect South Coast AQMD.
- (B) Respond to Congressional and Senatorial inquiries regarding South Coast AQMD programs, policies or initiatives.
- (C) Assist South Coast AQMD consultants in identifying potential funding sources and securing funding for South Coast AQMD programs.
- (D) Provide support staff to the Governing Board, Board committees, and various advisory and other groups including but not limited to: the Air Quality Management Plan Advisory Group, the Environmental Justice Advisory Group, the Home Rule Advisory Group, the Local Government and Small Business Assistance Advisory Group, the Mobile Source Air Pollution Reduction Review Committee (MSRC) and MSRC Technical Advisory Committee, the Scientific, Technical and Modeling Peer Review Advisory Group, the Technology Advancement Advisory Group, various Rule working groups, as well as ad hoc committees established from time to time.

## REVENUE CATEGORIES

### I. **Allocatable**

A portion of South Coast AQMD revenue offsets operational support costs of the South Coast AQMD.

1a Allocatable South Coast AQMD: District-wide administrative and support services (e.g., Human Resources, Payroll, Information Management).

1b Allocatable Office: Administrative activities specific to a division/office.

### II. **Annual Operating Emissions Fees**

### III. **Permit Processing Fees**

### IV. **Annual Operating Permit Renewal Fees**

### V. **Federal Grants/Other Federal Revenue**

### VI. **Source Test/Sample Analysis Fees**

### VII. **Hearing Board Fees**

### VIII. **Clean Fuels Fees**

### IX. **Mobile Sources**

### X. **Air Toxics AB 2588**

### XI. **Transportation Programs**

XII - XIV. These revenue categories are no longer used.

### XV. **California Air Resources Board Subvention/State Grants**

XVI. This revenue category is no longer used.

### XVII. **Other Revenue**

### XVIII. **Area Sources**

### XIX. **Portable Equipment Registration Program (PERP)**

### XX. **State Grant**

For a description of the revenue categories listed above, please refer to the corresponding revenue account in the FUND BALANCE & REVENUES section, "Explanation of Revenue Sources" within this document.

## WORK PROGRAM OVERVIEW

The Work Program is a management tool that allocates resources by Office, Program Category, and project. It is developed from Program Output Justification forms prepared during the budget process by each Office. Work Programs for each Office can be found in the OFFICE BUDGETS section of this document. Work Programs by Program Category are within the following pages. A glossary of terms and acronyms used in the Work Programs are at the end of this section.

Professional & Special Services, Temporary Agency Services, and Capital Outlays expenditures are assigned to specific Work Program Codes associated with the project the expenditures support. All other expenditures (Salaries and Benefits and most Services and Supplies line items) are distributed within an Office based on Full-Time Equivalents (FTEs). A prorated share of the District General Budget has been allocated to each line in the work program based on the number of FTEs reflected on the line.

The following is a brief description of each column in the Work Program:

The **#** column identifies each line in the Work Program in numerical order.

The **Program Code** is a five-digit code assigned to each program. The first two digits represent the Office. The last three digits are the Program.

The **Goal** column identifies which of the three Program Goals (defined in the Goals and Priority Objectives) applies to that output. The Goals are:

**GOAL I**      **Achieve Clean Air Standards.**

**GOAL II**      **Enhance Public Education and Equitable Treatment for All Communities.**

**GOAL III**      **Operate Efficiently and Transparently.**

The **Office** column, which appears on the Work Program by Category document, identifies the Office responsible for performing the work.

The **Program Category** column, which appears on the Work Program by Office document, identifies one of the nine Program Categories associated with an activity.

The **Program** column identifies the Program associated with the work.

The **Activities** column provides a brief description of the work.

The **FTEs** column identifies the number of Full Time Equivalent staff positions in the current-year adopted budget, mid-year and proposed changes (+/-), and the proposed budget for the next fiscal year. An FTE position represents one person-year.

The **Expenditures** column, found in the Work Program by Category document, identifies the expenditures in the current-year adopted budget, proposed changes (+/-) and the proposed budget for the next fiscal year.

The **Revenue Category** column identifies the revenue that supports the work. Revenue Category titles can be found within this section and revenue descriptions are in the FUND BALANCE & REVENUES section, "Explanation of Revenue Sources" within this document.



**Advance Clean Air Technology  
Work Program by Category**

Program Code	Goal	Office	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Expenditures FY 2019-20	+/-	Expenditures FY 2020-21	Revenue Categories
1 08 001	I	LEG	AB2766/Mob Src/Legal Advice	AB2766 Leg Adv: Trans/Mob Source	0.05	0.00	0.05	\$ 10,732	\$	10,777	IX
2 04 003	III	FIN	AB2766/MSRC	MSRC Program Administration	0.35	0.00	0.35	52,376	(793)	51,582	IX
3 08 003	I	LEG	AB2766/MSRC	Legal Advice: MSRC Prog Admin	0.10	0.00	0.10	21,464	89	21,553	IX
4 44 003	I	STA	AB2766/MSRC	Mob Src Review Comm Prog Admin	0.50	0.00	0.50	83,103	1,424	84,528	IX
5 44 004	I	STA	Advisory Group/Small Business	AB2766 Admin Discretionary Prog	3.00	0.00	3.00	498,620	8,546	507,166	IX
6 44 012	I	STA	AQMP/Control Tech Assessment	Tech Supp: Quantify Cost Effec	1.00	0.00	1.00	166,207	2,849	169,055	VIII
7 04 030	I	FIN	AB134	AB134	2.00	0.00	2.00	299,289	(4,534)	294,755	IX
8 08 030	I	LEG	AB134	AB134	1.50	0.00	1.50	321,958	1,341	323,299	IX
9 44 030	I	STA	AB134	AB134	5.00	0.00	5.00	831,033	14,244	845,277	IX
10 60 030	I	CE	AB134	AB134	0.00	0.25	0.25	-	38,329	38,329	IX
11 44 039	I	STA	Admin/Office Mgt/Tech Adv	Admin Support/Coordination	0.77	0.00	0.77	127,979	2,194	130,173	VIII
12 44 048	I	STA	Admin/Prog Mgmt/Tech Advance	Overall TA Program Mgmt/Coord	1.55	0.00	1.55	257,620	4,416	262,036	VIII
13 44 095	I	STA	CA Natural Gas Veh Partnership	CA Natural Gas Veh Partnership	0.10	0.00	0.10	16,621	285	16,906	VIII
14 44 121	I	STA	China Cln Shipping	China Partnership Cleaner Shpng	0.90	0.00	0.90	149,586	2,564	152,150	IX
15 04 130	III	FIN	Clean Fuels/Contract Admin	Clean Fuels Contract Admin/Monitor	0.15	0.00	0.15	22,447	(340)	22,107	VIII
16 44 130	I	STA	Clean Fuels/Contract Admin	Admin/Project Supp for TA Cont	3.90	0.00	3.90	648,206	11,110	659,316	VIII
17 08 131	I	LEG	Clean Fuels/Legal Advice	Legal Advice: Clean Fuels	0.15	0.00	0.15	32,196	134	32,330	VIII
18 44 132	I	STA	Clean Fuels/Mobile Sources	Dev/Impl Mobile Src Proj/Demo	1.00	0.00	1.00	1,451,207	2,849	1,454,055	VIII
19 44 134	I	STA	Clean Fuels/Stationary Combust	Dev/Demo Clean Combustion Tech	0.30	0.00	0.30	49,862	855	50,717	VIII
20 44 135	I	STA	Clean Fuels/Stationary Energy	Dev/Demo Alt Clean Energy	0.55	0.00	0.55	91,414	1,567	92,980	VIII
21 44 136	I	STA	Clean Fuels/Tech Transfer	Disseminate Low Emiss Cf Tech	1.80	0.00	1.80	299,172	5,128	304,300	VIII
22 44 187	I	STA	DERA Sch Bus Repl	DERA Sch Bus Repl Admin/Impl	0.10	0.00	0.10	16,621	285	16,906	V
23 44 188	I	STA	DERA FY 13 Veh Repl	DERA Vehicle Repl Admin/Impl	0.10	0.00	0.10	16,621	285	16,906	XVII
24 44 190	I	STA	Diesel Projects EPA	Diesel Projects EPA/Admin/Impl	0.20	-0.20	0.00	33,241	(33,241)	-	V
25 44 203	I	STA	EFMP Program Support	EFMP Program Support	5.00	0.00	5.00	831,033	14,244	845,277	XVII
26 44 258	I	STA	FARMER Grant	Fund Ag Replacement Measures	2.50	-1.00	1.50	415,517	(161,933)	253,583	XVII
27 44 356	I	STA	GGRF ZEDT Demo	GGRF ZEDT Demo Admin	1.10	0.00	1.10	182,827	3,134	185,961	XVII
28 44 453	I	STA	Mob Src: Emiss Inven Method	Rvw CARB/US EPA emissions inven methodology	1.50	0.00	1.50	249,310	4,273	253,583	VIII,IX
29 04 457	III	FIN	Mobile Source/Moyer Adm	Carl Moyer: Contract/Fin Admin	1.02	0.00	1.02	152,637	(2,312)	150,325	IX
30 08 457	I	LEG	Mob Src/C Moyer/Leg Advice	Moyer/Implem/Program Dev	0.10	0.00	0.10	21,464	89	21,553	IX
31 16 457	I	AHR	MS/Carl Moyer Admin	C Moyer/Contractor Compliance	0.10	-0.07	0.03	16,994	(11,976)	5,018	IX
32 44 457	I	STA	Mob Src/C Moyer Adm/Outreach	Carl Moyer: Impl/Admin Grant	13.10	0.80	13.90	2,477,307	172,563	2,649,870	IX
33 44 459	I	STA	Mob Src/C Moyer/Impl/Prg Dev	Moyer/Implem/Program Dev	3.00	1.00	4.00	498,620	177,602	676,222	IX
34 44 460	I	STA	VIP Admin	VIP Admin/Outreach/Impl	0.50	0.00	0.50	83,103	1,424	84,528	IX
35 44 533	I	STA	POLB AMECS Demo	POLB AMECS Demo-Admin/Impl	0.10	0.00	0.10	16,621	285	16,906	XVII
36 04 542	I	FIN	Prop 1B:Goods Movement	Contracts/Finance Admin	0.50	0.00	0.50	74,822	(1,134)	73,689	IX
37 16 542	I	AHR	Prop 1B:Goods Movement	Prop 1B: Goods Movement	0.10	-0.07	0.03	16,994	(11,976)	5,018	IX
38 04 544	I	FIN	Prop 1B:Low Emiss Sch Bus	Grants/Finance Admin	0.05	0.00	0.05	7,482	(113)	7,369	IX
39 44 677	I	STA	School Bus/Lower Emission Prog	School Bus Program Oversight	2.00	0.00	2.00	332,413	5,698	338,111	IX
40 44 738	I	STA	Target Air Shed EPA	Targeted Air Shed Admin/Impl	0.50	0.00	0.50	83,103	1,424	84,528	V,XVII
41 44 740	I	STA	Tech Adv/Commercialization	Assess Cfs/Adv Tech Potential	0.25	0.00	0.25	41,552	712	42,264	VIII
42 44 741	I	STA	Tech Adv/Non-Combustion	Dev/Demo Non-Combustion Tech	0.60	0.00	0.60	99,724	1,709	101,433	VIII
43 44 816	I	STA	Transportation Research	Transport Research/Adv Systems	0.10	0.00	0.10	16,621	285	16,906	VIII
44 44 827	I	STA	VW-General Admin	VW-General Admin	4.00	-2.00	2.00	664,826	(326,716)	338,111	XVII
45 44 840	I	STA	VW-ZE Trucks-South Coast	VW-ZE Trucks-South Coast	0.00	1.00	1.00	-	169,055	169,055	XVII
46 44 841	I	STA	VW-Combustion-South Coast	VW-Combustion-South Coast	0.00	1.00	1.00	-	169,055	169,055	XVII
<b>Total Advance Clean Air Technology</b>					61.19	0.71	61.90	\$ 11,780,542	\$ 265,021	\$ 12,045,564	

A prorated share of the District General Budget has been allocated to each line in the work program based on the number of FTEs reflected on the line.

**Customer Service and Business Assistance  
Work Program by Category**

Program Code	Goal	Office	Program	Activities	FTEs FY 2019-20 +/-	FTEs FY 2020-21 +/-	Expenditures FY 2019-20 \$	Expenditures FY 2020-21 \$	Revenue Categories
1 04 002	III	FIN	AB2766/Mobile Source	Prog Admin: Monitor/Dist/Audit	0.10	0.00	14,964	9,773	IX
2 35 037	I	LPA	AB617-Outreach	AB617-Outreach	5.00	0.00	891,120	881,700	IX
3 50 038	I	EP	Admin/Office Management	Dev/Coord Goals/Policies/Overs	3.00	0.00	530,896	520,251	IX
4 60 038	III	CE	Admin/Office Budget	Dev/Coord Goals/Policies/Overs	6.00	0.00	898,798	919,901	IX
5 35 046	III	LPA	Admin/Prog Mgmt	Admin Office/Units/SuppCoord Staff	5.02	0.00	887,461	885,226	IX
6 50 047	I	EP	Admin/Operations Support	Budget/Contracts/Reports/Projects	3.00	0.00	533,396	522,751	IX
7 60 047	I	CE	Admin/Operations Support	Budget/Contracts/Reports/Projects	4.90	-1.90	751,959	463,450	IX
8 35 126	II	LPA	Clean Air Connections	Coord of region-wide community group	1.00	0.00	178,224	176,340	IX
9 04 170	I	FIN	Billing Services	Answer/Resp/Resolv Prob & Inq	8.00	0.00	1,212,656	1,194,519	IX,III,IV
10 50 200	I	EP	Economic Dev/Bus Retention	Perm Proc/Public Participation	0.10	0.00	17,697	17,342	III
11 35 205	II	LPA	Environmental Education	Curriculum Dev/Project Coord	0.25	0.00	44,556	44,085	II,IX,XV
12 35 240	I	LPA	Environmental Justice	Impl Board's EJ Pgrms/Policies	2.00	1.00	356,448	529,020	II,IV
13 04 260	III	FIN	Fee Review	Cmte Mtg/Fee-Related Complaint	0.10	0.00	14,964	14,738	II,III,IV,XV
14 35 260	III	LPA	Fee Review	Cmte Mtg/Fee-Related Complaint	0.50	0.00	89,112	88,170	II,III,IV,XV
15 50 260	III	EP	Fee Review	Fee Review Committee	0.45	0.00	79,634	78,038	II,III,IV
16 04 355	III	FIN	Grants Management	Grant Anlyz/Eval/Negot/Acc/Rpt	1.00	0.00	149,644	147,377	IV,V,XV
17 35 381	III	LPA	Interagency Liaison	Interact Gov Agns/Promote SCAQMD	0.15	0.00	26,734	26,451	IX
18 35 390	I	LPA	Intergov/Geographic Deployment	Dev/Impl Local Govt Outreach	10.50	0.00	1,909,353	1,889,569	II,IX
19 50 425	I	EP	Lobby Permit Services	Supp Perm Proc/Customer Svc	1.00	0.00	176,965	173,417	III
20 27 481	III	IM	New System Development	Dev sys in supp of Dist-wide	1.75	-0.50	372,217	274,580	IX,III
21 03 490	II	EO	Outreach	Pub Awareness Clean Air Prog	0.97	0.00	303,886	305,407	IX
22 35 491	II	LPA	Outreach/Business	Chambers/Business Meetings	1.00	0.00	178,224	176,340	II,IV
23 35 492	II	LPA	Public Education/Public Events	Pub Events/Conf/Rideshare Fair	2.00	0.00	455,229	629,685	II,V,IX,XV
24 60 492	II	CE	Outreach/Business	Pub Events/Conf/Rideshare Fair	0.20	-0.10	30,509	15,332	IX
25 35 496	II	LPA	Outreach/Visiting Dignitary	Tours/Briefings-Dignitary	0.25	0.00	44,556	44,085	IX
26 35 514	I	LPA	Permit: Expired Permit Program	Assist w Permit Reinstatement	0.30	0.00	53,467	52,902	IV
27 50 520	I	EP	Perm Proc/Pre-App Mtg Outreach	Pre-App Mtgs/Genl Prescreening	1.00	0.00	176,965	173,417	III
28 16 540	III	AHR	Print Shop	Printing/Collating/Binding	4.00	1.00	685,745	836,282	IX
29 35 555	II	LPA	Public Information Center	Inform public of unhealthy air	1.00	0.00	268,224	266,340	II,V,IX
30 03 565	III	EO	Public Records Act	Comply w/ Public Req for Info	0.01	0.00	3,133	16	IX
31 04 565	I	FIN	Public Records Act	Comply w/ Public Rec Requests	0.02	0.00	2,993	2,948	IX
32 08 565	III	LEG	Public Records Act	Comply w/ Public Rec Requests	1.50	0.00	321,958	323,299	IX
33 16 565	III	AHR	Public Records Act	Comply w/ Public Rec Requests	0.05	-0.02	8,497	5,018	IX
34 17 565	III	CB	Public Records Act	Comply w/ Public Rec Requests	0.02	0.00	4,807	4,786	IX
35 26 565	III	PRA	Public Records Act	Comply w/ Public Rec Requests	0.79	0.00	140,535	140,587	IX
36 27 565	III	IM	Public Records Act	Comply w/ Public Req for Info	4.75	0.00	951,660	961,303	IX
37 35 565	III	LPA	Public Records Act	Comply w/ Public Req for Info	0.10	0.00	17,822	17,634	IX

Customer Service and Business Assistance (Cont.) Work Program by Category										
#	Program Code	Goal	Office	Program	Activities	FTEs FY 2019-20 +/-	FTEs FY 2020-21 +/-	Expenditures FY 2019-20	Expenditures FY 2020-21 +/-	Revenue Categories
38	44 565	III	STA	Public Records Act	Comply w/ Public Req for Info	0.17	0.45	\$ 28,255	\$ 76,559	la
39	50 565	III	EP	Public Records Act	Comply w/ Public Req for Info	0.25	0.00	44,241	(887)	la
40	60 565	III	CE	Public Records Act	Comply w/ Public Req for Info	3.00	-2.70	457,628	(411,633)	la
41	04 631	III	FIN	Cash Mgmt/Refunds	Research/Doc/Prep/Proc Refunds	0.30	0.00	44,893	(680)	III,IV,XI
42	35 679	III	LPA	Small Business Assistance	Small Business/Financial Assistance	1.00	0.00	178,224	(1,884)	III
43	08 681	III	LEG	Small Business/Legal Advice	Legal Advice: SB/Fee Review	0.05	0.00	10,732	45	I,III
44	50 690	I	EP	Source Education	Prov Tech Asst To Industries	2.80	0.00	495,503	(9,936)	III,IV,V,XV
45	60 690	I	CE	Source Education	Prov Tech Asst To Industries	0.40	-0.20	61,017	(30,354)	III,IV,V,XV
46	44 701	I	STA	Source Testing/Customer Svc	Conduct ST/Prov Data/Cust Svc	0.05	0.00	8,310	142	VI
47	44 709	I	STA	VOC Sample Analysis/SBA/Other	VOC Analysis & Reptg/Cust Svc	0.50	-0.50	83,103	(83,103)	VI
48	35 710	I	LPA	Speakers Bureau	Coordinate/conduct speeches	0.10	0.00	17,822	(188)	la
49	16 720	I	AHR	Subscription Services	Rule & Gov Board Materials	0.70	0.00	118,955	(1,876)	IV,XVII
50	26 788	I	PRA	AB2588 Mailing/Venue	AB2588 Mailing/Venue	0.05	-0.05	8,895	(8,895)	XVII
51	35 791	I	LPA	Toxics/AB2588	Outreach/AB 2588 Air Toxics	0.01	0.00	1,782	(19)	X
52	26 833	II	PRA	Rule 2202 ETC Training	Rule 2202 ETC Training	1.15	1.00	214,576	178,034	XI
<b>Total Customer Service &amp; Business Assistance</b>						82.31	(2.52)	\$ 14,558,947	\$ (249,512)	\$ 14,309,436

**Develop Programs  
Work Program by Category**

Program Code	Goal	Office	Program	Activities	FTEs FY 2019-20	FTEs FY 2020-21 +/-	FTEs FY 2019-20	Expenditures FY 2019-20	Expenditures FY 2020-21 +/-	Revenue Categories
1 26 002	I	PRA	AB2766/Mobile Source	AB2766 Mobile Source Outreach	2.70	0.50	\$ 480,308	\$ 89,158	IX	
2 04 009	I	FIN	AB 1318 Mitigation	AB 1318 Projects Admn/Impl	0.13	-0.13	19,454	(19,454)	XVII	
3 44 009	I	STA	AB 1318 Mitigation	AB 1318 Projects Admn/Impl	0.25	-0.20	41,552	(33,099)	XVII	
4 03 010	I	EO	AQMP	Develop/Implement AQMP	0.05	0.05	15,664	78	II,IX	
5 08 010	I	LEG	AQMP	AQMP Revision/CEQA Review	0.10	0.00	21,464	89	II,IV,IX	
6 26 010	I	PRA	AQMP	AQMP Special Studies	1.60	1.20	292,627	221,656	IV,V,IX,XV	
7 03 028	I	EO	Admin/SCAQMD Policy	Dev/Coord Goals/Policies/Overs	0.44	0.00	212,845	690	la	
8 26 033	I	PRA	AB617-Em Inventory	AB617-Emission Inventory	3.00	0.00	533,676	199	IX	
9 26 034	I	PRA	AB617-Em Reduc P Ins	AB617-Emission Reduction Plans	10.15	-0.05	1,805,603	(8,226)	IX	
10 26 038	I	PRA	Admin/Office Management	Coordinate Off/Admin Activities	4.55	0.75	824,408	138,770	lb	
11 26 068	II	PRA	SCAQMD Projects	Prepare Environmental Assessments	3.35	1.00	770,938	178,180	II,IV,IX	
12 44 069	I	STA	AQIP Evaluation	AQIP Contract Admn/Evaluation	0.50	-0.40	83,103	(66,198)	IX	
13 26 102	II	PRA	CEQA Document Projects	Review/Prepare CEQA Comments	3.75	0.00	667,095	248	II,IX	
14 26 104	I	PRA	CEQA Policy Development	ID/Develop/Impl CEQA Policy	0.50	0.00	113,946	33	IV,IX	
15 26 121	I	PRA	China Cln Shipping	China Partnership Cleaner Shpng	1.00	0.00	177,892	35,066	IX	
16 26 217	I	PRA	Emissions Inventory Studies	AER Hotline/Support	0.75	0.00	133,419	50	II,V,IX,XV	
17 26 218	I	PRA	AQMP/Emissions Inventory	Dev Emiss Inv: Forecasts/RFPs	1.25	0.00	222,365	83	II,IX	
18 26 368	I	PRA	Incentive RFP Emiss Red Projs	Incentive Projects Admn	1.00	0.00	177,892	66	XVII	
19 44 368	I	STA	Incentive RFP Emiss Red Projs	Incentive Projects Admn	3.00	0.00	498,620	8,546	XVII	
20 44 396	I	STA	Lawnmower Exchange	Lawn Mower Admn/Impl/Outreach	0.30	0.00	49,862	855	XVII	
21 26 397	II	PRA	Lead Agency Projects	Prep Envrnt Assmts/Perm Proj	2.50	0.00	444,730	165	III	
22 26 451	I	PRA	Mob Src/CARB/EPA Monitoring	CARB/US EPA Mob Src Fuel Policies	0.50	-0.10	88,946	(17,763)	IX	
23 26 452	I	PRA	Mob Src/CEC/US DOE Monitoring	CEC/US DOE Mob Src rulemaking proposals	0.20	0.00	35,578	13	IX,XVII	
24 44 458	I	STA	Mobile Source Strategies	Implement Fleet Rules	1.00	0.00	166,207	2,849	VIII	
25 26 503	I	PRA	PM Strategies	PM10 Plan/Analyze/Strategy Dev	1.00	1.00	177,892	178,024	II,V,XV	
26 44 542	I	STA	Prop 18:Goods Movement	Prop 18:Goods Movement	2.00	0.00	407,413	5,698	IX	
27 35 560	I	LPA	Public Notification	Public notif of rules/hearings	0.50	0.00	109,112	(942)	II,IV,IX	
28 26 685	I	PRA	Socio-Economic	Apply econ models/Socio-econ	4.00	0.50	861,568	89,244	II,IV	
29 44 702	I	STA	ST Methods Development	Eval ST Methods/Validate	0.95	0.00	157,896	2,706	II	
30 44 705	I	STA	ST Sample Analysis/Air Program	Analyze ST Samples/Air Prgms	0.25	0.00	41,552	712	II	
31 26 745	I	PRA	Rideshare	Dist Rideshare/Telecommute Prog	0.55	0.00	97,841	36	IX	
32 26 816	I	PRA	Transportation Regional Progs	Dev AQMP Meas/Coord w/Reg Agn	0.40	0.35	76,157	57,312	V,IX	
33 26 834	I	PRA	Rule 2202 Implement	Rule 2202 Proc/Sub Plans/Tech Eval	2.15	-0.29	382,468	(51,466)	XI	
34 26 836	I	PRA	Rule 2202 Support	R2202 Supt/CmptnMaint/WebSubmt	2.05	-0.06	399,679	(15,542)	V,XI	

<b>Total Develop Programs</b>	56.42	4.07	60.49	\$ 10,589,771	\$ 797,838	\$ 11,387,608
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Develop Rules Work Program by Category											
Program Code	Goal	Office	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Expenditures FY 2019-20	+/-	Expenditures FY 2020-21	Revenue Categories
1 26 031	I	PRA	AB617-BACT Clrghouse Dev	AB617-BARCT Rulemaking	16.20	-4.25	11.95	\$ 2,881,850	\$(755,250)	\$ 2,126,600	IX
2 26 035	I	PRA	AB617-General	AB617-General	4.15	0.00	4.15	\$ 738,252		738,526	IX
3 50 035	I	EP	AB617-General	AB617-General	1.00	0.00	1.00	176,965	(3,549)	173,417	IX
4 44 043	I	STA	Admin/Office Mgmt/Rules	Rules: Assign/Manage/Supp	0.15	0.00	0.15	24,931	427	25,358	lb
5 26 050	I	PRA	Admin/Rule Dev/PRA	Admin: Rule Development	1.10	0.00	1.10	195,681	73	195,754	lb
6 26 071	I	PRA	Arch Ctgs - Admin	Rdev/Aud/DB/TA/SCAQMD/Rpts/AER	0.50	0.00	0.50	88,946	33	88,979	XVIII
7 26 077	I	PRA	Area Sources/Rulemaking	Dev/Eval/Impl Area Source Prog	0.50	-0.25	0.25	88,946	(44,456)	44,490	II,IX
8 26 165	I	PRA	Conformity	Monitor Transp. Conformity	0.25	0.00	0.25	44,473	17	44,490	V,IX
9 26 257	I	PRA	Fac Based Mob Src	Facility Based Mobile Src Meas	6.25	2.00	8.25	1,186,825	406,330	1,593,155	IX
10 26 362	II	PRA	Health Effects	Study Health Effect/Toxicology	0.70	0.00	0.70	124,524	46	124,571	II,III,IX
11 26 385	I	PRA	Criteria Pollutants/Mob Srcs	Dev/Impl Intercredit Trading	0.75	-0.55	0.20	133,419	(97,827)	35,592	IV,IX
12 26 449	I	PRA	Mob Src/SCAQMD Rulemaking	Prepare SCAQMD Mob Src rulemaking proposals	3.60	-2.60	1.00	640,411	(462,453)	177,958	IX
13 44 456	I	STA	MS & AQMP Control Strategies	AQMP Control Strategies	0.30	0.00	0.30	49,862	855	50,717	VIII
14 26 460	I	PRA	Regional Modeling	Rule Impact/Analyses/Model Dev	5.00	0.00	5.00	959,460	331	959,791	II,V,IX
15 26 646	I	PRA	R1180 Community Mon	R1180 Comm Monitoring Refinery	0.20	0.00	0.20	35,578	13	35,592	XVII
16 50 650	I	EP	Rulemaking	Dev/Amend/Impl Rules	0.25	0.00	0.25	44,241	(887)	43,354	II,XV
17 08 651	I	LEG	Rules/Legal Advice	Legal Advice: Rules/Draft Regs	1.20	0.00	1.20	257,567	1,073	258,639	II
18 44 653	I	STA	Rulemaking/BACT	Dev/Amend BACT Guidelines	1.50	0.00	1.50	249,310	4,273	253,583	II
19 26 654	I	PRA	Rulemaking/NOX	Rulemaking/NOX	0.90	0.00	0.90	160,103	60	160,162	II,IV,XV
20 26 655	I	PRA	NSR/Adm Rulemaking	Amend/Develop NSR & Admin Rules	0.90	0.00	0.90	160,103	60	160,162	II,IV,V,XV
21 26 656	I	PRA	Rulemaking/VOC	Dev/Amend VOC Rules	3.00	-2.50	0.50	533,676	(444,697)	88,979	II,IV,XV
22 44 657	I	STA	Rulemaking/Support PRA	Assist PRA w/ Rulemaking	0.05	1.15	1.20	8,310	194,556	202,866	II
23 50 657	I	EP	Rulemaking/Support PRA	Provide Rule Development Supp	0.25	0.00	0.25	44,241	(887)	43,354	II,XV
24 60 657	I	CE	Rulemaking/Support PRA	Provide Rule Development Supp	1.00	-0.25	0.75	152,543	(37,555)	114,988	IV,XV
25 26 659	I	PRA	Rulemaking/Toxics	Develop/Amend Air Toxic Rules	8.75	2.65	11.40	1,556,555	472,168	2,028,723	II,XV
26 08 661	I	LEG	Rulemaking/RECLAIM	RECLAIM Legal Adv/Related Iss	0.50	0.00	0.50	107,319	447	107,766	II
27 26 661	I	PRA	Rulemaking/RECLAIM	RECLAIM Amend Rules/Related Is	1.50	0.00	1.50	266,838	99	266,937	II
28 44 706	I	STA	ST Sample Analysis/Air Program	Analyze ST Samples/Rules	0.25	0.00	0.25	41,552	712	42,264	II
29 44 708	I	STA	VOC Sample Analysis/Rules	VOC Analysis & Rptg/Rules	0.25	0.00	0.25	41,552	712	42,264	II,XV
30 50 752	I	EP	Title III Rulemaking	Title III Dev/Implement Rules	0.25	0.00	0.25	44,241	(887)	43,354	II,V,XV
31 50 773	I	EP	Title V & NSR Rulemaking-Supp	Title V Rules Dev/Amend/Impl	0.25	0.00	0.25	44,241	(887)	43,354	II

<b>Total Develop Rules</b>	61.45	(4.60)	56.85	\$ 11,082,515	\$(766,777)	\$ 10,315,738
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**Ensure Compliance  
Work Program by Category**

Program Code	Goal	Office	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Expenditures FY 2019-20	+/-	Expenditures FY 2020-21	Revenue Categories
1 44 015	I	STA	Acid Rain Program	Acid Rain CEMS Eval/Cert	0.50	-0.30	0.20	\$ 83,103	\$ (49,292)	\$ 33,811	II,IV
2 60 032	I	CE	AB617-Meetings	AB617-Meetings	8.00	-7.00	1.00	1,220,341	(1,067,024)	153,317	IX
3 60 033	I	CE	AB617-Inspections	AB617-Inspections	0.00	3.00	3.00	-	459,950	459,950	IX
4 60 034	I	CE	AB617-CERP	AB617-CERP	0.00	0.10	0.10	-	15,332	15,332	IX
5 60 036	I	CE	AB617-Complaints	AB617-Complaints	0.00	1.00	1.00	-	153,317	153,317	IX
6 44 042	I	STA	Admin/Office Mgmt/Compliance	Compliance: Assign/Manage/Supp	0.37	0.00	0.37	61,496	1,054	62,550	lb
7 60 070	I	CE	CARB PERP Program	CARB Audits/Statewide Equip Reg	6.00	0.00	6.00	915,255	4,645	919,901	XIX
8 08 072	I	LEG	Arch Ctgs - End User	Case Dispo/Rvw, Track, Prep NOV's	0.05	0.00	0.05	10,732	45	10,777	XVIII
9 26 072	I	PRA	Arch Ctgs - End User	Compliance/Rpts/Rule Implementation	1.00	-0.25	0.75	177,892	(44,423)	133,469	XVIII
10 44 072	I	STA	Arch Ctgs - End User	Sample Analysis/Rpts	2.00	0.00	2.00	332,413	5,698	338,111	XVIII
11 08 073	I	LEG	Arch Ctgs - Other	Case Dispo/Rvw, Track, Prep NOV's	0.05	0.00	0.05	10,732	45	10,777	XVIII
12 26 073	I	PRA	Arch Ctgs - Other	Compliance/Rpts/Rule Implementation	1.00	0.00	1.00	177,892	66	177,958	XVIII
13 26 076	I	PRA	Area Sources/Compliance	Area Source Compliance	4.50	0.00	4.50	820,514	298	820,812	III,IV,V,IX,XV
14 16 080	III	AHR	Auto Services	Vehicle/Radio Repair & Maint	3.00	1.00	4.00	509,809	159,217	669,026	la
15 60 093	I	CE	CARB Oil & Gas Reg.	GHG EM Stds Oil/NG Facilities	0.00	4.00	4.00	-	613,267	613,267	XVII
16 44 105	I	STA	CEMS Certification	CEMS Review/Approval	6.15	-1.15	5.00	1,022,171	(176,894)	845,277	II,III,VI
17 35 111	II	LPA	Call Center/CUT SMOG	Smoking Vehicle Complaints	8.00	0.00	8.00	1,425,793	(15,073)	1,410,719	IX,XV
18 08 115	I	LEG	Case Disposition	Trial/Dispo-Civil Case/Injunct	4.75	0.00	4.75	1,019,535	4,245	1,023,780	II,IV,V,VII,XV
19 60 152	III	CE	Compliance/IM Related Activiti	Assist IM: Design/Review/Test	0.50	-0.30	0.20	79,271	(44,608)	34,663	IV
20 08 154	I	LEG	Compliance/NOV Administration	Review/Track/Prep NOV's/MSAs	0.75	0.00	0.75	160,979	670	161,649	IV
21 60 155	I	CE	Compliance Guidelines	Procedures/Memos/Manuals	1.50	-1.25	0.25	228,814	(190,485)	38,329	IV
22 50 156	I	EP	Perm Proc/Info to Compliance	Prov Permit Info to Compliance	3.00	0.00	3.00	530,896	(10,646)	520,251	III,IV,XV
23 60 157	I	CE	Compliance/Special Projects	Prog Audits/Data Req/Brd Supp	3.00	1.00	4.00	457,628	155,639	613,267	II
24 60 158	I	CE	Compliance Testing	R461/Combustion Equip Testing	1.00	-0.50	0.50	164,543	(82,884)	81,658	IV
25 44 175	I	STA	DB/Computerization	Develop Systems/Database	0.44	0.00	0.44	73,131	1,253	74,384	II,IV,VI
26 08 185	I	LEG	Database Management	Support IM/Dev Tracking System	1.00	0.00	1.00	249,639	5,894	255,533	IV
27 26 215	I	PRA	AER Gen/Rev/Am/Aud	AER General/Review/Amend/Audit	11.00	0.00	11.00	2,061,812	(97,272)	1,964,540	II,V
28 08 235	I	LEG	Environmental Litigation	Maj Prosecutions/Civil Actions	2.00	0.00	2.00	429,278	1,788	431,065	IV
29 50 240	I	EP	Enforcement Justice	R461/Combustion Equip Testing	0.50	0.00	0.50	88,483	(1,774)	86,708	II,IV,XV
30 26 358	I	PRA	GHG Rules-Compl	Green House Gas Rules-Compliance	1.00	0.00	1.00	177,892	66	177,958	IV
31 17 364	I	CB	Hearing Board/Abatement Orders	Attn/Recrd/Monitr Mtgs	0.10	0.00	0.10	24,036	(108)	23,928	IV
32 17 365	I	CB	Hearing Board/Variations/Appeal	Attn/Recrd/Monitr HB Mtgs	3.20	0.00	3.20	854,361	(3,456)	850,905	IV,V,VII
33 50 365	I	EP	Hearing Bd/Variations	Variations/Orders of Abatement	0.75	0.00	0.75	132,724	(2,661)	130,063	VII
34 60 365	I	CE	Hearing Bd/Variations	Variations/Orders of Abatement	2.00	-1.75	0.25	305,085	(266,756)	38,329	VII
35 08 366	I	LEG	Hearing Board/Legal	Hear/Disp-Varian/Appeal/Rev	3.00	0.00	3.00	643,917	2,681	646,598	IV,V,XV
36 60 375	I	CE	Inspections	Compliance/Inspection/Follow-up	85.00	0.00	85.00	12,966,118	65,807	13,031,926	II,V,XV
37 50 377	I	EP	Inspections/RECLAIM Audits	Audit/Compliance Assurance	6.00	0.00	6.00	1,061,792	(21,291)	1,040,501	II,IV
38 60 377	I	CE	Inspections/RECLAIM Audits	Audit/Compliance Assurance	14.00	2.00	16.00	2,135,596	317,472	2,453,068	II,IV
39 08 380	I	LEG	Interagency Coordination	Coordinate with Other Agencies	0.20	0.00	0.20	42,928	179	43,107	II,V
40 08 403	III	LEG	Legal Rep/Litigation	Prep/Hearing/Disposition	3.50	0.00	3.50	912,237	(1,872)	910,365	la,II
41 44 450	I	STA	Microscopic Analysis	Asbestos/PM/Metals Analysis	2.00	1.00	3.00	332,413	174,753	507,166	VI
42 08 465	I	LEG	Mutual Settlement	Mutual Settlement Program	1.50	0.00	1.50	321,958	1,341	323,299	IV
43 50 492	I	EP	Customer Service	Compliance/Inspection/Follow-up	0.50	0.00	0.50	88,483	(1,774)	86,708	II,V,IX,XV
44 44 500	I	STA	PM2.5 Program	Est/Operate/Maint PM2.5 Network	10.30	0.00	10.30	1,711,928	29,342	1,741,271	II,V,IX
45 60 539	I	CE	Procedure 5 Review	Evaluate Proc 5 Asbestos Plans	0.40	2.60	3.00	61,017	398,933	459,950	XVII

A prorated share of the District General Budget has been allocated to each line in the work program based on the number of FTEs reflected on the line.

**Ensure Compliance (Cont.)  
Work Program by Category**

#	Program Code	Goal	Office	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Expenditures FY 2019-20	+/-	Expenditures FY 2020-21	Revenue Categories
46	60 550	II	CE	Public Complaints/Breakdowns	Comptresp/Invfwup/Resolutn	9.00	1.00	10.00	\$ 1,372,883	\$ 160,285	\$ 1,533,168	II,IV,V,XV
47	60 605	I	EP	RECLAIM/Admin Support	Admin/Policy/Guidelines	6.50	0.00	6.50	1,150,275	(23,065)	1,127,210	II,III,IV,XV
48	60 605	I	CE	RECLAIM/Admin Support	Admin/Policy/Guidelines	1.50	-0.25	0.25	76,271	(37,942)	38,329	II,III,IV,XV
49	26 620	I	PRA	Refinery Pilot Project	Refinery Pilot Project	1.80	1.00	2.80	381,206	178,077	559,283	II
50	26 645	I	PRA	Rule 1610 Plan Verification	Rule 1610 Plan Verification	0.50	0.00	0.50	88,946	33	88,979	V,IX
51	50 678	I	EP	School Siting	Identify Haz. Emission Sources near Schools	0.25	0.00	0.25	44,241	(887)	43,354	II
52	60 678	I	CE	School Siting	Identify Haz. Emission Sources near Schools	0.00	0.75	0.75	-	114,988	114,988	IV
53	50 680	I	EP	Small Business Assistance	Asst sm bus w/ Permit Process	0.50	0.00	0.50	88,483	(1,774)	86,708	III,IV
54	44 700	I	STA	Source Testing/Compliance	Conduct ST/Prov Data/Compl	2.25	0.00	2.25	403,965	6,410	410,375	VI
55	44 704	I	STA	ST/Sample Analysis/Compliance	Analyze ST Samples/Compliance	4.00	0.00	4.00	664,826	11,395	676,222	VI
56	44 707	I	STA	VOC Sample Analysis/Compliance	VOC Analysis & Rptg/Compliance	7.00	-0.50	6.50	1,200,446	(64,586)	1,135,860	IV,XV
57	44 716	I	STA	Special Monitoring	Rule 403 Compliance Monitoring	2.20	0.00	2.20	400,655	6,267	406,922	III,IV,IX,XV
58	60 771	I	CE	Title V	Title V Compl/Inspect/Follow Up	4.50	0.00	4.50	686,442	3,484	689,925	II,IV
59	04 791	III	FIN	Toxics/AB2588	AB2588 Toxics HS Fee Collection	0.15	0.00	0.15	37,447	(340)	37,107	X
60	08 791	I	LEG	Toxics/AB2588	AB2588 Legal Advice: Plan & Impl	0.05	0.00	0.05	10,732	45	10,777	X
61	27 791	III	IM	Toxics/AB2588	AB2588 Database Software Supp	0.50	0.00	0.50	139,176	1,015	140,191	X
62	50 791	I	EP	Toxics/AB2588	AB2588 Rev Rpts/Risk Redplans	0.25	0.00	0.25	44,241	(887)	43,354	X
63	60 791	I	CE	Toxics/AB2588	Risk Reduct Plan Rvw/Comm Mtgs	0.10	-0.10	0.00	15,254	(15,254)	-	X
64	26 794	I	PRA	Toxics/AB2588	AB2588/Toxics	13.00	0.00	13.00	2,312,596	860	2,313,456	X
65	44 794	I	STA	Toxics/AB2588	Eval Protocols/Methods/ST	3.25	-1.25	2.00	540,171	(202,061)	338,111	X
66	44 795	I	STA	Toxics/Engineering	R1401 Toxics/HRA Prot/Rpt Eval	0.05	1.25	1.30	8,310	211,462	219,772	VI,X
67	08 805	III	LEG	Training	Continuing Education/Training	0.75	0.00	0.75	160,979	670	161,649	lb

260.61	5.10	265.71	\$ 43,912,181	\$ 842,898	\$ 44,755,079
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**Total Ensure Compliance**

**Monitoring Air Quality  
Work Program by Category**

#	Program Code	Goal	Office	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Expenditures FY 2019-20	+/-	Expenditures FY 2020-21	Revenue Categories
1	44 035	I	STA	AB617-General	AB617-General	0.00	0.50	0.50	\$ -	\$ 84,528	\$ 84,528	IX
2	44 036	I	STA	AB617-Monitoring	AB617-Monitoring	39.00	0.00	39.00	6,482,058	111,102	6,593,160	IX
3	44 038	I	STA	Admin/Office Mgmt/Monitoring	Overall Program Mgmt/Coord	1.40	-0.50	0.90	232,689	(80,539)	152,150	IX
4	44 046	I	STA	Admin/Program Management	STA Program Administration	2.00	0.00	2.00	344,413	5,698	350,111	IX
5	26 061	I	PRA	Air Quality Evaluation	Air Quality Evaluation	2.50	-0.50	2.00	444,730	(88,814)	355,916	IX
6	44 063	I	STA	Ambient Air Analysis	Analyze Criteria/Tox/Pollutants	8.91	0.00	8.91	1,480,901	25,383	1,506,284	II,V,IX
7	44 064	I	STA	Ambient Network	Air Monitoring/Toxics Network	18.05	2.50	20.55	3,107,629	474,059	3,581,688	II,V,IX
8	44 065	I	STA	Air Quality Data Management	AM Audit/Validation/Reporting	1.00	0.00	1.00	166,207	2,849	169,055	II,V,IX
9	44 067	II	STA	Ambient Lead Monitoring	Lead Monitoring/Analysis/Reporting	0.50	0.00	0.50	83,103	1,424	84,528	IV
10	44 073	I	STA	Arch Cigs - Other	Sample Analysis/Rpts	2.00	0.00	2.00	332,413	5,698	338,111	XVIII
11	44 079	II	STA	AQ-SPEC	AQ-SPEC	6.19	0.00	6.19	1,028,819	17,634	1,046,453	XVII
12	44 081	I	STA	Air Filtration EPA	Air Filtration EPA/Admn/Impl	0.15	0.00	0.15	24,931	427	25,358	V
13	44 082	I	STA	Air Filtration Other	Air Filtration Other/Admn/Impl	0.10	0.00	0.10	16,621	285	16,906	XVII
14	60 210	II	CE	Emergency Response	Emerg Tech Asst to Public Saf	0.10	0.00	0.10	15,254	77	15,332	IV,XV
15	44 240	I	STA	Environmental Justice	Implement Environmental Justice	0.45	-0.45	0.00	74,793	(74,793)	-	II,IX
16	44 248	I	STA	EPA Community Scale AQ-SPEC	EPA Community Scale AQ-SPEC	1.00	0.00	1.00	166,207	2,849	169,055	V,XVII
17	26 443	I	PRA	MATES V	MATES V	0.30	0.90	1.20	63,368	170,182	233,550	XVII
18	26 444	I	PRA	MATES V Refinery	MATES V Refinery	0.10	0.00	0.10	17,789	7	17,796	XVII
19	26 445	I	PRA	Meteorology	ModelDev/Data Analysis/Forecast	2.50	-0.50	2.00	569,730	(88,814)	480,916	II,V,IX
20	44 468	I	STA	NATTS(Nat Air Tox Trends Sta)	NATTS (Nat Air Tox Trends)	1.00	0.00	1.00	166,207	2,849	169,055	II,V,IX
21	44 469	I	STA	Near Roadway Mon	Near Roadway Monitoring	1.50	-1.50	0.00	249,310	(249,310)	-	IV,V,IX
22	44 505	I	STA	PM Sampling Program (DHS)	PM Sampling Program - Addition	8.41	0.00	8.41	1,397,798	23,958	1,421,756	V
23	44 507	I	STA	PM Sampling Spec	PM Sampling Special Events	0.10	0.00	0.10	16,621	285	16,906	V
24	44 530	I	STA	Photochemical Assessment	Photochemical Assess & Monitor	3.00	0.00	3.00	498,620	8,546	507,166	V,IX
25	44 585	I	STA	Quality Assurance	Quality Assurance Branch	7.00	-1.00	6.00	1,163,446	(149,114)	1,014,332	II,V,IX
26	44 646	I	STA	R1180 Community Mon	R1180 Comm Monitoring Refinery	9.00	5.00	14.00	1,495,860	1,651,916	3,147,775	XVII
27	44 663	I	STA	Salton Sea Monit	Mon/Analyze Hydrogen Sulfide	0.25	0.00	0.25	41,552	712	42,264	XVII
28	44 715	II	STA	Spec Monitoring/Emerg Response	Emergency Response	0.50	0.00	0.50	83,103	1,424	84,528	II
<b>Total Monitoring Air Quality</b>						117.01	4.45	121.46	\$ 19,764,170	\$ 1,860,508	\$ 21,624,679	



**Operational Support  
Work Program by Category**

Program Code	Goal	Office	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Expenditures FY 2019-20	+/-	Expenditures FY 2020-21	Revenue Categories
1 04 020	III	FIN	Admin/SCAQMD Budget	Analyze/Prepare/Imp/Track WP	2.65	0.06	2.71	\$ 396,558	\$ 2,835	\$ 399,393	la
2 04 021	III	FIN	Admin/SCAQMD Contracts	Contract Admin/Monitor/Process	3.20	0.00	3.20	478,862	(7,255)	471,608	la
3 04 023	III	FIN	Admin/SCAQMD Capital Assets	FA Rep/Reconcile/Inv/Acct	0.70	0.00	0.70	104,751	(1,587)	103,164	la
4 17 024	III	CB	Admin/SCAQMD/GB/HB Mgmt	Admin Governing/Hearing Brds	1.25	0.00	1.25	300,454	(1,350)	299,103	la,VII,XV
5 08 025	III	LEG	Admin/SCAQMD-Legal Research	Legal Research/Staff/Exec Mgmt	1.20	0.00	1.20	257,567	1,073	258,639	la
6 16 026	III	AHR	SCAQMD Mail	Posting/Mailing/Delivery	2.30	0.00	2.30	390,853	(6,164)	384,690	la
7 04 035	I	FIN	AB617-General	AB617-General	0.50	0.00	0.50	74,822	(1,134)	73,689	IX
8 08 035	I	LEG	AB617-General	AB617-General	2.50	0.00	2.50	536,597	2,234	538,832	IX
9 16 035	I	AHR	AB617-General	AB617-General	3.00	1.00	4.00	509,809	159,217	669,026	IX
10 27 035	I	IM	AB617-General	AB617-General	8.00	0.00	8.00	1,602,796	16,240	1,619,036	IX
11 03 038	III	EO	Admin/Office Management	Budget/Program Management	1.00	0.00	1.00	331,742	(16,890)	314,853	lb
12 04 038	III	FIN	Admin/Office Management	Fin Mgmt/Oversee Activities	2.75	0.00	2.75	287,657	117,631	405,288	lb
13 08 038	III	LEG	Admin/Office Management	Attorney Timekeeping/Perf Eval	3.50	0.00	3.50	758,486	3,128	761,614	lb
14 16 038	III	AHR	Admin/Office Management	Reports/Proj/Budget/Contracts	3.85	2.15	6.00	688,852	331,687	1,020,538	lb
15 27 038	III	IM	Admin/Office Management	Overall Direction/Coord of IM	2.00	0.00	2.00	417,773	(13,014)	404,759	lb
16 04 045	III	FIN	Admin/Office Budget	Office Budget/Prep/Imp/Track	0.05	0.00	0.05	7,482	(113)	7,369	lb
17 16 060	III	AHR	Equal Employment Opportunity	Program Dev/Monitor/Reporting	0.10	-0.05	0.05	16,994	(8,631)	8,363	la
18 04 071	I	FIN	Arch Ctgs - Admin	Cost Analysis/Payments	0.04	0.00	0.04	5,986	(91)	5,895	XVIII
19 08 071	I	LEG	Arch Ctgs - Admin	Rule Dev/TA/Reinterpretations	0.05	0.00	0.05	10,732	45	10,777	XVIII
20 27 071	I	IM	Arch Ctgs - Admin	Database Dev/Maintenance	0.25	0.00	0.25	50,087	507	50,595	XVIII
21 04 085	III	FIN	Building Corporation	Building Corp Acct/Fin Reports	0.02	0.00	0.02	2,993	(45)	2,948	la
22 16 090	III	AHR	Building Maintenance	Repairs & Preventative Maint	8.00	0.00	8.00	1,359,490	(21,439)	1,338,051	la
23 16 092	III	AHR	Business Services	Building Services Admin/Contracts	2.55	0.14	2.69	433,337	16,582	449,920	la
24 08 102	II	LEG	CEQA Document Projects	CEQA Review	0.75	0.00	0.75	160,979	670	161,649	II,III,IX
25 27 160	III	IM	Computer Operations	Oper/Manage Host Computer Sys	5.25	0.00	5.25	1,478,185	9,807	1,487,992	la
26 27 173	III	IM	CyberSecurity	CyberSecurity	0.00	1.00	1.00	-	202,379	202,379	la
27 27 184	III	IM	Database Information Support	Ad Hoc Reports/Bulk Data Update	1.00	0.00	1.00	214,379	2,030	216,408	la
28 27 185	III	IM	Database Management	Dev/Maintain Central Database	2.25	0.00	2.25	450,786	4,567	455,354	la
29 27 215	I	IM	Annual Emission Reporting	System Enhancements for GHG	0.50	0.00	0.50	100,175	1,015	101,190	II,XVII
30 16 225	III	AHR	Employee Benefits	Benefits Analysis/Orient/Records	1.50	1.00	2.50	254,904	163,237	418,141	la
31 16 226	III	AHR	Classification & Pay	Class & Salary Studies	0.30	0.02	0.32	50,981	2,541	53,522	la
32 08 227	III	LEG	Employee/Employment Law	Legal Advice: Employment Law	0.50	0.00	0.50	107,319	447	107,766	la
33 16 228	III	AHR	Recruitment & Selection	Recruit Candidates for SCAQMD	3.25	-0.95	2.30	623,043	(187,353)	435,690	la
34 16 232	III	AHR	Position Control	Track Positions/Workforce Analysis	0.55	-0.35	0.20	93,465	(60,014)	33,451	la
35 04 233	III	FIN	Employee Relations	Assist HR/Interpret Salary Res	0.10	0.00	0.10	14,964	(227)	14,738	la
36 16 233	III	AHR	Employee Relations	Meet/Confer/Labor-Mgmt/Grievance	2.20	-0.70	1.50	373,860	(122,975)	250,885	la
37 16 255	III	AHR	Facilities Services	Phones/Space/Keys/Audio-Visual	1.00	0.00	1.00	169,936	(2,680)	167,256	la
38 04 265	III	FIN	Financial Mgmt/Accounting	Record Accts Rec & Pay/Rpts	6.20	1.07	7.27	983,324	146,638	1,129,962	la
39 04 266	III	FIN	Financial Mgmt/Fin Analysis	Fin/SCAQMD Stat Analysis & Audit	0.80	0.00	0.80	119,716	(1,814)	117,902	la
40 04 267	III	FIN	Financial Mgmt/Treasury Mgmt	Treas Mgt Anlyz/Trk/Proj/Invst	1.00	0.00	1.00	234,294	(2,267)	232,027	la
41 04 268	III	FIN	Financial Systems	CLASS/Rev/Acct/PR/Sys Analyze	0.10	0.00	0.10	14,964	(227)	14,738	la
42 02 275	II	GB	Governing Board	Rep of Dist Meet/Conf/Testimony	0.00	0.00	0.00	1,843,587	(183,357)	1,660,230	la
43 08 275	III	LEG	Governing Board	Legal Advice-Attend Board/Cmte Mtgs	1.00	0.00	1.00	214,639	894	215,533	la
44 17 275	III	CB	Governing Board	Attend/Record/Monitor Meetings	1.40	0.00	1.40	336,508	(1,512)	334,996	la
45 35 350	III	LPA	Graphic Arts	Graphic Arts	2.00	0.00	2.00	356,448	(3,768)	352,680	la

A prorated share of the District General Budget has been allocated to each line in the work program based on the number of FTEs reflected on the line.

**Operational Support (Cont.)  
Work Program by Category**

Program Code	Goal	Office	Program	Activities	FTEs FY 2019-20	FTEs FY 2020-21 +/-	FTEs FY 2020-21	Expenditures FY 2019-20	Expenditures FY 2020-21 +/-	Expenditures FY 2020-21	Revenue Categories
46 27 370	III	IM	Information Technology Svcs	Enhance Oper Effic/Productivity	2.75	0.00	2.75	\$ 573,711	\$ 5,582	\$ 579,294	la
47 08 401	III	LEG	Legal Advice/SCAQMD Programs	General Advice: Contracts	2.00	0.00	2.00	479,278	1,788	481,065	la
48 27 420	III	IM	Library	General Library Svcs/Archives	0.25	0.00	0.25	58,437	507	58,945	la
49 16 446	III	AHR	Mentorship Program	Mentorship Program	0.00	0.10	0.10	-	16,726	16,726	la
50 04 447	I	FIN	Mobile Sources/Accounting	Record Acct Rec & Pay/Special Funds	0.65	0.00	0.65	97,269	(1,474)	95,795	IX
51 27 470	III	IM	Network Operations/Telecomm	Operate/Maintain/Implem SCAQMD	9.25	-1.00	8.25	2,139,731	(182,752)	1,956,979	la
52 27 480	III	IM	New System Development	Dev sys for special oper needs	2.50	-0.50	2.00	552,546	(96,115)	456,431	II,IV
53 04 493	II	FIN	Outreach/SB/MB/DVBE	Outreach/incr SB/DVBE Partic	0.05	0.00	0.05	7,482	(113)	7,369	la
54 04 510	III	FIN	Payroll	Ded/Ret Rpts/PR/St & Fed Rpts	4.10	0.00	4.10	661,042	(9,295)	651,747	la
55 04 570	III	FIN	Purchasing	Purch/Track Svcs & Supplies	2.50	0.00	2.50	374,111	(5,668)	368,444	la
56 04 571	III	FIN	Purchasing/Receiving	Receive/Record SCAQMD Purchases	1.20	0.00	1.20	179,573	(2,720)	176,853	la
57 04 572	III	FIN	Purchasing-Receiving/Stockroom	Track/Monitor SCAQMD Supplies	1.00	0.00	1.00	149,644	(2,267)	147,377	la
58 27 615	III	IM	Records Information Mgmt Plan	Plan/Imp/Dir/Records Mgmt plan	1.25	0.00	1.25	294,078	2,537	296,615	la
59 27 616	III	IM	Records Services	Records/Documents processing	3.75	0.00	3.75	896,311	7,612	903,923	la,III,IV
60 04 630	III	FIN	Cash Mgmt/Revenue Receiving	Receive/Post Pymts/Reconcile	5.25	0.00	5.25	785,633	(11,902)	773,731	II,III,IV,XI
61 16 640	III	AHR	Risk Management	Liab/Property/Wk Comp/Selfins	2.25	0.00	2.25	457,357	19,720	477,077	la
62 27 735	III	IM	Systems Maintenance	Maintain Existing Software Prog	4.50	0.00	4.50	1,346,777	9,134	1,355,911	II,III,IV
63 27 736	III	IM	Systems Implementation/PeopleS	Fin/HR PeopleSoft Systems Impl	1.50	0.00	1.50	300,524	3,045	303,569	la
64 04 805	III	FIN	Training	Continuing Education/Training	0.20	0.00	0.20	29,929	(453)	29,475	lb
65 26 805	III	PRA	Training	Training	0.54	0.00	0.54	96,062	36	96,097	lb
66 50 805	III	EP	Training	Dist/Org Unit Training	3.10	0.00	3.10	548,593	(11,000)	537,592	lb
67 60 805	III	CE	Training	Dist/Org Unit Training	2.00	2.00	4.00	305,085	308,182	613,267	lb
68 04 825	III	FIN	Union Negotiations	Official Labor/Mgmt Negotiate	0.02	0.00	0.02	2,993	(45)	2,948	la
69 26 825	III	PRA	Union Negotiations	Official Labor/Mgmt Negotiate	0.04	0.00	0.04	7,116	3	7,118	la
70 35 825	III	LPA	Union Negotiations	Official Labor/Mgmt Negotiate	0.01	0.00	0.01	1,782	(19)	1,763	la
71 44 825	III	STA	Union Negotiations	Labor/Mgmt Negotiations	0.05	0.00	0.05	8,310	142	8,453	la
72 50 825	III	EP	Union Negotiations	Official Labor/Mgmt Negotiate	0.05	0.00	0.05	8,848	(177)	8,671	la
73 60 825	III	CE	Union Negotiations	Official Labor/Mgmt Negotiate	0.10	0.00	0.10	15,254	77	15,332	la
74 04 826	III	FIN	Union Steward Activities	Rep Employees in Grievance Act	0.01	0.00	0.01	1,496	(23)	1,474	la
75 26 826	III	PRA	Union Steward Activities	Rep Employees in Grievance Act	0.08	0.00	0.08	14,231	5	14,237	la
76 35 826	III	LPA	Union Steward Activities	Union Steward Activities	0.01	0.00	0.01	1,782	(19)	1,763	la
77 44 826	III	STA	Union Steward Activities	Rep Employees in Grievance Act	0.05	0.00	0.05	8,310	142	8,453	la
78 50 826	III	EP	Union Steward Activities	Rep Employees in Grievance Act	0.05	0.00	0.05	8,848	(177)	8,671	la
79 60 826	III	CE	Union Steward Activities	Rep Employees in Grievance Act	0.10	0.00	0.10	15,254	77	15,332	la
80 04 827	I	FIN	VW-General Admin	VW-General Admin	1.00	0.00	1.00	149,644	(2,267)	147,377	XVII
81 27 827	I	IM	VW-General Admin	VW-General Admin	0.00	1.00	1.00	-	202,379	202,379	XVII
82 03 855	II	EO	Web Tasks	Create/edit/review web content	0.03	0.00	0.03	9,399	47	9,446	la
83 04 855	II	FIN	Web Tasks	Create/edit/review web content	0.02	0.00	0.02	2,993	(45)	2,948	la
84 17 855	II	CB	Web Tasks	Create/edit/review web content	0.03	0.00	0.03	7,211	(32)	7,178	la
85 26 855	II	PRA	Web Tasks	Create/edit/review web content	0.10	-0.05	0.05	17,789	(8,891)	8,898	la
86 27 855	II	IM	Web Tasks	Create/edit/review web content	3.25	0.00	3.25	933,354	6,597	939,951	la
87 35 855	II	LPA	Web Tasks	Create/edit/review web content	0.40	0.00	0.40	71,290	(754)	70,536	la
88 50 855	II	EP	Web Tasks	Creation/Update of Web Content	0.25	0.00	0.25	44,241	(887)	43,354	la
89 60 855	II	CE	Web Tasks	Creation/Update of Web Content	1.50	-1.40	0.10	228,814	(213,482)	15,332	la

<b>Total Operational Support</b>	138.85	4.54	143.39	\$ 29,113,274	\$ 575,261	\$ 29,688,534
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A prorated share of the District General Budget has been allocated to each line in the work program based on the number of FTEs reflected on the line.

Policy Support Work Program by Category										
Program Code	Goal	Office	Program	Activities	FTEs FY 2019-20 +/-	FTEs FY 2020-21 +/-	Expenditures FY 2019-20 \$	Expenditures FY 2020-21 +/- \$	Expenditures FY 2020-21 \$	Revenue Categories
1 44 041	I	STA	Admin/Office Mgmt/Policy Supp	Overall Policy Supp/Mgmt/Coord	0.49	0.00	\$ 81,441	\$ 1,396	\$ 82,837	lb
2 03 083	II	EO	Hlth Effects Air Pollution Fou	Health Effects Air Poll Foundation Support	0.01	0.00	3,133	16	3,149	la
3 04 083	II	FIN	Hlth Effects Air Pollution Fou	Health Effects Air Poll Foundation Support	0.02	0.00	2,993	(45)	2,948	la
4 26 083	II	PRA	Hlth Effects Air Pollution Fou	Health Effects Air Poll Foundation Support	0.10	0.00	17,789	7	17,796	la,II,IV
5 26 148	I	PRA	Climate/Energy/Incentives	GHG/Climate Change Policy Development	2.00	-1.50	355,784	(266,805)	88,979	IV,XVII
6 50 148	I	EP	Climate/Energy/Incentives	GHG/Climate Change Support	0.50	0.00	88,483	(1,774)	86,708	II,IX
7 26 240	I	PRA	EJ-AQ Guidance Document	AQ Guidance Document	0.10	-0.10	17,789	(17,789)	-	II,IX
8 03 275	I	EO	Governing Board	Board/Committee Support	1.72	0.00	538,849	2,698	541,547	la
9 26 276	I	PRA	Advisory Group/Home Rule	Governing Board Advisory Group	0.50	0.00	88,946	33	88,979	la
10 44 276	I	STA	Advisory Group/Technology Adva	Tech Adv Advisory Group Supp	0.10	0.00	16,621	285	16,906	VIII
11 50 276	I	EP	Board Committees	Admin/Statory Source Committees	0.25	0.00	44,241	(887)	43,354	la
12 60 276	I	CE	Board Committees	Admin/Statory Source Committee	0.15	-0.05	22,881	(7,550)	15,332	la
13 26 277	I	PRA	Advisory Group/AQMP	Governing Board AQMP Advisory Group	0.05	0.45	8,895	80,084	88,979	II,IX
14 26 278	I	PRA	Advisory Group/Sci,Tech,Model	Scientific/Tech/Model Peer Rev	0.10	0.30	17,789	53,394	71,183	II,IX
15 35 280	I	LPA	Advisory Group/Ethnic Comm	GB Ethnic Comm Advisory Group	0.40	0.00	71,290	(754)	70,536	II,IX
16 35 281	I	LPA	Advisory Group/Small Business	SBA Advisory Group Staff Support	0.50	0.00	89,112	(942)	88,170	IV,IX
17 35 283	I	LPA	Governing Board Policy	Brd sup/Respond to GB req	0.55	0.00	98,023	(1,036)	96,987	la
18 35 345	II	LPA	Goods Mivmt&Financial Incentive	Goods Movement & Financial Incentives Progr	1.00	0.00	178,224	(1,884)	176,340	IX
19 03 381	I	EO	Interagency Liaison	Local/State/Fed Coord/Interact	0.71	0.00	222,432	1,114	223,545	la,IX
20 08 404	I	LEG	Legal Rep/Legislation	Draft Legis/SCAQMD Position/Mtgs	0.25	0.00	53,660	223	53,883	II,IX
21 03 410	I	EO	Legislation	Testimony/Mtgs:New/Current Leg	0.03	0.00	9,399	47	9,446	la,IX
22 44 410	I	STA	Legislation	Support Pollution Reduction thru Legislatio	0.50	0.00	83,103	1,424	84,528	IX
23 35 412	I	LPA	Legislation/Federal	Lobbying/Analyses/Tracking/Out	0.25	0.00	709,686	(471)	709,215	la
24 35 413	I	LPA	Legislation/Exec Office Support	Coord Legis w/ EO, EC, Mgmt	0.25	0.00	44,556	(471)	44,085	la
25 35 414	I	LPA	Legislation-Effects	Lobbying/Analyses/Tracking/Out	0.80	0.00	152,579	(1,507)	151,072	la,IX
26 03 416	I	EO	Legislative Activities	Supp/Promote/Influence Legis/Adm	0.03	0.00	9,399	47	9,446	la
27 08 416	I	LEG	Legislative Activities	Lobbying: Supp/Promote/Influence legis/Adm	0.10	0.00	21,464	89	21,553	la
28 26 416	I	PRA	Legislative Activities	Supp/Promote/Influence Legis/Adm	0.50	0.00	88,946	33	88,979	la
29 35 416	I	LPA	Legislative Activities	Supp/Promote/Influence Legis/Adm	0.50	0.00	454,112	(942)	453,170	la
30 50 416	I	EP	Legislative Activities	Legislative Activities	0.25	0.00	44,241	(887)	43,354	la
31 35 494	I	LPA	Outreach/Collateral/Media	Edits,Brds,Talk shows,Commercl	5.60	0.00	1,162,771	(10,551)	1,152,220	la
32 08 717	II	LEG	Student interns	Gov Board/Student Intern Program	0.10	0.00	21,464	89	21,553	la
33 16 717	II	AHR	Student interns	Gov Board/Student Intern Program	4.20	-4.20	713,732	(713,732)	-	la
34 26 717	II	PRA	Student interns	Gov Bd/Student Intern Program	0.50	0.00	88,946	33	88,979	la
35 35 717	II	LPA	Student interns	Student interns	0.10	0.00	17,822	(188)	17,634	la
36 60 717	II	CE	Student interns	Gov Board/Student Intern Program	0.05	0.05	7,627	7,705	15,332	la
					23.26	(5.05)	\$ 5,648,222	\$ (879,500)	\$ 4,768,722	

**Total Policy Support**

**Timely Review of Permits  
Work Program by Category**

#	Program Code	Goal	Office	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Expenditures FY 2019-20	+/-	Expenditures FY 2020-21	Revenue Categories
1	50 120	I	EP	Certification/Registration Pro	Certification/Registration Prog	1.00	0.00	1.00	\$ 176,965	\$ (3,549)	\$ 173,417	III
2	50 253	I	EP	ERC Appl/Processing	Process ERC Applications	3.50	0.00	3.50	619,379	(12,420)	606,959	III
3	50 367	I	EP	Hearing Board/Appeals	Appeals: Permits & Denials	0.25	0.00	0.25	44,241	(887)	43,354	III
4	26 461	I	PRA	Permit & CEQA Modeling Review	Review Model Permit/Risk Assmt	1.00	0.00	1.00	202,892	66	202,958	III
5	50 475	I	EP	NSR Implementation	Implement NSR/Allocate ERCs	2.50	0.00	2.50	442,413	(8,871)	433,542	II,III,V,XV
6	50 476	I	EP	NSR Data Clean Up	Edit/Update NSR Data	0.50	0.00	0.50	88,483	(1,774)	86,708	II
7	50 515	I	EP	Perm Proc/Non TV/Non RECLAIM	PP: Non TIRV/TIRIII/RECLAIM	50.25	0.00	50.25	8,924,511	(154,313)	8,770,198	III,XV
8	08 516	I	LEG	Permit Processing/Legal	Legal Advice: Permit Processing	0.10	0.00	0.10	21,464	89	21,553	III
9	50 517	I	EP	Permit Services	Facility Data-Creates/Edit	12.50	0.00	12.50	2,212,067	(44,357)	2,167,711	III,XV
10	50 518	I	EP	RECLAIM Non-Title V	Process RECLAIM Only Permits	4.00	0.00	4.00	707,862	(14,194)	693,667	III,IV,XV
11	50 519	I	EP	Perm Proc/Title III (Non TV)	Process Title III Permits	1.00	0.00	1.00	176,965	(3,549)	173,417	III
12	50 521	I	EP	Perm Proc/Expedited Permit	Proc Expedited Permits (301OT)	4.00	0.00	4.00	707,862	(14,194)	693,667	III
13	27 523	III	IM	Permit Streamlining	Permit Streamlining	0.25	0.00	0.25	50,087	507	50,595	III
14	50 523	I	EP	Permit Streamlining	Permit Streamlining	4.75	0.00	4.75	840,586	(16,855)	823,730	III
15	44 545	I	STA	Protocols/Reports/Plans	Eval Test Protocols/Cust Svc	0.10	0.00	0.10	16,621	285	16,906	III,IV
16	44 546	I	STA	Protocols/Reports/Plans	Eval Test Protocols/Compliance	6.15	0.00	6.15	1,022,171	17,520	1,039,691	IV,VI
17	50 607	I	EP	RECLAIM & Title V	Process RECLAIM & TV Permits	18.40	0.00	18.40	3,256,163	(65,293)	3,190,870	III
18	50 643	I	EP	Rule 222 Filing Program	Rule 222 Filing Program	0.50	0.00	0.50	88,483	(1,774)	86,708	IV
19	35 680	I	LPA	Small Business/Permit Streamlin	Asst sm bus to comply/SCAQMD req	3.95	0.00	3.95	703,985	(7,442)	696,543	I,III,IV,V,XV
20	44 725	I	STA	Permit Processing/Support E&C	Assist EAC w/ Permit Process	0.05	0.30	0.35	8,310	50,859	59,169	III
21	50 728	I	EP	Perm Proc/IM Programming	Assist IM: Design/Review/Test	2.55	0.00	2.55	451,262	(9,049)	442,213	I,III,IV
22	08 770	I	LEG	Title V	Leg Advice: Title V Prog/Perm Dev	0.05	0.00	0.05	10,732	45	10,777	I,IV
23	27 770	I	IM	Title V	Dev/Maintain Title V Program	1.50	0.00	1.50	300,524	3,045	303,569	III
24	08 772	I	LEG	Title V Permits	Leg Advice: New Source Title V Permit	0.05	0.00	0.05	10,732	45	10,777	III
25	50 774	I	EP	TV/Non-RECLAIM	Process Title V Only Permits	18.00	0.00	18.00	3,185,377	(63,873)	3,121,504	III
26	50 775	I	EP	Title V - Admin	Title V Administration	1.00	0.00	1.00	176,965	(3,549)	173,417	III

**Total Timely Review of Permits**      137.90      0.30      138.20      \$ 24,447,102      \$ (353,482)      \$ 24,093,620

**Total South Coast AQMD**      939.00      7.00      946.00      \$ 170,896,725      \$ 2,092,256      \$ 172,988,981

## WORK PROGRAM GLOSSARY

**Below are descriptions of the activities related to the Work Program.**

**AB 134** – under the Community Air Protection Program, funding from CARB is distributed to air districts for the implementation of projects pursuant to the Carl Moyer Memorial Air Quality Standards Attainment Program. (See Carl Moyer Program).

**AB 617** – Community Air Protection Program (to improve air quality in disadvantaged communities with high cumulative exposure through monitoring and emission reduction plans.

**AB 1318 Mitigation** - an eligible electrical generating facility shall pay mitigation fees for the transfer of emission credits from South Coast AQMD's internal emission credit accounts. Mitigation fees shall be used to finance emission reduction projects, pursuant to the requirements of AB 1318.

**AB 2766** (Mobile Sources, MSRC) - programs funded from motor vehicle registration fees. The activities include: evaluation, monitoring, technical assistance, and tracking of AB2766 Subvention Fund Program progress reports including cost-effectiveness and emissions reductions achieved; supporting programs implemented by the Mobile Source Review Committee (MSRC); disbursing and accounting for revenues subvended to local governments; and performing South Coast AQMD activities related to reduction of emissions from mobile sources.

**Acid Rain Program** - developing and implementing the Continuous Emissions Monitoring (CEMS) Program in compliance with 40 CFR Part 75 of the Clean Air Act.

**Administration/South Coast AQMD** - supporting the administration of South Coast AQMD. Examples are tracking fixed assets, operating the mailroom, preparing and reviewing contracts, conducting oversight of South Coast AQMD activities, developing District-wide policies and procedures, preparing the South Coast AQMD budget, providing legal advice on South Coast AQMD programs and other activities, and performing activities in support of South Coast AQMD as a whole.

**Admin/South Coast AQMD Capital Assets (Asset Management)** – tracking of acquisitions, disposals/retirements and reconciliation of capital assets to the Capital Outlays account, and conducting annual lab and biennial asset inventories.

**Administration/Office Management** - supporting the administration of an organizational unit or a unit within an Office. This includes preparing Office budgets, tracking programs, providing overall direction and coordination, providing program management and integration, preparing policies and procedures manuals, and preparing special studies and projects.

**Advisory Group** – providing support to various groups such as: AQMP (Air Quality Management Plan), Environmental Justice, Home Rule, Local Government and Small Business Assistance, Technology Advancement, and Permit Streamlining Task Force.

## WORK PROGRAM GLOSSARY

**Air Filtration** - installation of high-efficiency air filtration devices in schools with the goal of reducing children's exposure to particulate matter in the classroom.

**Air Quality Evaluation** - analyzing air quality trends and preparing the Reasonable Further Progress (RFP) report.

**Ambient Air Analysis/Ambient Network** (Audit, Data Reporting, Special Monitoring) – complying with Federal regulations to monitor air quality for criteria pollutants at air monitoring stations to determine progress toward meeting the federal ambient air quality standards. This includes operating South Coast AQMD's air monitoring network and localized monitoring at landfill sites as well as conducting specialized monitoring in response to public nuisance situations. South Coast AQMD monitoring stations also collect samples which are analyzed by South Coast AQMD's laboratory. Also see Special Monitoring.

**Ambient Lead Monitoring** – maintaining the current ambient lead monitoring network to meet federal monitoring requirements.

**Annual Emission Reporting (AER)** – implementing the AER Program and tracking actual emissions reported by facilities, conducting audits of data, handling refunds, and preparing inventories and various reports.

**Annual Emission Reporting Program Public Assistance** - providing public assistance in implementing South Coast AQMD's AER program by conducting workshops, resolving fee-related issues, and responding to questions.

**AQIP Evaluation** – provides incentive funding for projects to meet VOC, NO<sub>x</sub>, and CO emission targets with funds generated from companies who pay fees in lieu of carpool programs. Projects are funded through a semi-annual solicitation process.

**AQMP** (Air Quality Management Plan) – Management Plan for the South Coast Air Basin and the Interagency AQMP Implementation Committee.

**Air Quality Sensor Performance Evaluation Center (AQ-SPEC)** - program to test commercially available, low-cost air quality sensors.

**Architectural Coatings** – Rule 314 requires architectural coatings manufacturers which distribute and/or sell their manufactured architectural coatings within South Coast AQMD for use in the South Coast AQMD to submit an Annual Quantity and Emissions Report. To recover the cost of the program, a fee is assessed to these manufacturers. The fee is based on the quantity of coatings sold as well as the cumulative emissions from the quantity of coatings distributed or sold for use in the South Coast AQMD.

**Area Sources/Compliance** – developing rules and compliance programs, as well as alternatives to traditional permitting for smaller sources of emissions of VOCs and NO<sub>x</sub>.

## WORK PROGRAM GLOSSARY

**Auto Services** - maintaining South Coast AQMD's fleet of automobiles, trucks, and vans as well as providing messenger services as needed.

**Billing Services** - administering South Coast AQMD's permit billing system, responding to inquiries, and resolving issues related to fees billed.

**Board Committees** - participation in Governing Board committees by preparing materials, presenting information on significant or new programs and providing technical expertise.

**Building Corporation** - managing the South Coast AQMD Building Corporation. The Building Corporation issued Installment Sale Revenue Bonds in conjunction with the construction of South Coast AQMD's Diamond Bar headquarters facility.

**Building Maintenance** - maintaining and repairing the Diamond Bar Headquarters facility and South Coast AQMD air monitoring sites.

**Business Services** – overseeing operation of Facilities Services, Automotive Services, Print Shop and Mail/Subscriptions Services; negotiating and administering leases for the Diamond Bar facility, Long Beach Office, and air monitoring stations.

**California Natural Gas Vehicle Partnership** – strategic, non-binding partnership formed to work together in developing and deploying natural gas vehicles and implementing a statewide natural gas infrastructure.

**Call Center** - operates the 24-hour radio communication system via telephone between South Coast AQMD headquarters and the public/field staff.

**CARB Oil & Gas** - Memorandum of Agreement (MOA) with CARB to coordinate the enforcement of CARB's Oil and Natural Gas Regulation for the implementation and enforcement of greenhouse gas emission standards for crude oil and natural gas facilities pursuant to California Health and Safety Code section 40701.

**CARB PERP (Portable Equipment Registration Program)** – a program established by CARB allowing the operation of portable equipment in any air district throughout the state without individual local district permits. Amended to enhance enforceability and expand CARB's requirements for portable engines and equipment units, creating a more comprehensive and inclusive statewide registration program that now provides for triennial inspection and renewal of PERP registration.

**Carl Moyer Program** – provides incentive funding for the repower, replacement, or purchase of new heavy-duty vehicles and equipment beyond the emission limits mandated by regulations. Awards are granted through an annual solicitation process. Separate program announcements

## WORK PROGRAM GLOSSARY

are also issued for pre-1990 diesel Class 7 or 8 truck fleet and ports truck fleet modernization programs. Also see Mobile Sources.

**Case Disposition** - resolving Notices of Violation (NOV) issued by South Coast AQMD inspectors. This includes preparing both civil and criminal cases and administering South Coast AQMD's Mutual Settlement Agreement Program.

**Cash Management** – receiving revenue, posting of payments, processing of refunds associated with South Coast AQMD programs and bank and preparing cash reconciliations.

**CEMS Certification** (Continuous Emissions Monitoring System) - evaluating, approving, and certifying the continuous emissions monitoring systems installed on emissions sources to ensure compliance with South Coast AQMD rules and permit conditions.

**CEQA Document Projects/Special Projects** (California Environmental Quality Act) - reviewing, preparing, assessing, and commenting on projects which have potential air quality impacts.

**Certification/Registration Program** – manufacturers can voluntarily apply to have standard, off-the-shelf equipment certified by South Coast AQMD to ensure that it meets all applicable requirements.

**China Partnership for Cleaner Shipping** - initiative with China to encourage cleaner ships to come to the Ports.

**Classification and Pay** – maintaining the classification plan and conducting job analyses to ensure South Coast AQMD positions are allocated to the proper class and conducting compensation studies to ensure classes are appropriately compensated and salaries remain competitive in the workforce.

**Clean Air Connections** – increase awareness of air quality issues and South Coast AQMD's programs and goals by developing and nurturing a region-wide group of community members with an interest in air quality issues.

**Clean Fuels Program** – accelerate the development and deployment of advanced, low emission technologies, including, but not limited to electric, hydrogen, and plug-in hybrid electric vehicles, low emission heavy-duty engines, after treatment for off-road construction equipment and identification of tailpipe emissions from biofuels.

**Climate/Energy/Incentives** – developing and evaluating policy and strategy related to local, state, federal and international efforts on climate change. Seek to maximize synergies for criteria and toxic reduction and minimize and negative impacts.

**Compliance** – ensuring compliance of clean air rules and regulations through regular inspection of equipment and facilities, as well as responding to air quality complaints made by the public.



## WORK PROGRAM GLOSSARY

**Compliance/Notice of Violation (NOV) Administration** – NOV processing and review for preparation for assignment to Mutual Settlement Agreement (MSA), civil, or criminal handling.

**Computer Operations** - operating and managing South Coast AQMD's computer resources. These resources support South Coast AQMD's business processes, air quality data, and modeling activities and the air monitoring telemetry system. Also see Systems Maintenance.

**Conformity** - reviewing of federal guidance and providing input on conformity analysis for the Regional Transportation Improvement Program (RTIP). Staff also participates in various Southern California Association of Governments (SCAG) meetings, the Statewide Conformity Working group, and other meetings to address conformity implementation issues. Staff participates in the federal Conformity Rule revision process, and monitors and updates Rule 1902, Transportation Conformity, as needed.

**Credit Generation Programs** (Intercredit Trading) – rulemaking and developing and implementing a program that expands emission credit trading by linking South Coast AQMD's stationary and mobile source credit markets.

**Criteria Pollutants/Mobile Sources** – coordinating the implementation of the AQMP and conducting feasibility studies for mobile source categories; developing control measures and amended rules as warranted.

**1-800-CUT-SMOG** - The Call Center handles (1-800-CUT-SMOG) calls from drivers who identify a vehicle emitting excessive amounts of exhaust smoke.

**Database Information Support** – day-to-day support of ad hoc reports and bulk data updates required from South Coast AQMD's enterprise databases.

**Database Management** - developing and supporting the data architecture framework, data modeling, database services, and the ongoing administration of South Coast AQMD's central information repository.

**DB/Computerization** – developing laboratory instrument computer systems for data handling and control, evaluating the quality of the stored information. Further develop and maintain the Source Test Information Management System (STIMS).

**DERA (Diesel Emission Reduction Act)** – a U.S. EPA funded program to modernize diesel fleets by retrofitting and replacing diesel engines/vehicles with cleaner, more efficient options.

**Economic Development/Business Retention** – meeting with various governmental agencies to assist company expansion or retention in the Basin.

## WORK PROGRAM GLOSSARY

**EJ-AQ Guidance Document (Environmental Justice-Air Quality Guidance Document)** – providing outreach to local governments as they update their general plans and make land use decisions. Providing updates to the reference document titled “Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning.”

**Emergency Response** - responding to emergency air pollution (toxic) incidents, providing air quality monitoring support to local authorities.

**Emission Reduction Credit Application Processing** – processing applications for Emission Reduction Credits (ERC).

**Emissions Inventory Studies** – developing major point source emissions data and area source emissions inventory, updating emissions factors, developing and updating control factors, performing special studies to improve emission data, and responding to public inquiries regarding emission data.

**Employee Benefits** – administering South Coast AQMD’s benefit plans, including medical, dental, vision, and life insurance, as well as State Disability Insurance, Section 125 plan, Long Term Care and Long Term Disability plans, Section 457 Deferred Compensation Plan, and Consolidated Omnibus Budget Reconciliation Act (COBRA) program.

**Employee Relations** – managing the collective bargaining process, administering Memorandum Of Understanding (MOU’s), preparing disciplinary documents, and administering South Coast AQMD’s performance appraisal program, Family and Medical Leave Act (FMLA) requests, tuition reimbursement, and outside training requests.

**Employee/Employment Law** – handling legal issues dealing with employment law in coordination with outside counsel.

**Enhanced Fleet Modernization Program (Replace Your Ride) Admin Support** – CARB-funded voluntary car retirement and replacement incentive program. The goal is to incentivize lower-income motorists to scrap their older, high-emitting cars and replace them with newer, cleaner, and more fuel-efficient cars to reduce smog-forming pollutants.

**Enforcement Litigation** – staff attorneys pursue enforcement litigation including actions for civil penalties or injunctions when violations have not been settled or circumstances otherwise dictate.

**Environmental Education** - informing and educating the public about air pollution and their role in bringing clean air to the basin.

**Environmental Justice (EJ)** - a strategy for equitable environmental policymaking and enforcement to protect the health of all persons who live or work in the South Coast District from the health effects of air pollution regardless of age, culture, ethnicity, gender, race,

## WORK PROGRAM GLOSSARY

socioeconomic status, or geographic location. The Environmental Justice Initiatives help to identify and address potential areas where citizens may be disproportionately impacted by air pollutants and ensure clean air benefits are afforded to all citizens and communities of the region.

**Equal Employment Opportunity** – ensuring non-discrimination and equal employment for employees and applicants through broad-based, targeted advertising; training interviewers to ensure fairness in evaluating candidates; ensuring that selection processes and testing instruments are appropriate and job-related; coaching supervisors and managers regarding hiring processes; and gathering data and preparing related staffing reports.

**Facilities Services** – monitoring service contracts, supporting tenants, overseeing conference center use, administering identification badges, overseeing building access control, maintaining key/lock systems, and configuring workspaces.

**Facility-Based Mobile Source Measures (FBMSMs)** – effort to begin implementation of the five FBMSMs (Warehouse Distribution Centers, Commercial Airports, New or Redevelopment Projects, Commercial Marine Ports, and Railyard & Intermodal Facilities) adopted in the 2016 AQMP to reduce emissions from facilities and ensure that these reductions are counted towards the region’s emissions budget.

**FARMER (Funding Agricultural Replacement Measures For Emission Reductions)** - CARB funding for projects that will reduce agricultural sector emissions by providing grants, rebates, and other financial incentives for agricultural harvesting equipment, heavy-duty trucks, agricultural pump engines, tractors, and other equipment used in agricultural operations.

**Fee Review** – activities relating to conducting Fee Review Committee hearings for businesses that contest South Coast AQMD fees (Rule 313).

**Financial Management** - managing the financial aspects of the South Coast AQMD. This includes cash management, treasury/investment, accounting, and program and financial audits. It also includes maintaining South Coast AQMD’s permit-related financial and accounting records as well as maintaining and enhancing South Coast AQMD's payroll and accounting systems.

**Goods Movement and Financial Incentives** – programs to evaluate the air quality issues associated with goods movement and traffic congestion, and for the identification of financial incentives for expedited facility modernization and diesel engine conversion.

**Governing Board** – supporting the operation of the Governing Board and advisory groups of the South Coast AQMD. These activities range from preparing the agenda and minutes to providing support services, legal advice, speeches, letters, and conference coordination.

**Grants Management** - coordinating, negotiating, monitoring, accounting, and reporting of South Coast AQMD's air pollution program and financial activities relating to grants, including U.S. EPA, DOE, CEC, and DHS grants and CARB Subvention.

## WORK PROGRAM GLOSSARY

**Graphics Arts** - designing and producing presentation materials and South Coast AQMD publications.

**Green House Gas Reporting (GHG)** - many of the businesses and facilities within South Coast AQMD's jurisdiction are required to report their GHG emissions to CARB under the regulation for Mandatory Reporting of Greenhouse Gases (state) and, beginning in 2011, to the U.S. EPA under their Mandatory Reporting Rule (federal).

**Green House Gas Reduction Fund** – CARB's Low Carbon Transportation Greenhouse Gas Reduction Fund (GGRF) Investment Program funds projects to demonstrate zero emission trucks.

**Health Effects** – conducting research and analyzing the health effects of air pollutants and assessing the health implications of pollutant reduction strategies; working with industry, trade associations, environmental groups, CARB and U.S. EPA and providing information to concerned citizens.

**Hearing Board** – supporting operation of South Coast AQMD's Hearing Board. These activities include accepting petitions filed; preparing and distributing notices; preparing minute orders, findings, and decisions of the Board; collecting fees; and general clerical support for the Board.

**Incentive RFP Emissions Reduction Projects** – the Board released an RFP to solicit stationary and mobile source projects that will result in emissions reductions of NO<sub>x</sub>, VOC, and PM in accordance with the approved control strategy in the 2016 AQMP. Project funding comes from existing special revenue funds related to mitigation fees, settlements, or grants from other agencies.

**Information Technology Services** - implementing new information technologies to enhance operational efficiency and productivity. Examples include developing workflow applications, training and supporting computer end users, and migrating network operating systems.

**Inspections** - inspecting facilities and equipment that emit or have the potential to emit air pollutants.

**Inspections/RECLAIM Audits** – conducting RECLAIM inspections and audits at facilities subject to Regulation XX (RECLAIM).

**Interagency Coordination/Liaison** - interacting with state, local, and federal control agencies and governmental entities.

**Intergovernmental/Geographic Deployment** - influencing local policy development and implementing a local government clean air program.

## WORK PROGRAM GLOSSARY

**Lawnmower Exchange** – residents of the South Coast Air Basin may trade in their gas-powered lawnmower and purchase a new zero-emission, battery electric lawnmower at a significant discount.

**Lead Agency Projects** – South Coast AQMD permitting and rule development projects where a CEQA document is prepared and the South Coast AQMD is the lead agency.

**Legal** - providing legal support to South Coast AQMD in the areas of liability defense, writs of mandate, injunctions, and public hearings. This activity also includes reviewing contracts, and advising staff on rules, fees and other governmental issues.

**Legislation** - drafting new legislation, analyzing and tracking proposed legislation, and developing position recommendations on legislation which impacts air quality.

**Library** - acquiring and maintaining reference materials and documentation that support the South Coast AQMD's programs.

**Lobby Permit Services** – providing information and support to applicants to expedite permit processing. Includes consolidating forms, prescreening review for completeness of applications, providing internet access of certain forms, and providing “over-the-counter” permits in the lobby of South Coast AQMD’s Diamond Bar headquarters.

**MATES V (Fifth Multiple Air Toxics Exposure Study)** – this study provides unique information on air toxics and their associated health risks based on long-term monitoring at ten fixed locations throughout the South Coast Air Basin (Basin) and a detailed emissions inventory and modeling analysis.

**Mentorship Program** - program is designed to connect people from across the South Coast AQMD organization, to allow staff to share and learn valuable knowledge and skills, and to provide an opportunity for employees to take a proactive role in their career development.

**Meteorology** - modeling, characterizing, and analyzing both meteorological and air quality data to produce the South Coast AQMD's daily air quality forecast.

**Microscopic Analysis** - analyzing, identifying, and quantifying asbestos for compliance with South Coast AQMD, state, and federal regulations.

**Mobile Sources** - transportation monitoring, strategies, control measures, demonstration projects, the Mobile Source Air Pollution Reduction Review Committee (MSRC), implementation of Fleet Rules, High Emitter Repair & Scrapage Program, and locomotive remote sensing.

**Mobile Source and AQMP (Air Quality Management Plan) Control Strategies** – provide technical assistance on the mobile source element of the AQMP.

## WORK PROGRAM GLOSSARY

**Moyer Program** – see Carl Moyer Program

**Mutual Settlement Program** - resolving civil penalties without court intervention; this program is a mechanism to resolve violations and avoid criminal proceedings.

**National Air Toxics Trends Stations (NATTS)** – through U.S. EPA funding, two sites in the monitoring network are utilized to collect ambient VOC and particulate samples. Samples are analyzed by the South Coast AQMD lab and reported to U.S. EPA where the data is used to determine toxic trends.

**Near Roadway (NO<sub>2</sub>) Monitoring** – federal monitoring requirement that calls for state and local air monitoring agencies to install near-road NO<sub>2</sub> monitoring stations at locations where peak hourly NO<sub>2</sub> concentrations are expected to occur within the near-road environment in larger urban areas.

**Network Operations/Telecommunications** – installing, maintaining, and providing operational support of South Coast AQMD's PC, voice, data, image, and radio networks; planning, designing, and implementing new network systems or services in response to South Coast AQMD's communications and business needs; and providing training, support, and application development services for end-users of voice and PC systems.

**New Systems Development** – providing support for computer systems development efforts.

**New Source Review (NSR)** - developing and implementing New Source Review rules; designing, implementing, and maintaining the Emission Reduction Credits and the NSR programs. These programs streamline the evaluation of permit renewal and emissions reporting.

**Outreach** - increasing public awareness of South Coast AQMD's programs, goals, permit requirements, and employment opportunities; interacting, providing technical assistance, and acting as liaison between South Coast AQMD staff and various sectors of private industry, local governments, small businesses, and visiting dignitaries.

**Outreach Media/Communications** - monitoring local and national press accounts, both print and broadcast media, to assess South Coast AQMD's outreach and public opinion on South Coast AQMD rules and activities. This also includes responding to media calls for informational background material on South Coast AQMD news stories.

**Payroll** - paying salaries and benefits to South Coast AQMD employees, withholding and remitting applicable taxes, and issuing W2s.

**Permit Processing** - inspecting, evaluating, auditing, analyzing, reviewing and preparing final approval or denial to operate equipment which may emit or control air contaminants.

## WORK PROGRAM GLOSSARY

**Permit Streamlining** – activities relating to reducing organizational costs and streamlining regulatory and permit requirements on businesses.

**Photochemical Assessment Monitoring Systems (PAMS)** - promulgating PAMS (a federal regulation), which requires continuous ambient monitoring of speciated hydrocarbons during smog season. Through U.S. EPA funding, ozone precursors are measured at seven stations and samples are collected.

**PM Sampling Program (U.S. EPA)** – daily collection of particulate samples

**Port of Long Beach (POLB) Advanced Maritime Emission Control System (AMECS) Demo** – funded by the Port of Long Beach, the proposed project will assess the performance and effectiveness of a barge-mounted emission control system to capture and treat hoteling emissions from ocean-going vessels (OGV) at berth at the Port of Long Beach.

**Portable Equipment Registration Program (PERP)** – see CARB PERP Program.

**Position Control** – tracking Board-authorized positions and South Coast AQMD workforce utilization, processing personnel transactions for use by Payroll, and preparing reports regarding employee status, personnel transactions, and vacant positions.

**Print Shop** – performing in-house printing jobs and contracting outside printing/binding services when necessary.

**Procedure 5 Review** – evaluation of asbestos plans which are required for the clean-up any disturbed asbestos containing materials.

**Proposition 1B** - providing incentive funding for goods movement and lower emission school bus projects with funds approved by voters in November 2006.

**Protocols/Reports/Plans/LAP** - evaluating and approving protocols, source testing plans and reports submitted by regulated facilities as required by South Coast AQMD rules and permit conditions, New Source Review, state and federal regulations; and evaluating the capabilities of source test laboratories under the Laboratory Approval Program (LAP).

**Public Complaints/Breakdowns** - responding to air pollution complaints about odors, smoke, dust, paint overspray, or companies operating out of compliance; responding to industry notifications of equipment breakdowns, possibly resulting in emission exceedances.

**Public Education/Public Events** – implementing community events and programs to increase the public's understanding of air pollution and their role in improving air quality.

## WORK PROGRAM GLOSSARY

**Public Information Center** - notifying schools and large employers of predicted and current air quality conditions on a daily basis and providing the public with printed South Coast AQMD information materials.

**Public Notification** – providing timely and adequate notification to the public of South Coast AQMD rulemaking workshops and public hearings, proposed rules, upcoming compliance dates, and projects of interest to the public.

**Public Records Act** - providing information to the public as requested and as required by Government Code, Section 6254.

**Purchasing** (Receiving, Stockroom) - procuring services and supplies necessary to carry out South Coast AQMD programs.

**Quality Assurance** – assuring the data quality from the Monitoring and Analysis Division meets or exceeds state and federal standards and also assuring the appropriateness of the data for supporting South Coast AQMD regulatory, scientific and administrative decisions.

**RECLAIM/Admin Support** – developing and implementing rules and monitoring emissions of the REgional CLean Air Incentives Market (RECLAIM) program, a market incentives trading program designed to help achieve federal and state ambient air quality standards in a cost-effective manner with minimal impacts to jobs or public health. The RECLAIM program will transition to a command and control regulatory structure.

**RECLAIM and Title V** – permit processing of applications from facilities that are both RECLAIM and Title V.

**RECLAIM Non-Title V** – permit processing of applications from RECLAIM facilities only.

**Records Information Management Plan** – providing the process to comply with internal and external requirements for the retention and retrieval of information pertinent to the mission and operation of the South Coast AQMD.

**Records Services** – maintaining South Coast AQMD's central records and files, converting paper files to images, and operating the network image management system; providing for all off-site long-term storage of records and for developing and monitoring South Coast AQMD's Records Retention Policy.

**Recruitment and Selection** – assisting South Coast AQMD management in meeting staffing needs by conducting fair and non-discriminatory recruitment and selection processes that result in qualified, diverse applicants for South Coast AQMD jobs; overseeing promotional and transfer processes and reviewing proposed staff reassignments.



## WORK PROGRAM GLOSSARY

**Refinery Pilot Project** – pursuant to the AQMP, a working group was formed to examine the efficacy of an alternative regulatory approach to reducing refinery emissions beyond the current requirements by establishing a targeted emission reduction commitment for each refinery for a set period of time and allow the use of on-site or off-site reduction strategies with acceptable environmental justice attributes.

**Regional Modeling** – designing, performing, and reviewing modeling and risk assessment analysis to assess the air quality impacts of new or modified sources of air pollution. Also see Meteorology.

**Ridesharing** - implementing South Coast AQMD's Rule 2202 Trip Reduction Plan.

**Risk Management** - developing and administering South Coast AQMD's liability, property, workers' compensation and safety programs.

**Rule 1180** - adopted in December 2017, this rule requires real-time fenceline air monitoring systems and establishes a fee schedule to fund refinery-related community air monitoring systems that will provide air quality information to the public about levels of various criteria air pollutants, volatile organic compounds, metals and other compounds at or near the property boundaries of petroleum refineries and in nearby communities.

**Rule 1610** – ensuring compliance with Rule 1610, Old-Vehicle Scrapping.

**Rule 2202 ETC Training** – administering and conducting monthly Rule 2202 implementation training classes, workshops and/or forums for the regulated public and other interested individuals.

**Rule 222 Implement/Support/Filing Program** – ensuring compliance with Rule 222 for equipment subject to a filing requirement with South Coast AQMD.

**Rulemaking/Rules** – developing new rules and evaluating existing South Coast AQMD and CARB rules and compliance information to assure timely implementation of the AQMP and its control measures.

**Salton Sea Monitoring** – maintaining the monitoring network for expected nuisance pollutants, primarily hydrogen sulfide, which are released from the Salton Sea area.

**School Bus Lower Emission Program** – funding to replace pre-1987 diesel school buses with new alternative fuel buses owned and operated by public school districts.

**South Coast AQMD Mail** – processing and delivering all incoming and outgoing mail.

## WORK PROGRAM GLOSSARY

**South Coast AQMD Projects** – South Coast AQMD permitting and rule development projects where a California Environmental Quality Act (CEQA) document is prepared and the South Coast AQMD is the lead agency.

**School Siting** – identifying any hazardous emission sources within one-quarter mile of a new school site as required by AB3205. District activities include reporting of criteria and toxic pollutant information and conducting inspections of permitted facilities within a quarter-mile radius of proposed schools.

**Small Business Assistance** - providing technical and financial assistance to facilitate the permit process for small businesses.

**Socio-Economic** - developing an economic database to forecast economic activity, analyzing economic benefits of air pollution control, and analyzing the social impact of economic activity resulting from air quality regulations and plans.

**Source Education** - providing classes to facility owners and operators to ensure compliance with applicable South Coast AQMD's rules and regulations.

**Source Testing (ST)** – conducting source tests as needed in support of permitting functions and to determine compliance with permit conditions and South Coast AQMD Rules. Additionally, data submitted by facilities is reviewed for protocol approval, CEMS certification, or test data acceptance.

**Speaker's Bureau** - training South Coast AQMD staff for advising local government and private industry on air quality issues.

**Special Monitoring** – performing special ambient air sampling at locations where public health, nuisance concern, or Rule 403 violations may exist; determining the impacts from sources emitting toxics on receptor areas; and performing special monitoring in support of the emergency response program and public complaints response. Also see Emergency Response.

**Sample Analyses** – analyzing samples submitted by inspectors to determine compliance with South Coast AQMD Rules. Samples are also analyzed in support of rule development activities.

**Student Interns** – providing mutually beneficial educational hands-on experience for high school and college students by providing them with the opportunity to engage in day-to-day work with mentoring professionals within South Coast AQMD.

**Subscription Services** - maintaining South Coast AQMD's rule subscription mailing list and coordinating the mailing of South Coast AQMD publications.

## WORK PROGRAM GLOSSARY

**Systems Implementation PeopleSoft** – implementing activities required to maintain an integrated Financial and Human Resources system, including additional features and functions introduced with scheduled software upgrades.

**Systems Maintenance** - routinely maintaining installed production data systems that support South Coast AQMD's business fluctuations, including minor modifications, special requests, fixes, and general maintenance.

**Targeted Air Shed** – funding from U.S. EPA to reduce air pollution in the nation's areas with the highest levels of ozone or particulate matter 2.5 (PM<sub>2.5</sub>) exposure.

**Technology Advancement** - supporting the development of innovative controls for mobile and stationary sources, reviewing promising control technologies, and identifying those most deserving of South Coast AQMD developmental support.

**Title III** - permitting equipment that emits hazardous air pollutants in compliance with the federal Clean Air Act.

**Title V** - developing and implementing a permit program in compliance with the federal Clean Air Act.

**Toxics/AB 2588** – evaluation of toxic inventories, risk assessments and risk reduction plans, with public notification as required. Analyzing, evaluating, reviewing, and making recommendations regarding toxic substances and processes and contributing input to District toxic rules and programs.

**Training** (Education, Organizational and Human Resources Development, Staff) - providing increased training in the areas of personnel education, computers, safety procedures, new programs, hazardous materials, and new technologies.

**Transportation Regional Programs/Research** – actively participating in Advisory Groups and Policy Committees involving the development and monitoring of South Coast AQMD's AQMP, Congestion Mitigation Air Quality Improvement Program (CMAQ), Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Transportation Control Measures (TCMs), and regional alternative commute mode programs.

**Union Negotiations/Union Steward Activities** – Union-related activities of union stewards including labor management negotiations and assisting in the filing of employee grievances.

**VOC Sample Analysis** - providing data and technical input for VOC rule development, performing analytical testing for compliance with South Coast AQMD rules regulating VOC content in coatings, inks, plastic foam, paint, adhesives, and solvents, and providing assistance and technical input to small businesses and other regulatory agencies, industry and the public.

## WORK PROGRAM GLOSSARY

**Volkswagen (VW) Environmental Mitigation Trust** – The Beneficiary Mitigation Plan for the Volkswagen (VW) Environmental Mitigation Trust identifies five funding categories for funded projects intended to mitigate the excess NOx emissions caused by VW vehicles.

**Voucher Incentive Program (VIP)** - incentive program designed to reduce emissions by replacing old, high-polluting vehicles with newer, lower-emission vehicles, or by installing a Verified Diesel Emission Control Strategy (VDECS).

**Web Tasks** – preparing and reviewing materials for posting to South Coast AQMD’s internet and/or intranet website.

# WORK PROGRAM ACRONYMS

## ORGANIZATIONAL UNITS

AHR	Administrative & Human Resources
CB	Clerk of the Boards
CE	Compliance & Enforcement
DG	District General
EP	Engineering & Permitting
EO	Executive Office
FIN	Finance
GB	Governing Board
IM	Information Management
LEG	Legal
LPAM	Legislative & Public Affairs/Media Office
PRA	Planning, Rule Development & Area Sources
STA	Science & Technology Advancement

## PROGRAMS

AB 134	Community Air Protection Program (Carl Moyer)
AB 617	Community Air Protection Program
AB 1318	Offsets-Electrical Generating Facilities
AB 2588	Air Toxics (“Hot Spots”)
AB 2766	Motor Vehicle Subvention Program
APEP	Annual Permit Emissions Program
AQIP	Air Quality Investment Program
AQMP	Air Quality Management Plan
BACT	Best Available Control Technology
CEMS	Continuous Emissions Monitoring Systems
CEQA	California Environmental Quality Act
CF	Clean Fuels Program
CMP	Carl Moyer Program
DERA	Diesel Emission Reduction Act
EFMP	Enhanced Fleet Modernization Program
ERC	Emission Reduction Credit
FARMER	Funding Agricultural Replacement Measures For Emissions Reductions
GGRF	Greenhouse Gas Reduction Fund
MATES	Multiple Air Toxics Exposure Study
MS	Mobile Sources Program
NSR	New Source Review
PERP	Portable Equipment Registration Program
PR	Public Records Act
QA	Quality Assurance
RECLAIM	REgional CLEAN Air Incentives Market
SOON	Surplus Off-Road Opt-In for NO <sub>x</sub>
ST	Source Test
Title III	Federally Mandated Toxics Program
Title V	Federally Mandated Permit Program
VIP	Voucher Incentive Program
VW	Volkswagen

## GOVERNMENT AGENCIES

APCD	Air Pollution Control District (Generic)
CARB	California Air Resources Board
CEC	California Energy Commission
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
NACAA	National Association of Clean Air Agencies
SCAG	Southern California Association of Governments

## GENERAL

AA	Affirmative Action
AER	Annual Emissions Reporting
AM	Air Monitoring
AQ-SPEC	Air Quality Sensor Performance Evaluation Center
AVR	Average Vehicle Ridership
BARCT	Best Available Retrofit Control Technology
CLASS	Clean Air Support System
CNG	Compressed Natural Gas
DB	Database
EIR	Environmental Impact Report
EJ	Environmental Justice
ERC	Emission Reduction Credit
ETC	Employee Transportation Coordinator
EV	Electric Vehicle
FBMSMs	Facility-Based Mobile Source Measures
FY	Fiscal Year
GHG	Greenhouse Gas
HR	Human Resources
HRA	Health Risk Assessment
ISR	Indirect Source Rules
LAER	Lowest Achievable Emissions Rate
LEV	Low Emission Vehicle
LNG	Liquefied Natural Gas
MOU	Memorandum of Understanding
MSERCs	Mobile Source Emission Reduction Credits
MSRC	Mobile Source (Air Pollution Reduction) Review Committee
NATTS	National Air Toxics Trends Stations
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NGV	Natural Gas Vehicle
NOV	Notice of Violation
NSR	New Source Review
NSPS	New Source Performance Standards
OEHHA	Office of Environmental Health Hazard Assessment
PAMS	Photochemical Assessment Monitoring System
PAR	Proposed Amended Rule
PE	Program Evaluations
PEV	Plug-In Electric Vehicle
PHEV	Plug-In Hybrid Electric Vehicle
PR	Proposed Rule
RFP	Request for Proposal
RFQ	Request for Quotations
RFQQ	Request for Qualifications and Quotations
RTC	RECLAIM Trading Credit
SBA	Small Business Assistance
SIP	State Implementation Plan
ST	Source Testing
SULEV	Super Ultra Low-Emission Vehicle
TCM	Transportation Control Measure
ULEV	Ultra- Low-Emissions Vehicle
VMT	Vehicle Miles Traveled
ZECT	Zero Emission Cargo Transport
ZEV	Zero-Emission Vehicle

## POLLUTANTS

CO	Carbon Monoxide
NO <sub>x</sub>	Oxides of Nitrogen
O <sub>3</sub>	Ozone
PM <sub>2.5</sub>	Particulate Matter <2.5 microns
PM <sub>10</sub>	Particulate Matter ≤ 10 microns
ROG	Reactive Organic Gases
SO <sub>x</sub>	Oxides of Sulfur
VOC	Volatile Organic Compound

## GOVERNING BOARD

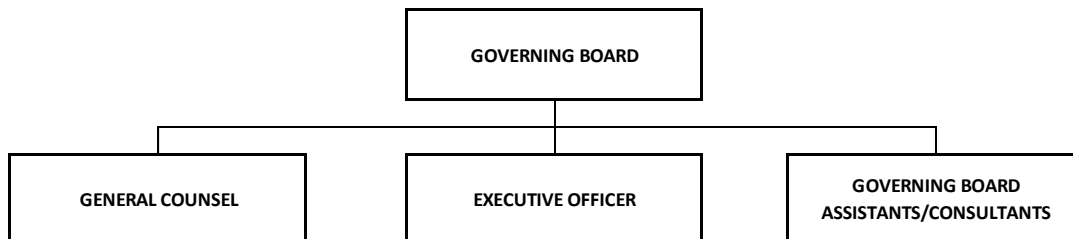
<b>At a Glance:</b>	
FY 2019-20 Adopted	\$1.8M
FY 2020-21 Budget	\$1.7M
% of FY 2020-21 Budget	1.0%
Total FTEs FY 2020-21 Budget	<b>N/A</b>

### DESCRIPTION OF MAJOR SERVICES:

The Governing Board is made up of 13 officials who meet monthly to establish policy and review new or amended rules for approval. The Governing Board appoints the South Coast AQMD Executive Officer and General Counsel, and members of the Hearing Board. Each Governing Board member is allocated funds to retain the services of Board Consultants and/or Assistants to provide support in their duties as Governing Board members.

Governing Board members include:

- One county Board of Supervisor’s representative each from the counties of Los Angeles, Orange, Riverside, and San Bernardino;
- One representative each from cities within Orange, Riverside, and San Bernardino counties, two representatives from cities within Los Angeles County, and one city representative from the City of Los Angeles;
- One representative appointed by the Governor, one by the Assembly Speaker, and one by the Senate Rules Committee.



**Governing Board  
Line Item Expenditure**

Major Object / Account # / Account Description		FY 2018-19 Actuals	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate *	FY 2020-21 Adopted Budget
<b>Salary &amp; Employee Benefits</b>						
51000-52000	Salaries	\$ 201,909	\$ 462,913	\$ 462,913	\$ 197,563	\$ 359,073
53000-55000	Employee Benefits	17,465	284,590	284,591	19,218	237,073
Sub-total Salary & Employee Benefits		\$ 219,374	\$ 747,503	\$ 747,504	\$ 216,781	\$ 596,146
<b>Services &amp; Supplies</b>						
67250	Insurance	\$ -	\$ -	\$ -	\$ -	\$ -
67300	Rents & Leases Equipment	-	-	-	-	-
67350	Rents & Leases Structure	-	-	-	-	-
67400	Household	-	-	-	-	-
67450	Professional & Special Services	668,613	807,784	786,784	786,784	807,784
67460	Temporary Agency Services	-	-	-	-	-
67500	Public Notice & Advertising	86,296	52,000	46,145	46,145	-
67550	Demurrage	-	-	-	-	-
67600	Maintenance of Equipment	-	-	-	-	-
67650	Building Maintenance	-	-	-	-	-
67700	Auto Mileage	13,779	10,000	10,000	10,000	10,000
67750	Auto Service	-	-	-	-	-
67800	Travel	69,339	64,800	64,800	64,800	64,800
67850	Utilities	-	-	-	-	-
67900	Communications	10,570	20,000	20,000	20,000	20,000
67950	Interest Expense	-	-	-	-	-
68000	Clothing	-	-	-	-	-
68050	Laboratory Supplies	-	-	-	-	-
68060	Postage	1,536	10,000	10,000	10,000	10,000
68100	Office Expense	6,600	4,000	4,000	4,000	4,000
68200	Office Furniture	-	-	-	-	-
68250	Subscriptions & Books	-	-	-	-	-
68300	Small Tools, Instruments, Equipment	-	-	-	-	-
68400	Gas and Oil	-	-	-	-	-
69500	Training/Conference/Tuition/ Board Exp.	123,973	112,500	112,500	112,500	132,500
69550	Memberships	-	-	-	-	-
69600	Taxes	-	-	-	-	-
69650	Awards	-	-	-	-	-
69700	Miscellaneous Expenses	28,009	15,000	36,000	36,000	15,000
69750	Prior Year Expense	-	-	-	-	-
69800	Uncollectable Accounts Receivable	-	-	-	-	-
89100	Principal Repayment	-	-	-	-	-
Sub-total Services & Supplies		\$ 1,008,714	\$ 1,096,084	\$ 1,090,229	\$ 1,090,229	\$ 1,064,084
77000	<b>Capital Outlays</b>	\$ -	\$ -	\$ -	\$ -	\$ -
79050	<b>Building Remodeling</b>	\$ -	\$ -	\$ -	\$ -	\$ -
Total Expenditures		\$ 1,228,088	\$ 1,843,587	\$ 1,837,733	\$ 1,307,010	\$ 1,660,230

\* Estimates based on July 2019 through February 2020 actual expenditures and February 2020 budget amendments.

**EXECUTIVE OFFICE**

**WAYNE NASTRI  
EXECUTIVE OFFICER**

<b>At a Glance:</b>	
FY 2019-20 Adopted	\$1.6M
FY 2020-21 Budget	\$1.6M
% of FY 2020-21 Budget	0.9%
Total FTEs FY 2020-21 Budget	5

**DESCRIPTION OF MAJOR SERVICES:**

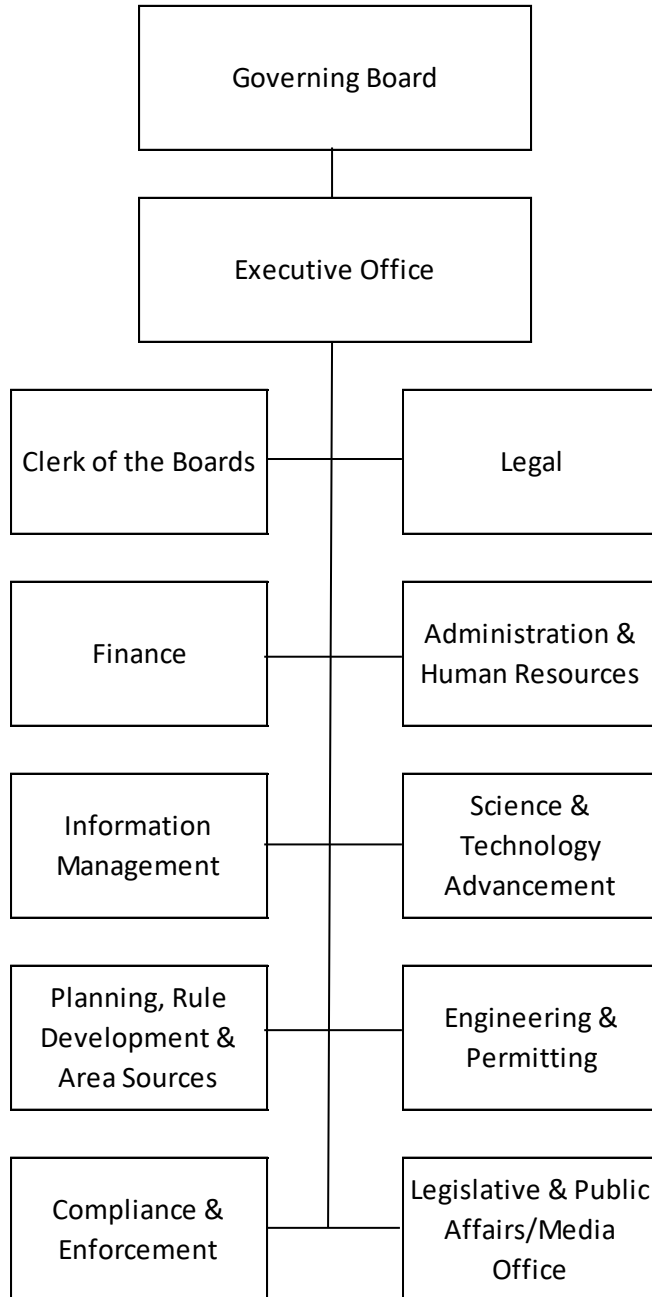
The Executive Office is responsible for the comprehensive management of the South Coast AQMD and the development and implementation of near-term and long-term strategies to attain ambient air quality standards. The Executive Office also translates set goals and objectives into effective programs and enforceable regulations that meet federal and state statutory requirements, while being sensitive to potential socioeconomic and environmental justice impacts in the South Coast Air Basin.

The Executive Office currently consists of the Executive Officer, Chief Operating Officer, and three support staff. The Executive Officer serves as Chief of Operations in implementing policy directed by the agency's 13-member Governing Board and in working proactively with state and federal regulatory officials. The Executive Officer also oversees all of the day-to-day administrative functions of staff and the annual operating budget.



## EXECUTIVE OFFICE (cont.)

### ORGANIZATIONAL CHART:



**EXECUTIVE OFFICE (cont.)**

**POSITION SUMMARY: 5 FTEs**

Executive Office Unit	Amended FY 2019-20	Change	Budget FY 2020-21
Administration	5	-	5

**POSITION DETAIL:**

<u>FTEs</u>	<u>Title</u>
1	Chief Operating Officer
1	Executive Officer
<u>3</u>	Executive Secretary
5	Total FTEs

**Executive Office  
Work Program by Office**

#	Program Code	Program Category	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Revenue Categories
1	03 1010	Develop Programs	AQMP	Develop/Implement AQMP	0.05	0.00	0.05	I,I,X
2	03 1028	Develop Programs	Admin/SCAQMD Policy	Dev/Coord Goals/Policies/Overs	0.44	0.00	0.44	la
3	03 1038	Operational Support	Admin/Office Management	Budget/Program Management	1.00	0.00	1.00	Ib
4	03 1083	Policy Support	Hlth Effects Air Pollution Fou	Health Effects Air Poll Foundation Support	0.01	0.00	0.01	la
5	03 1275	Policy Support	Governing Board	Board/Committee Support	1.72	0.00	1.72	la
6	03 1381	Policy Support	Interagency Liaison	Local/State/Fed Coord/Interact	0.71	0.00	0.71	Ia,I,X
7	03 1410	Policy Support	Legislation	Testimony/Mtgs:New/Current Leg	0.03	0.00	0.03	Ia,I,X
8	03 1416	Policy Support	Legislative Activities	Supp/Promote/Influence Legis/Adm	0.03	0.00	0.03	la
9	03 1490	Customer Service and Business Assistance	Outreach	Publ Awareness Clean Air Prog	0.97	0.00	0.97	la
10	03 1565	Customer Service and Business Assistance	Public Records Act	Comply w/ Public Req for Info	0.01	0.00	0.01	la
11	03 1855	Operational Support	Web Tasks	Create/edit/review web content	0.03	0.00	0.03	la

5.00	-	5.00
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**Total Executive Office**

Executive Office Line Item Expenditure						
Major Object / Account # / Account Description		FY 2018-19 Actuals	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate *	FY 2020-21 Adopted Budget
<b>Salary &amp; Employee Benefits</b>						
51000-52000	Salaries	\$ 875,062	\$ 868,518	\$ 868,518	\$ 834,143	\$ 839,752
53000-55000	Employee Benefits	489,069	462,846	468,665	468,516	476,993
Sub-total Salary & Employee Benefits		\$ 1,364,131	\$ 1,331,364	\$ 1,337,183	\$ 1,302,659	\$ 1,316,745
<b>Services &amp; Supplies</b>						
67250	Insurance	\$ -	\$ -	\$ -	\$ -	\$ -
67300	Rents & Leases Equipment	-	-	-	-	-
67350	Rents & Leases Structure	-	-	-	-	-
67400	Household	-	-	-	-	-
67450	Professional & Special Services	8,094	75,000	75,000	75,000	75,000
67460	Temporary Agency Services	-	-	-	-	-
67500	Public Notice & Advertising	-	7,500	7,500	7,500	7,500
67550	Demurrage	-	-	-	-	-
67600	Maintenance of Equipment	201	400	551	551	400
67650	Building Maintenance	-	-	-	-	-
67700	Auto Mileage	629	800	800	800	800
67750	Auto Service	-	-	-	-	-
67800	Travel	49,382	77,000	77,000	77,000	77,000
67850	Utilities	-	-	-	-	-
67900	Communications	5,645	6,500	6,500	6,500	6,500
67950	Interest Expense	-	-	-	-	-
68000	Clothing	-	-	-	-	-
68050	Laboratory Supplies	-	-	-	-	-
68060	Postage	23	7,000	7,000	7,000	7,000
68100	Office Expense	2,218	6,300	6,300	6,300	6,300
68200	Office Furniture	-	-	-	-	-
68250	Subscriptions & Books	-	5,000	5,000	5,000	5,000
68300	Small Tools, Instruments, Equipment	-	-	-	-	-
68400	Gas and Oil	-	-	-	-	-
69500	Training/Conference/Tuition/ Board Exp.	3,955	1,000	3,500	3,500	1,000
69550	Memberships	25,098	26,000	26,000	26,000	26,000
69600	Taxes	-	-	-	-	-
69650	Awards	-	-	7,196	7,196	-
69700	Miscellaneous Expenses	5,408	25,000	25,304	25,304	25,000
69750	Prior Year Expense	-	-	-	-	-
69800	Uncollectable Accounts Receivable	-	-	-	-	-
89100	Principal Repayment	-	-	-	-	-
Sub-total Services & Supplies		\$ 100,653	\$ 237,500	\$ 247,651	\$ 247,651	\$ 237,500
77000	<b>Capital Outlays</b>	\$ -	\$ -	\$ -	\$ -	\$ -
79050	<b>Building Remodeling</b>	\$ -	\$ -	\$ -	\$ -	\$ -
Total Expenditures		\$ 1,464,784	\$ 1,568,864	\$ 1,584,834	\$ 1,550,310	\$ 1,554,245

\* Estimates based on July 2019 through February 2020 actual expenditures and February 2020 budget amendments.



**SOUTH COAST**

**AIR QUALITY MANAGEMENT DISTRICT**

## DISTRICT GENERAL

<b>At a Glance:</b>	
FY 2019-20 Adopted	\$16.7M
FY 2020-21 Budget	\$18.0M
% of FY 2020-21 Budget	10.4%
Total FTEs FY 2020-21 Budget	N/A

Accounts associated with general operations of the South Coast AQMD are budgeted and tracked in District General. Included are such items as retirement payouts, principal and interest payments, insurance, utilities, taxes, housekeeping, security, and building maintenance and improvements.

District General Line Item Expenditure						
Major Object / Account # / Account Description		FY 2018-19 Actuals	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate *	FY 2020-21 Adopted Budget
<b>Salary &amp; Employee Benefits</b>						
51000-52000	Salaries	\$ -	\$ 1,785,964	\$ 1,785,965	\$ 1,785,964	\$ 1,785,964
53000-55000	Employee Benefits	263,583	480,000	476,179	260,000	480,000
Sub-total Salary & Employee Benefits		\$ 263,583	\$ 2,265,964	\$ 2,262,144	\$ 2,045,964	\$ 2,265,964
<b>Services &amp; Supplies</b>						
67250	Insurance	\$ 1,717,104	\$ 1,317,400	\$ 1,317,400	\$ 1,317,400	\$ 1,449,140
67300	Rents & Leases Equipment	112,649	117,000	121,500	121,500	117,000
67350	Rents & Leases Structure	-	-	19,841	19,841	19,300
67400	Household	634,759	809,388	805,288	805,288	869,261
67450	Professional & Special Services	1,405,201	1,254,852	1,324,320	1,324,320	1,273,089
67460	Temporary Agency Services	-	-	-	-	-
67500	Public Notice & Advertising	24,386	25,000	25,000	25,000	25,000
67550	Demurrage	-	100,000	100,000	100,000	100,000
67600	Maintenance of Equipment	386,375	403,654	406,993	406,993	403,654
67650	Building Maintenance	891,624	831,479	881,479	881,479	831,479
67700	Auto Mileage	-	-	-	-	-
67750	Auto Service	-	-	-	-	-
67800	Travel	-	-	-	-	-
67850	Utilities	1,413,787	1,959,620	1,699,977	1,418,977	1,959,620
67900	Communications	166,021	150,900	151,400	151,400	150,900
67950	Interest Expense	3,637,290	3,503,982	3,503,983	3,503,983	3,353,106
68000	Clothing	-	-	-	-	-
68050	Laboratory Supplies	-	-	-	-	-
68060	Postage	9,015	17,083	17,083	17,083	17,083
68100	Office Expense	144,859	288,200	288,200	168,200	288,200
68200	Office Furniture	11,474	4,000	37,400	37,400	14,000
68250	Subscriptions & Books	-	-	-	-	-
68300	Small Tools, Instruments, Equipment	-	-	-	-	-
68400	Gas and Oil	-	-	-	-	-
69500	Training/Conference/Tuition/ Board Exp.	-	-	-	-	-
69550	Memberships	-	-	-	-	-
69600	Taxes	17,603	56,000	56,577	56,577	56,000
69650	Awards	12,863	27,342	27,342	27,342	17,342
69700	Miscellaneous Expenses	9,761	14,375	24,161	24,161	10,625
69750	Prior Year Expense	(1,774)	-	-	-	-
69800	Uncollectable Accounts Receivable	471,292	-	-	-	-
89100	Principal Repayment	2,553,110	2,686,640	2,686,641	2,686,641	3,840,443
Sub-total Services & Supplies		\$ 13,617,400	\$ 13,566,915	\$ 13,494,585	\$ 13,093,585	\$ 14,795,242
77000	<b>Capital Outlays</b>	\$ 577,988	\$ 75,000	\$ 1,634,335	\$ 1,634,335	\$ 75,000
79050	<b>Building Remodeling</b>	\$ -	\$ -	\$ -	\$ -	\$ -
99950	<b>Transfers Out</b>	\$ 2,904,582	\$ 841,353	\$ 2,525,592	\$ 2,525,592	\$ 841,353
Total Expenditures		\$ 17,363,553	\$ 16,749,232	\$ 19,916,656	\$ 19,299,476	\$ 17,977,559

\* Estimates based on July 2019 through February 2020 actual expenditures and February 2020 budget amendments.

## ADMINISTRATIVE & HUMAN RESOURCES

### A. JOHN OLVERA DEPUTY EXECUTIVE OFFICER

<b>At a Glance:</b>	
FY 2019-20 Adopted	\$6.7M
FY 2020-21 Budget	\$6.5M
% of FY 2020-21 Budget	3.8%
Total FTEs FY 2020-21 Budget	43

#### DESCRIPTION OF MAJOR SERVICES:

Administrative & Human Resources is comprised of several units: Employment & Labor Relations/Benefits & Records, Classification & Pay/Recruitment & Selection, Risk Management, Business Services, and Building Services. Human Resources units are responsible for planning and administering programs to maximize hiring, retention, and development of the highly qualified employees necessary to meet South Coast AQMD's air quality goals. Risk Management is responsible for programs aimed at ensuring a healthful and safe work environment, including security, emergency preparedness, and business continuity programs as well as programs to reduce liability and accident-related costs. Business Services oversees the administration of the South Coast AQMD headquarters facility services, its leases, the maintenance of fleet vehicles, and the management of the Print Shop and Mail/Subscription services. Building Services is responsible for the maintenance and repair of the South Coast AQMD headquarters building, childcare center, field offices, air monitoring stations, and meteorological stations.

#### ACCOMPLISHMENTS:

##### RECENT:

- Administered employee benefits programs including an expanded health fair, expanded options in the 457 deferred compensation plan, expanded wellness education programs, and expanded supervisor and manager training opportunities.
- Conducted successful recruitment efforts for promotional opportunities and new hires.
- Completed reclassification studies; received Board approval for adoption or reclassification of 11 classifications.
- Provided support and direction to management and staff with respect to adherence to relevant state and federal laws and South Coast AQMD policies, procedures and Memoranda of Understanding.
- Supported South Coast AQMD's Succession Planning program through the Executive Office.



## ADMINISTRATIVE & HUMAN RESOURCES (cont.)

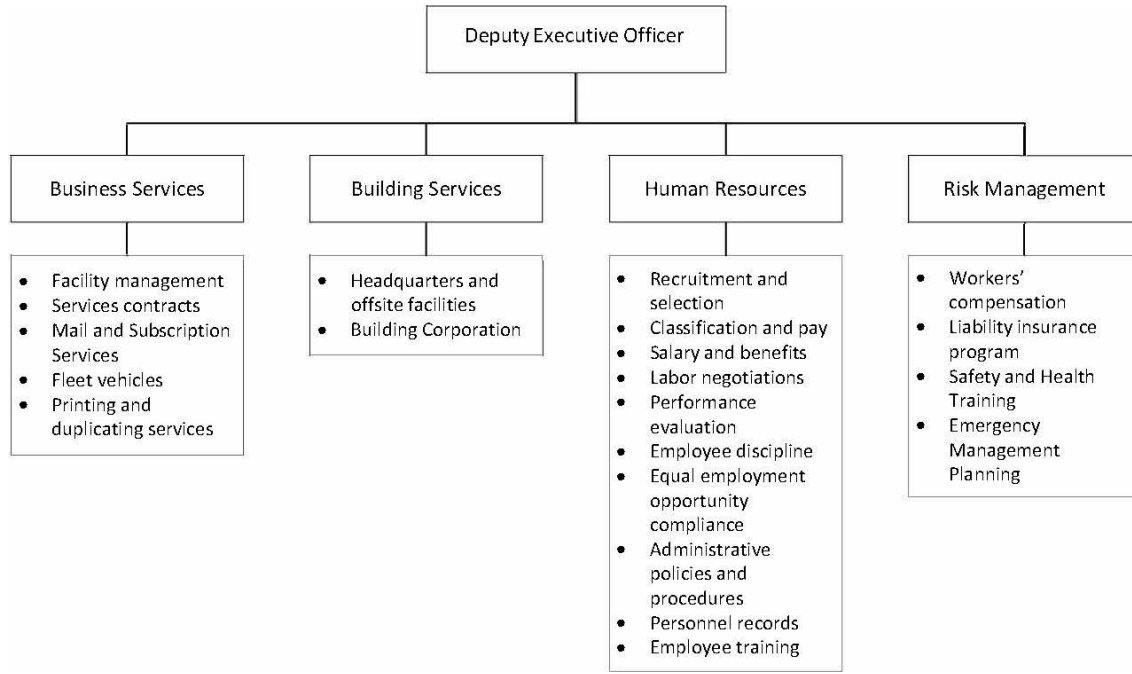
- Implemented the District-wide mentoring program.
- Administered the Governing Board Summer Intern Program.
- Conducted ergonomic workspace evaluations and other safety training programs.
- Implemented the Teleworking Program for employees.
- Held training on sexual harassment prevention and anti-bullying policies, as well as programs for career development and workforce education.
- Completed a Continuity of Operations Plan and Emergency Operations Plan, and conducted training.
- Implemented the Elevator Modernization project.
- Completed the installation of drought-resistant landscaping and water-saving irrigation along the building.
- Achieved Board approval for a new Child Care Center 10-year lease.
- Achieved Board approval for extension and expansion of Long Beach Office lease.
- Completed new office construction and conference room updates at headquarters building.
- Completed work-space design and reconfiguration on several floors.
- Purchased and deployed 10 new fleet vehicles.

### **ANTICIPATED:**

- Negotiate new MOUs for represented groups, and new compensation terms for unrepresented groups.
- Continue to provide support and direction to management and staff with respect to adherence to relevant state and federal laws and South Coast AQMD policies, procedures and Memoranda of Understanding.
- Continue recruitment and selection efforts and conduct classification studies.
- Provide training workshops for supervisors and managers.
- Implement the Continuity of Operations Plan and Emergency Operations Plan program.
- Implement the mentorship program.
- Conduct emergency preparedness drills.
- Conduct training on emergency preparedness programs, including COOP/EOP.
- Implement new training programs (supervisor skills, safety), using new Learning Management Software system.
- Continue updates and implementation of South Coast AQMD's Succession Planning program.
- Continue to plan for significant turnover of vehicle fleet due to CNG tank expiration.

ADMINISTRATIVE & HUMAN RESOURCES (cont.)

**ORGANIZATIONAL CHART:**



**POSITION SUMMARY: 43 FTEs**

Administrative & Human Resources Units	Amended FY 2019-20	Change	Budget FY 2020-21
Office Administration	2	-	2
Business Services	14	-	14
Building Services	8	-	8
Career Development Interns	6	-	6
Classification & Pay/Recruitment & Selection	5	-	5
Employee & Labor Relations/Benefits & Records	6	-	6
Risk Management	2	-	2
<b>Total</b>	<b>43</b>	<b>-</b>	<b>43</b>

ADMINISTRATIVE & HUMAN RESOURCES (cont.)

**POSITION DETAIL:**

<u>FTEs</u>	<u>Title</u>
1	Building Maintenance Manager
1	Building Supervisor
1	Business Services Manager
6	Career Development Intern
1	Deputy Executive Officer/Administrative & Human Resources
1	Facilities Services Technician
1	Fleet Services Supervisor
2	Fleet Services Worker II
5	General Maintenance Worker
5	Human Resources Analyst
2	Human Resources Manager
2	Human Resources Technician
2	Mail Subscription Services Clerk
1	Mail Subscription Services Supervisor
1	Office Assistant
1	Offset Press Operator
2	Print Shop Duplicator
1	Print Shop Supervisor
1	Risk Manager
2	Secretary
1	Senior Administrative Secretary
2	Senior Office Assistant
<u>1</u>	Staff Specialist
43	Total FTEs

**Administrative & Human Resources  
Work Program by Office**

#	Program Code	Program Category	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Revenue Categories
1	16 1026	Operational Support	SCAQMD Mail	Posting/Mailing/Delivery	2.30	0.00	2.30	la
2	16 1035	Operational Support	AB617-General	AB617-General	3.00	1.00	4.00	IX
3	16 1038	Operational Support	Admin/Office Management	Reports/Proj/Budget/Contracts	3.85	2.15	6.00	IX
4	16 1060	Operational Support	Equal Employment Opportunity	Program Dev/Monitor/Reporting	0.10	-0.05	0.05	la
5	16 1080	Operational Support	Auto Services	Vehicle/Radio Repair & Maint	3.00	1.00	4.00	la
6	16 1090	Operational Support	Building Maintenance	Repairs & Preventative Maint	8.00	0.00	8.00	la
7	16 1092	Operational Support	Business Services	Building Services Admin/Contracts	2.55	0.14	2.69	la
8	16 225	Operational Support	Employee Benefits	Benefits Analysis/Orient/Records	1.50	1.00	2.50	la
9	16 226	Operational Support	Classification & Pay	Class & Salary Studies	0.30	0.02	0.32	la
10	16 228	Operational Support	Recruitment & Selection	Recruit Candidates for SCAQMD	3.25	-0.95	2.30	la
11	16 232	Operational Support	Position Control	Track Positions/Workforce Analysis	0.55	-0.35	0.20	la
12	16 233	Operational Support	Employee Relations	Meet/Confer/Labor-Mgmt/Grievance	2.20	-0.70	1.50	la
13	16 255	Operational Support	Facilities Services	Phones/Space/Keys/Audio-Visual	1.00	0.00	1.00	la
14	16 446	Operational Support	Mentorship Program	Mentorship Program	0.00	0.10	0.10	la
15	16 457	Advance Clean Air Technology	MS/Carl Moyer Admin	C Moyer/Contractor Compliance	0.10	-0.07	0.03	IX
16	16 540	Customer Service and Business Assistance	Print Shop	Printing/Collating/Binding	4.00	1.00	5.00	la
17	16 542	Advance Clean Air Technology	Prop 1B:Goods Movement	Prop 1B: Goods Movement	0.10	-0.07	0.03	IX
18	16 565	Customer Service and Business Assistance	Public Records Act	Comply w/ Public Rec Requests	0.05	-0.02	0.03	la
19	16 640	Operational Support	Risk Management	Liab/Property/Wk Comp/Selfins	2.25	0.00	2.25	la
20	16 717	Policy Support	Student Interns	Gov Board/Student Intern Program	4.20	-4.20	0.00	la
21	16 720	Customer Service and Business Assistance	Subscription Services	Rule & Gov Board Materials	0.70	0.00	0.70	IV,XVII

**Total Administrative & Human Resources**

43.00	(0.00)	43.00
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**Administrative & Human Resources  
Line Item Expenditure**

Major Object / Account # / Account Description		FY 2018-19 Actuals	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate *	FY 2020-21 Adopted Budget
<b>Salary &amp; Employee Benefits</b>						
51000-52000	Salaries	\$ 3,259,541	\$ 3,413,047	\$ 3,413,046	\$ 3,320,536	\$ 3,200,293
53000-55000	Employee Benefits	2,029,196	2,122,658	2,122,658	2,174,948	2,154,045
Sub-total Salary & Employee Benefits		\$ 5,288,737	\$ 5,535,704	\$ 5,535,704	\$ 5,495,484	\$ 5,354,338
<b>Services &amp; Supplies</b>						
67250	Insurance	\$ -	\$ -	\$ -	\$ -	\$ -
67300	Rents & Leases Equipment	29,522	41,600	41,600	41,600	41,600
67350	Rents & Leases Structure	-	-	-	-	-
67400	Household	887	5,284	5,284	5,284	5,284
67450	Professional & Special Services	207,821	151,750	123,198	123,198	151,750
67460	Temporary Agency Services	97,858	17,000	49,565	49,565	17,000
67500	Public Notice & Advertising	10,394	12,066	12,066	12,066	9,066
67550	Demurrage	-	-	-	-	-
67600	Maintenance of Equipment	3,893	5,500	5,500	5,500	5,500
67650	Building Maintenance	-	-	-	-	-
67700	Auto Mileage	6,385	4,200	4,200	4,200	4,200
67750	Auto Service	520,817	470,000	470,000	470,000	470,000
67800	Travel	1,658	2,500	2,500	2,500	2,500
67850	Utilities	-	-	-	-	-
67900	Communications	16,358	21,900	21,900	21,900	21,900
67950	Interest Expense	-	-	-	-	-
68000	Clothing	12,463	10,808	10,808	10,808	10,808
68050	Laboratory Supplies	-	-	-	-	-
68060	Postage	6,280	5,469	5,469	5,469	5,469
68100	Office Expense	106,910	111,300	111,300	111,300	111,300
68200	Office Furniture	67,464	-	-	-	-
68250	Subscriptions & Books	2,838	2,520	2,520	2,520	2,520
68300	Small Tools, Instruments, Equipment	6,494	5,030	5,030	5,030	5,030
68400	Gas and Oil	299,038	292,021	292,021	292,021	292,021
69500	Training/Conference/Tuition/ Board Exp.	15,545	15,062	15,062	15,062	15,062
69550	Memberships	618	3,265	3,265	3,265	6,265
69600	Taxes	2,255	-	2,279	2,279	-
69650	Awards	-	-	-	-	-
69700	Miscellaneous Expenses	8,203	12,000	5,708	5,708	12,000
69750	Prior Year Expense	(370)	-	-	-	-
69800	Uncollectable Accounts Receivable	-	-	-	-	-
89100	Principal Repayment	-	-	-	-	-
Sub-total Services & Supplies		\$ 1,423,329	\$ 1,189,275	\$ 1,189,275	\$ 1,189,275	\$ 1,189,275
77000	<b>Capital Outlays</b>	\$ -	\$ -	\$ 450,000	\$ 450,000	\$ -
79050	<b>Building Remodeling</b>	\$ -	\$ -	\$ -	\$ -	\$ -
Total Expenditures		\$ 6,712,066	\$ 6,724,979	\$ 7,174,979	\$ 7,134,759	\$ 6,543,613

\* Estimates based on July 2019 through February 2020 actual expenditures and February 2020 budget amendments.

**CLERK OF THE BOARDS**

**FAYE THOMAS  
CLERK OF THE BOARDS**

<b>At a Glance:</b>	
FY 2019-20 Adopted	\$1.4M
FY 2020-21 Budget	\$1.4M
% of FY 2020-21 Budget	0.8%
Total FTEs FY 2020-21 Budget	6

**DESCRIPTION OF MAJOR SERVICES:**

Clerk of the Boards coordinates the activities, provides operational support, and maintains the official records for both the Governing Board and the Hearing Board. The Office is responsible for preparing the legal notices for hearings and meetings, and ensuring that such notices are published as required. Clerk of the Boards' staff assist petitioners and attorneys in the filing of petitions before the Hearing Board and explain the Hearing Board's functions and procedures. Staff prepares Minute Orders, Findings and Decisions of the Hearing Board, and Summary Minutes of Governing Board meetings. The Clerk acts as communication liaison for the Boards with South Coast AQMD staff and state and federal agencies.

**ACCOMPLISHMENTS:**

**RECENT**

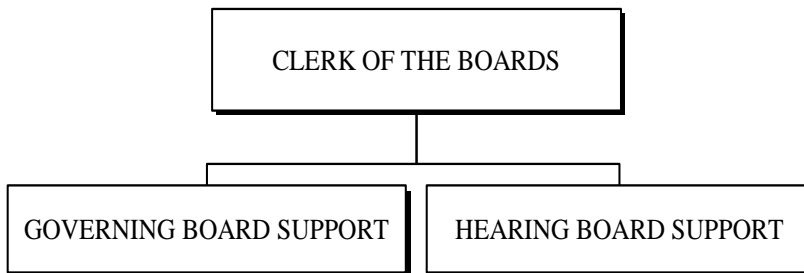
- Received and processed 54 subpoenas, public/administrative records requests, and claims against the South Coast AQMD.
- Provided support for 12 Governing Board meetings, including: preparing an agenda and minutes for each meeting; preparation, distribution, and publication of 32 meeting and public hearing notices; preparation of 30 Board Resolutions.
- Provided support for 89 hearings, pre-hearing conferences, and general meetings held by the Hearing Board, including: processing 88 petitions; preparation, distribution, and publication of 69 meeting and public hearing notices; preparation of 91 Minute Orders, Findings & Decisions, Pre-hearing Memoranda, and General Meeting Reports of Actions; and preparation and distribution of 152 daily agendas and monthly case calendars.
- Planned and coordinated efforts and provided clerical support for special offsite meetings, including: Governing Board – Mobile Board Meeting 10/4/2018 in Los Angeles, Board Retreat 5/9/2019-5/10/2019 in Indian Wells.

**CLERK OF THE BOARDS (cont.)**

**ANTICIPATED:**

- Provide support for approximately 80 hearings, pre-hearing conferences, and general meetings held by the Hearing Board, including: processing approximately 90 petitions; preparation, distribution, and publication of 100 meeting and public hearing notices; preparation of over 100 Minute Orders, Findings and Decisions, Pre-hearing Memoranda, and General Meeting Reports of Actions; and preparing and distributing more than 120 daily agendas and monthly case calendars.
- Provide support for 12 Governing Board meetings, including preparation of meeting agendas, minutes and Board Resolutions.

**ORGANIZATIONAL CHART:**



**POSITION SUMMARY: 6 FTEs**

Clerk of the Boards Unit	Amended FY 2019-20	Change	Budget FY 2020-21
Governing/Hearing Board Support	6	-	6

**POSITION DETAIL:**

<u>FTEs</u>	<u>Title</u>
1	Clerk of the Board
3	Deputy Clerk/Transcriber
1	Office Assistant
<u>1</u>	Senior Deputy Clerk
6	Total FTEs

**Clerk of the Boards  
Work Program by Office**

#	Program Code	Program Category	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Revenue Categories
1	17 024	Operational Support	Admin/SCAQMD/GB/HB Mgmt	Admin Governing/Hearing Brds	1.25	0.00	1.25	la,VII,XV
2	17 275	Operational Support	Governing Board	Attend/Recrd/Monitor Meetings	1.40	0.00	1.40	la
3	17 364	Ensure Compliance	Hearing Board/Abatement Orders	Attnd/Recrd/Monitr Mtgs	0.10	0.00	0.10	IV
4	17 365	Ensure Compliance	Hearing Board/Variences/Appeal	Attend/Record/Monitor HB Mtgs	3.20	0.00	3.20	IV,V,VII
5	17 565	Customer Service and Business Assistance	Public Records Act	Comply w/ Public Rec Requests	0.02	0.00	0.02	la
6	17 855	Operational Support	Web Tasks	Create/edit/review web content	0.03	0.00	0.03	la

**Total Clerk of the Boards**

6.00	-	6.00
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**Clerk of the Boards  
Line Item Expenditure**

Major Object / Account # / Account Description		FY 2018-19 Actuals	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate *	FY 2020-21 Adopted Budget
<b>Salary &amp; Employee Benefits</b>						
51000-52000	Salaries	\$ 424,342	\$ 408,778	\$ 408,778	\$ 418,029	\$ 409,056
53000-55000	Employee Benefits	314,077	291,875	291,874	290,408	278,098
Sub-total Salary & Employee Benefits		\$ 738,419	\$ 700,653	\$ 700,652	\$ 708,437	\$ 687,154
<b>Services &amp; Supplies</b>						
67250	Insurance	\$ -	\$ -	\$ -	\$ -	\$ -
67300	Rents & Leases Equipment	-	-	-	-	-
67350	Rents & Leases Structure	-	-	-	-	-
67400	Household	-	-	-	-	-
67450	Professional & Special Services	15,000	85,200	85,200	25,200	85,200
67460	Temporary Agency Services	-	-	-	-	-
67500	Public Notice & Advertising	17,277	40,000	45,855	45,855	40,000
67550	Demurrage	-	-	-	-	-
67600	Maintenance of Equipment	-	200	200	200	200
67650	Building Maintenance	-	-	-	-	-
67700	Auto Mileage	-	100	100	100	100
67750	Auto Service	-	-	-	-	-
67800	Travel	410	200	200	200	200
67850	Utilities	-	-	-	-	-
67900	Communications	97	500	500	500	500
67950	Interest Expense	-	-	-	-	-
68000	Clothing	-	-	-	-	-
68050	Laboratory Supplies	-	-	-	-	-
68060	Postage	556	1,200	1,200	1,200	1,200
68100	Office Expense	2,858	6,600	6,600	6,600	6,600
68200	Office Furniture	-	-	-	-	-
68250	Subscriptions & Books	-	-	-	-	-
68300	Small Tools, Instruments, Equipment	-	-	-	-	-
68400	Gas and Oil	-	-	-	-	-
69500	Training/Conference/Tuition/ Board Exp.	538,903	584,920	584,920	584,920	584,920
69550	Memberships	300	300	300	300	300
69600	Taxes	-	-	-	-	-
69650	Awards	-	-	-	-	-
69700	Miscellaneous Expenses	252	500	500	500	500
69750	Prior Year Expense	-	-	-	-	-
69800	Uncollectable Accounts Receivable	-	-	-	-	-
89100	Principal Repayment	-	-	-	-	-
Sub-total Services & Supplies		\$ 575,653	\$ 719,720	\$ 725,575	\$ 665,575	\$ 719,720
77000	<b>Capital Outlays</b>	\$ -	\$ -	\$ -	\$ -	\$ -
79050	<b>Building Remodeling</b>	\$ -	\$ -	\$ -	\$ -	\$ -
Total Expenditures		\$ 1,314,072	\$ 1,420,373	\$ 1,426,227	\$ 1,374,012	\$ 1,406,874

\* Estimates based on July 2019 through February 2020 actual expenditures and February 2020 budget amendments.

## COMPLIANCE & ENFORCEMENT

### MARIAN COLEMAN DEPUTY EXECUTIVE OFFICER

<b>At a Glance:</b>	
FY 2019-20 Adopted	\$21.0M
FY 2020-21 Budget	\$20.8M
% of FY 2020-21 Budget	12.0%
Total FTEs FY 2020-21 Budget	155

#### DESCRIPTION OF MAJOR SERVICES:

Compliance and Enforcement (C&E) ensures public health by conducting unannounced field inspections to verify compliance with South Coast AQMD, state and federal rules and regulations and investigating air quality complaints and equipment breakdowns. Title V and RECLAIM sources are inspected at least annually, with the exception of select industries targeted for more frequent evaluation (e.g., at least quarterly inspection of chrome plating facilities). All other 24,000 stationary sources and 13,000 PERP engines/equipment are inspected at least once every three years. Notices to Comply are issued when additional information is required of a source to determine compliance, and for minor administrative violations. Notices of Violation are issued for more serious, typically emissions-based violations. Other activities include participation in Emergency Response and joint inspection activities with other agencies, providing expert testimony before the South Coast AQMD Hearing Board, and conducting training classes for the public and regulated community.

#### ACCOMPLISHMENTS:

##### RECENT:

- Completed 204 inspections of chrome plating facilities (quarterly inspections of 102 facilities).
- Completed 168 Title V facility inspections.
- Completed 167 RECLAIM facility audits.
- Completed inspections of 3,342 other permitted stationary source facilities.
- Completed inspections of 2,148 PERP-registered engines/equipment.
- Completed 15 "Blue Sky" team inspections at refineries.
- Responded to 6,198 complaints (96.4% of those received).
- Responded to 378 breakdown notifications (79% of those received).
- Issued 1,619 Notices to Comply and 1,587 Notices of Violation (NOVs).
- Conducted 24 training classes for members of the public and the regulated community.

## COMPLIANCE & ENFORCEMENT (cont.)

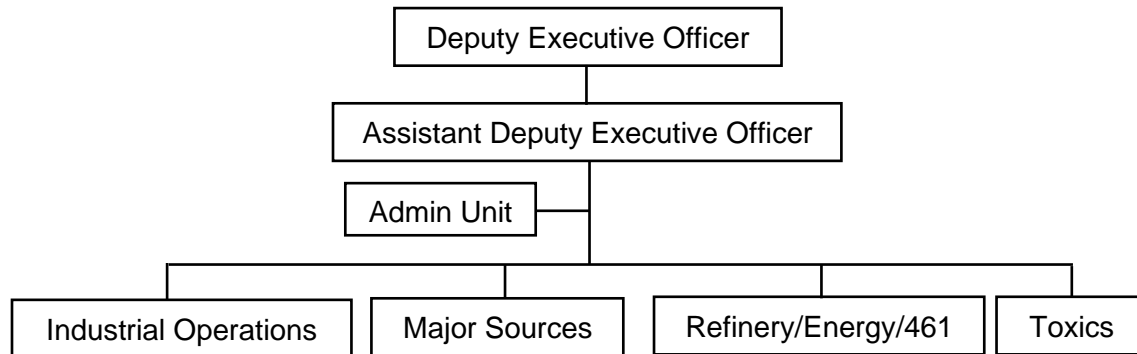
### ANTICIPATED:

- Asbestos Strike Force
  - Due to the current global health crisis, we will attempt to maintain the number of asbestos notification inspections at 1,200.
- Marine Vessel & Terminal Inspection Program: Operation Sea Force (Community Emissions Reduction Plan [CERP Action])
  - Perform surveillance and track marine vessels in the South Coast AQMD waters that vent emissions into the atmosphere without notification or due to poor maintenance.
  - Attempt to board and inspect two marine oil tankers per week for Rule 1142 compliance.
- Complaint Prioritization
  - Improve timelines of complaint response by meeting the first contact complaint response time goal of two hours for an average of at least 85 % of the time.
- Inspection Prioritization
  - Due to the current global health crisis, we will attempt to maintain the number of non-Title V/non-RECLAIM inspections at 7,000 annually.
- Oil and Gas Inspections (CERP Action)
  - Coordinate efforts with the Monitoring team to conduct inspections of oil wells that have elevated pollutants during mobile platform surveys.
- Idling Truck Program (CERP Action)
  - Conduct quarterly sweeps in three AB 617 communities, including at locations identified by community members.
  - Work with CARB and Legislative & Public Affairs/Media Office (LPAM) to have “No Idling Signage” installed in AB 617 communities and schools.
- Rendering Plants (CERP Action)
  - Continue responding to rendering odor complaints and update complainants on a timely basis.
  - Conduct inspections to evaluate compliance with Rule 415.
- Rule 1180 - Refinery Community and Fenceline Monitoring Response
  - Respond to public complaints and investigate emission exceedances of pollutants which exceed pre-determined thresholds.
- Work with Planning, Rule Development and Area Sources staff on continued rule development to ensure clear and enforceable rules and effective notification systems.
- Conduct additional multi-agency inspection sweeps to identify and confirm possible sources of excess Cr6 emissions in other communities.
- Reduce paperwork and streamline the report writing process to increase inspection efficiencies.
- Efficiently move NOV reports to the General Counsel’s office.
- Work closely with the General Counsel’s office to address significant violations.
- Work closely with monitoring and rule-making staff to identify, assess, and address facilities with high emissions.

## COMPLIANCE & ENFORCEMENT (cont.)

- Update policies and procedures governing enforcement actions.

### ORGANIZATIONAL CHART:



### POSITION SUMMARY: 155 FTEs

Office of Compliance and Enforcement Units	Amended FY 2019-20	Change	Budget FY 2020-21
Major Sources	22	-	22
Industrial Operations	52	-	52
Refinery/Energy/461	38	-	38
Toxics	35	-	35
Senior Admin/Staff	8	-	8
Total	155	-	155

## COMPLIANCE & ENFORCEMENT (cont.)

### STAFFING DETAIL:

<u>FTEs</u>	<u>Title</u>
6	AQ Analysis & Compliance Supervisor
91	AQ Inspector II
15	AQ Inspector III
1	Assistant Deputy Executive Officer
1	Deputy Executive Officer
10	Office Assistant
2	Senior Office Assistant
4	Senior Enforcement Manager
1	Staff Assistant
3	Staff Specialist
2	Senior Administrative Secretary
2	Secretary
<u>17</u>	Supervising AQ Inspector
155	Total Adopted Positions

**Compliance & Enforcement  
Work Program by Office**

Program Code	Program Category	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Revenue Categories
1 60 1030	Advance Clean Air Technology	AB134	AB134	0.00	0.25	0.25	IX
2 60 1032	Ensure Compliance	AB617-Meetings	AB617-Meetings	8.00	-7.00	1.00	IX
3 60 1033	Ensure Compliance	AB617-Inspections	AB617-Inspections	0.00	3.00	3.00	IX
4 60 1034	Ensure Compliance	AB617-CERP	AB617-CERP	0.00	0.10	0.10	IX
5 60 1036	Ensure Compliance	AB617-Complaints	AB617-Complaints	0.00	1.00	1.00	IX
6 60 1038	Customer Service and Business Assistance	Admin/Office Budget	Dev/Coord Goals/Policies/Overs	6.00	0.00	6.00	lb
7 60 1047	Customer Service and Business Assistance	Admin/Operations Support	Budget/Contracts/Reports/Projects	4.90	-1.90	3.00	lb
8 60 1070	Ensure Compliance	CARB PERP Program	CARB Audits/Statewide Equip Reg	6.00	0.00	6.00	XIX
9 60 1093	Ensure Compliance	CARB Oil & Gas Reg.	GHG EM Stds Oil/NG Facilities	0.00	4.00	4.00	XVII
10 60 148	Policy Support	Climate/Energy/Incentives	GHG/Climate Chg Support	0.00	0.00	0.00	IV,IX
11 60 152	Ensure Compliance	Compliance/IM Related Activiti	Assist IM: Design/Review/Test	0.50	-0.30	0.20	IV
12 60 155	Ensure Compliance	Compliance Guidelines	Procedures/Memos/Manuals	1.50	-1.25	0.25	IV
13 60 157	Ensure Compliance	Compliance/Special Projects	Prog Audits/Data Req/Bird Supp	3.00	1.00	4.00	II
14 60 158	Ensure Compliance	Compliance Testing	R461/Combustion Equip Testing	1.00	-0.50	0.50	IV
15 60 210	Monitoring Air Quality	Emergency Response	Emerg Tech Asst to Public Saf	0.10	0.00	0.10	IV,XV
16 60 276	Policy Support	Board Committees	Admin/Stationary Source Committee	0.15	-0.05	0.10	la
17 60 365	Ensure Compliance	Hearing Bd /Variances	Variances/Orders of Abatement	2.00	-1.75	0.25	VII
18 60 375	Ensure Compliance	Inspections	Compliance/Inspection/Follow-up	85.00	0.00	85.00	II,V,XV
19 60 377	Ensure Compliance	Inspections/RECLAIM Audits	Audit/Compliance Assurance	14.00	2.00	16.00	II,IV
20 60 416	Policy Support	Legislative Activities	Legislative Activities	0.00	0.00	0.00	la
21 60 492	Customer Service and Business Assistance	Outreach/Business	Pub Events/Conf/Rideshare Fair	0.20	-0.10	0.10	IX
22 60 539	Ensure Compliance	Procedure 5 Review	Evaluate Proc 5 Asbestos Plans	0.40	2.60	3.00	XVII
23 60 550	Ensure Compliance	Public Complaints/Breakdowns	Compltrsp/Invlwp/Resolutn	9.00	1.00	10.00	II,IV,V,XV
24 60 565	Customer Service and Business Assistance	Public Records Act	Comply w/ Public Req for Info	3.00	-2.70	0.30	la
25 60 605	Ensure Compliance	RECLAIM/Admin Support	Admin/Policy/Guidelines	0.50	-0.25	0.25	II,III,IV,XV
26 60 657	Develop Rules	Rulemaking/Support PRA	Provide Rule Development Supp	1.00	-0.25	0.75	IV,XV
27 60 678	Ensure Compliance	School Siting	Identify Haz. Emission Sources near Schools	0.00	0.75	0.75	IV
28 60 690	Customer Service and Business Assistance	Source Education	Prov Tech Asst To Industries	0.40	-0.20	0.20	III,IV,V,XV
29 60 717	Policy Support	Student Interns	Gov Board/Student Intern Program	0.05	0.05	0.10	la
30 60 751	Ensure Compliance	Title III Inspections	Title III Comp/Insp/Follow Up	0.00	0.00	0.00	IV
31 60 771	Ensure Compliance	Title V	Title V Compl/Inspect/Follow Up	4.50	0.00	4.50	II,IV
32 60 791	Ensure Compliance	Toxics/AB2588	Risk Reduct Plan Rvw/Comm Mtgs	0.10	-0.10	0.00	X
33 60 805	Operational Support	Training	Dist/Org Unit Training	2.00	2.00	4.00	lb
34 60 825	Operational Support	Union Negotiations	Official Labor/Mgmt Negotiate	0.10	0.00	0.10	la
35 60 826	Operational Support	Union Steward Activities	Rep Employees in Grievance Act	0.10	0.00	0.10	la
36 60 855	Operational Support	Web Tasks	Creation/Update of Web Conten	1.50	-1.40	0.10	la

**Total Compliance & Enforcement**

155.00	-	155.00
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Compliance & Enforcement						
Line Item Expenditure						
Major Object / Account # / Account Description		FY 2018-19 Actuals	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate *	FY 2020-21 Adopted Budget
<b>Salary &amp; Employee Benefits</b>						
51000-52000	Salaries	\$ 11,832,986	\$ 13,046,309	\$ 13,044,311	\$ 12,884,727	\$ 12,720,909
53000-55000	Employee Benefits	6,559,881	7,574,368	7,574,367	7,084,400	7,694,758
Sub-total Salary & Employee Benefits		\$ 18,392,867	\$ 20,620,677	\$ 20,618,678	\$ 19,969,127	\$ 20,415,666
<b>Services &amp; Supplies</b>						
67250	Insurance	\$ -	\$ -	\$ -	\$ -	\$ -
67300	Rents & Leases Equipment	-	-	-	-	-
67350	Rents & Leases Structure	106,868	111,543	111,543	111,543	111,543
67400	Household	-	-	-	-	-
67450	Professional & Special Services	13,801	19,500	6,500	6,500	12,500
67460	Temporary Agency Services	-	2,000	-	-	-
67500	Public Notice & Advertising	-	-	-	-	-
67550	Demurrage	-	250	250	250	-
67600	Maintenance of Equipment	25,242	34,000	11,000	11,000	22,000
67650	Building Maintenance	-	-	-	-	-
67700	Auto Mileage	993	1,000	1,000	1,000	1,000
67750	Auto Service	-	1,000	-	-	-
67800	Travel	8,181	15,000	12,000	12,000	15,000
67850	Utilities	-	-	-	-	-
67900	Communications	65,305	117,350	117,350	117,350	117,350
67950	Interest Expense	-	-	-	-	-
68000	Clothing	44,764	31,297	21,297	21,297	31,000
68050	Laboratory Supplies	7,277	12,000	6,000	6,000	12,000
68060	Postage	15,450	11,645	11,645	11,645	14,000
68100	Office Expense	79,900	9,355	142,355	142,355	40,000
68200	Office Furniture	1,922	2,000	-	-	2,000
68250	Subscriptions & Books	1,296	400	400	400	457
68300	Small Tools, Instruments, Equipment	6,054	15,460	7,460	7,460	8,000
68400	Gas and Oil	-	-	-	-	-
69500	Training/Conference/Tuition/ Board Exp.	18,734	25,550	25,550	25,550	25,000
69550	Memberships	-	250	250	250	-
69600	Taxes	-	-	-	-	-
69650	Awards	-	-	-	-	-
69700	Miscellaneous Expenses	1,983	5,750	5,750	5,750	3,500
69750	Prior Year Expense	(16)	-	-	-	-
69800	Uncollectable Accounts Receivable	-	-	-	-	-
89100	Principal Repayment	-	-	-	-	-
Sub-total Services & Supplies		\$ 397,755	\$ 415,350	\$ 480,350	\$ 480,350	\$ 415,350
77000	<b>Capital Outlays</b>	\$ -	\$ -	\$ 93,000	\$ 93,000	\$ -
79050	<b>Building Remodeling</b>	\$ -	\$ -	\$ -	\$ -	\$ -
Total Expenditures		\$ 18,790,622	\$ 21,036,027	\$ 21,192,028	\$ 20,542,477	\$ 20,831,016
* Estimates based on July 2019 through February 2020 actual expenditures and February 2020 budget amendments.						

## ENGINEERING & PERMITTING

### AMIR DEJBAKHSH DEPUTY EXECUTIVE OFFICER

<b>At a Glance:</b>	
FY 2019-20 Adopted	\$25.7M
FY 2020-21 Budget	\$24.9M
% of FY 2020-21 Budget	14.4%
Total FTEs FY 2020-21 Budget	161

#### DESCRIPTION OF MAJOR SERVICES:

Engineering & Permitting (E&P) is responsible for processing applications for Permits to Construct & Operate, and special services. The permit processing activities involve approximately 360 major facilities that have been issued Title V Federal Operating permits, about 250 facilities in the RECLAIM program, and over 27,000 large and small business operations. In addition, staff also participates in activities with other agencies, assists with Economic Development and Business Retention programs, provides engineering support to other divisions, and evaluates and implements permit backlog reduction and permit streamlining activities, including automation and other permit processing modernization efforts.

#### ACCOMPLISHMENTS:

##### RECENT:

- Since the commencement of the backlog reduction effort in July 2016, reduced and maintained reduction of total pending applications by over 50%, from more than 7,300 to less than 3,500 pending applications.
- Continued permit streamlining efforts by:
  - Processing almost 2,400 Permits to Construct and 7,401 applications for Permits, Plans, and ERC during FY 2018-19;
  - Focusing on reducing last remaining aged permit applications to extent possible; and
  - Continuing to focus on reducing pending applications beyond targets established in 2016 Action Plan to establish a cushion to help address additional incoming permit applications anticipated from RECLAIM program phase-out over the next one to three years.
- Met the 2,250 – 2,500 (less RECLAIM transition applications) target for FY 2019-20 by maintaining pending application inventory at less than 2,500 (excluding Permits to Construct issued).



## **ENGINEERING & PERMITTING (cont.)**

- Achieved and maintained the timely completion rate for new permit applications by processing over 76 percent of new permit applications within 180 days of being deemed complete.
- Issued over 170 Title V renewal and modification permits in calendar year 2019.
- Continued program to recognize top performing individuals and teams to help maintain high morale and acknowledge performance.
- Continued development of Online Permit Processing tools and other automation efforts. Deployed online registration tool for the three most frequently registered equipment categories, while continuing to support online permitting for dry cleaning equipment, gasoline dispensing facilities and automotive refinishing spray booths.
- Maintained Division's Permit Streamlining goal of application delivery to Permitting Teams within 4 business days.
- Continued implementation of EPA Title V Program Audit Findings Action Plan.
- Posted all newly issued Title V permits to the internet for online public access on an ongoing basis.
- Participated in public meetings to address public concerns regarding high toxic risks and emissions.
- Assisted in developing and amending South Coast AQMD Rules and Regulations such as Reg. III, Reg. XI, Reg. XIV, and other amendments called for under AB 617, including Reg. XX, and incorporating updated Best Available Retrofit Control Technology (BARCT).
- Provided Pre- and Post-application conferences to help permit applicants.
- Participated, reviewed and provided permit remedies to permit holders throughout Calendar Year 2019 from Fee Review cases.
- Provided technical support to IM to test and troubleshoot CLASS programs issues.
- Successfully provided engineering support and/or expert testimony in Hearing Board cases throughout calendar year 2019.
- Organized and administered the annual Certified Permit Processing Professional (CPP) exam for 24 participants. Certified nine new CPP holders as well as provided support to 163 existing CPP holders.
- Prepared Federal New Source Review (NSR) Equivalency Determination Reports pursuant to Rule 1315.
- Prepared annual report on the NOx and SOx RECLAIM Program in accordance with Rule 2015.

### **ANTICIPATED:**

- Continue progress in reducing the permit applications inventory by maintaining pending permit applications inventory excluding Permits to Construct issued and RECLAIM transition applications at or near 3,000, and total pending applications inventory to below 3,500.
- Continue to maintain the timely completion rate for new permit applications by processing 75 to 80 percent of new permit applications within 180 days of being deemed complete.
- Monitor and reduce average permit application residence times.

## ENGINEERING & PERMITTING (cont.)

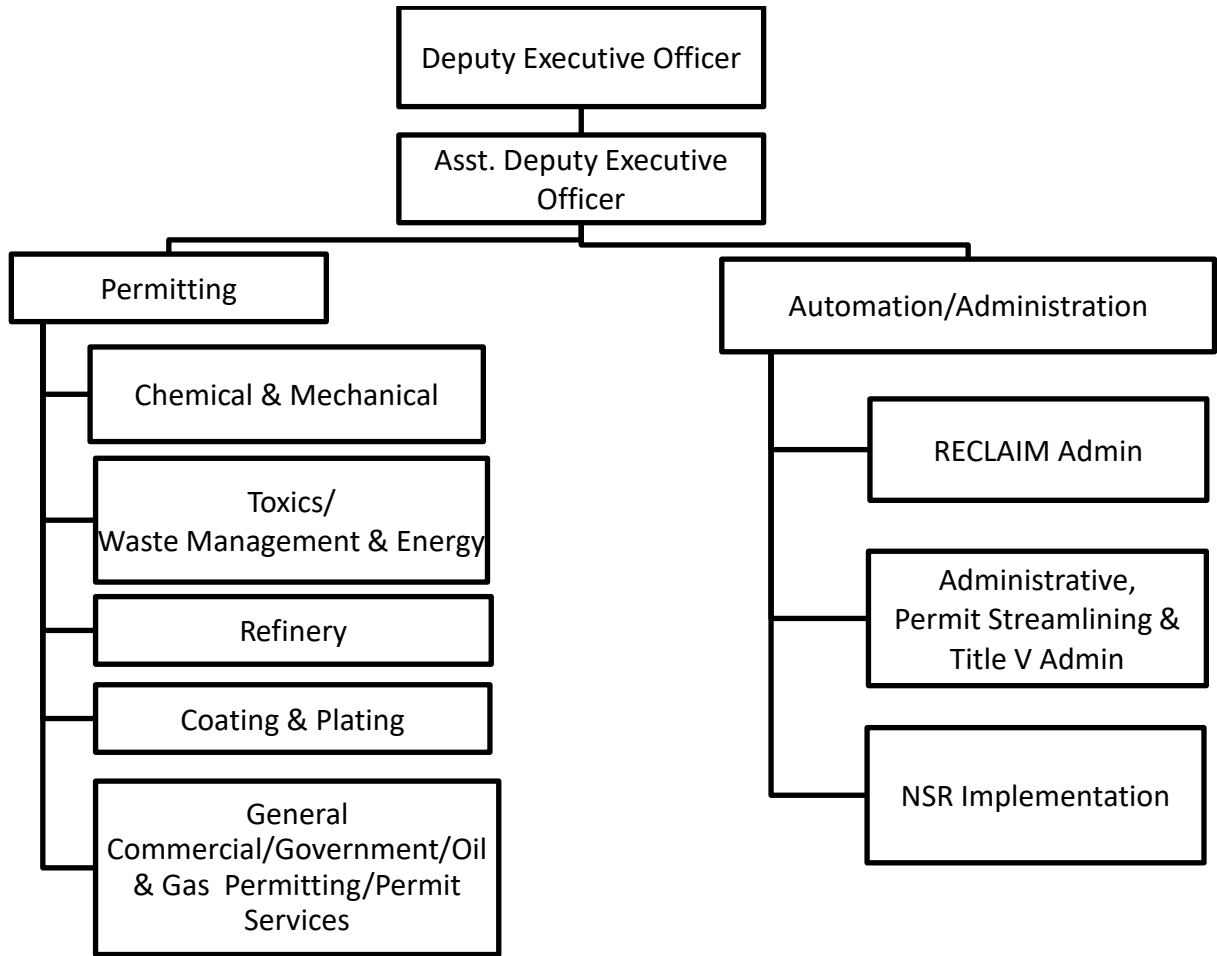
- Continue to complete timely renewal of Title V permits.
- Continue to implement action plan to further improve Title V program pursuant to EPA's recommendations:
  - a) Continue to prepare expanded Statement of Basis (SOB) for all initial Title V permits, at least 10 percent of Title V renewals, and all De-Minimis and Significant Title V revisions,
  - b) Continue efforts to develop automated capability to publish Title V permits online,
  - c) Provide more detailed accounts of applicable federal requirements in Title V permits,
  - d) Provide public with online access to all issued Title V permits, and
  - e) Develop formal policy for sources exiting the Title V program.
- Continue efforts to streamline and expedite permit issuance through:
  - a) Equipment certification/registration programs
  - b) Streamlined standard permits
  - c) Enhancement of permitting systems (including electronic permitting)
  - d) Expedited Permit Processing Program
  - e) Maintaining adequate staff resources
  - f) Improved training
  - g) Revisiting policies and rules.
- Expand the outreach of the of online permitting and permit automation tools for dry cleaning, gasoline dispensing facilities and automotive spray booths.
- Continue the development and deployment of Phase II Online Permitting efforts:
  - a) On-line Dashboard tool for Permit Application Status Tracking that will allow public to track the status of individual permit applications,
  - b) Rule 222 Filing & Registration Forms,
  - c) Registration/Certification for Emergency Generators and Soil Vapor Extraction Systems,
  - d) 400-E-xx Permit Application Forms, and
  - e) Enhancements to Dry Cleaning, Gasoline Dispensing and Automotive Spray Booth modules.
- Continue permit processing modernization efforts through the development of a plan and business model that will facilitate transition to electronic permit application submittal and processing and can be deployed as soon as the development of electronic smart permit applications forms is complete.
- Continue implementation of the staff recognition program, recognizing top performing individuals and teams to help maintain high morale and acknowledge performance.
- Continue to improve and monitor the operational and permitting efficiency of permitting teams by:
  - a) Streamlining workflow,
  - b) Enhancing permitting tools,
  - c) Standardizing permit conditions,
  - d) Reviewing and updating outdated Permitting Policies and Procedures, and
  - e) Standardizing time and processing status metrics for monitoring permit applications through completion.

## ENGINEERING & PERMITTING (cont.)

- Continue soliciting stakeholder input on permit application backlog reduction and permit streamlining efforts through Permit Streamlining Task Force subcommittee meetings.
- Continue certification of Certified Permitting Professionals (CPPs).
- Continue to improve customer services and public outreach by:
  - a) Providing public education by attending public meetings and addressing public concerns,
  - b) Aiding permit applicants through pre- and post-conferences, and
  - c) Providing permitting information for Public Record requests.
- Continue to evaluate the optional Expedited Permitting Program and propose improvements if warranted.
- Update and expand the Permit Processing Handbook.
- Review and comment on Rule 1402 Risk Reduction Plans.
- Continue to provide critical input in developing and amending South Coast AQMD Rules.
- Continue to provide critical input to Compliance & Enforcement in enforcing South Coast AQMD Rules.
- Continue to provide support in Fee Review cases and Hearing Board cases.
- Continue to prepare Federal NSR Equivalency Determination Reports pursuant to Rule 1315.
- Continue to prepare annual report on the NO<sub>x</sub> and SO<sub>x</sub> RECLAIM Program in accordance with Rule 2015.
- Develop a plan to re-issue permits to facilities that are opting out of NO<sub>x</sub> RECLAIM program.
- Continue to provide critical guidance to PRDAS in developing a streamlined NSR process for facilities exiting the RECLAIM program.

**ENGINEERING & PERMITTING (cont.)**

**ORGANIZATIONAL CHART:**



**POSITION SUMMARY: 161 FTEs**

Engineering & Permitting	Amended FY 2019-20	Change	Budget FY 2020-21
Administration	4	-	4
Engineering	130	-	130
Operations	27	-	27
Total	161	-	161

## ENGINEERING & PERMITTING (cont.)

### POSITION DETAIL:

<u>FTEs</u>	<u>Title</u>
92	Air Quality Engineer II
1	Air Quality Specialist
1	Assistant Deputy Executive Officer
2	Data Technician
1	Deputy Executive Officer
1	Office Assistant
1	Program Supervisor
5	Secretary
2	Senior Administrative Secretary
20	Senior Air Quality Engineer
6	Senior Air Quality Engineering Manager
17	Senior Office Assistant
2	Staff Specialist
8	Supervising Air Quality Engineer
<u>2</u>	Supervising Office Assistant
161	Total FTEs

**Engineering & Permitting  
Work Program by Office**

Program #	Code	Program Category	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Revenue Categories
1	50 035	Develop Rules	AB617-General	AB617-General	1.00	0.00	1.00	IX
2	50 038	Customer Service and Business Assistance	Admin/Office Management	Dev/Coord Goals/Policies/Overs	3.00	0.00	3.00	Ib
3	50 047	Customer Service and Business Assistance	Admin/Operations Support	Budget/Contracts/Reports/Projects	3.00	0.00	3.00	Ib
4	50 120	Timely Review of Permits	Certification/Registration Pro	Certification/Registration Prog	1.00	0.00	1.00	III
5	50 148	Policy Support	Climate/Energy/Incentives	GHG/Climate Change Support	0.50	0.00	0.50	II,X
6	50 156	Ensure Compliance	Perm Proc/Info to Compliance	Prov Permit Info to Compliance	3.00	0.00	3.00	III,IV,XV
7	50 200	Customer Service and Business Assistance	Economic Dev/Bus Retention	Perm Proc/Public Participation	0.10	0.00	0.10	III
8	50 240	Ensure Compliance	Environmental Justice	R461/Combustion Equip Testing	0.50	0.00	0.50	II,IV,XV
9	50 253	Timely Review of Permits	ERC Appl Processing	Process ERC Applications	3.50	0.00	3.50	III
10	50 260	Customer Service and Business Assistance	Fee Review	Fee Review Committee	0.45	0.00	0.45	II,III,IV
11	50 276	Policy Support	Board Committees	Admin/Stationary Source Committees	0.25	0.00	0.25	Ia
12	50 365	Ensure Compliance	Hearing Bd/Variations	Variations/Orders of Abatement	0.75	0.00	0.75	VII
13	50 367	Timely Review of Permits	Hearing Board/Appeals	Appeals: Permits & Denials	0.25	0.00	0.25	III
14	50 377	Ensure Compliance	Inspections/RECLAIM Audits	Audit/Compliance Assurance	6.00	0.00	6.00	II,IV
15	50 416	Policy Support	Legislative Activities	Legislative Activities	0.25	0.00	0.25	Ia
16	50 425	Customer Service and Business Assistance	Lobby Permit Services	Supp Perm Proc/Customer Svc	1.00	0.00	1.00	III
17	50 475	Timely Review of Permits	NSR Implementation	Implement NSR/Allocate ERCs	2.50	0.00	2.50	II,III,V,XV
18	50 476	Timely Review of Permits	NSR Data Clean Up	Edit/Update NSR Data	0.50	0.00	0.50	II
19	50 492	Ensure Compliance	Customer Service	Compliance/Inspection/Follow-up	0.50	0.00	0.50	II,V,IX,XV
20	50 515	Timely Review of Permits	Perm Proc/Non TV/Non RECLAIM	PP: Non TitIV/TitleIII/RECLAIM	50.25	0.00	50.25	III,XV
21	50 517	Timely Review of Permits	Permit Services	Facility Data-Create/Edit	12.50	0.00	12.50	III,XV
22	50 518	Timely Review of Permits	RECLAIM Non-Title V	Process RECLAIM Only Permits	4.00	0.00	4.00	III,IV,XV
23	50 519	Timely Review of Permits	Perm Proc/Title III (Non TV)	Process Title III Permits	1.00	0.00	1.00	III
24	50 520	Customer Service and Business Assistance	Perm Proc/Pre-App Mtg Outreac	Pre-App Mtgs/Genl Prescreening	1.00	0.00	1.00	III
25	50 521	Timely Review of Permits	Perm Proc/Expedited Permit	Proc Expedited Permits (301OT)	4.00	0.00	4.00	III
26	50 523	Timely Review of Permits	Permit Streamlining	Permit Streamlining	4.75	0.00	4.75	III
27	50 565	Customer Service and Business Assistance	Public Records Act	Comply w/ Public Req for Info	0.25	0.00	0.25	Ia
28	50 605	Ensure Compliance	RECLAIM/Admin Support	Admin/Policy/Guidelines	6.50	0.00	6.50	II,III,IV,XV
29	50 607	Timely Review of Permits	RECLAIM & Title V	Process RECLAIM & TV Permits	18.40	0.00	18.40	III
30	50 643	Timely Review of Permits	Rule 222 Filing Program	Rule 222 Filing Program	0.50	0.00	0.50	IV
31	50 650	Develop Rules	Rulemaking	Dev/Amend/Impl Rules	0.25	0.00	0.25	II,XV
32	50 657	Develop Rules	Rulemaking/Support PRA	Provide Rule Development Supp	0.25	0.00	0.25	II,XV
33	50 678	Ensure Compliance	School Siting	Identify Haz. Emission Sources near Schools	0.25	0.00	0.25	II
34	50 680	Ensure Compliance	Small Business Assistance	Asst sm bus w/ Permit Process	0.50	0.00	0.50	III,IV
35	50 690	Customer Service and Business Assistance	Source Education	Prov Tech Asst To Industries	2.80	0.00	2.80	III,IV,V,XV
36	50 728	Timely Review of Permits	Perm Proc/IM Programming	Assist IM: Design/Review/Test	2.55	0.00	2.55	II,III,IV
37	50 752	Develop Rules	Title III Rulemaking	Title III Dev/Implement Rules	0.25	0.00	0.25	II,V,XV
38	50 773	Develop Rules	Title V & NSR Rulemaking-Supp	Title V Rules Dev/Amend/Impl	0.25	0.00	0.25	II
39	50 774	Timely Review of Permits	TV/Non-RECLAIM	Process Title V Only Permits	18.00	0.00	18.00	III
40	50 775	Timely Review of Permits	Title V - Admin	Title V Administration	1.00	0.00	1.00	III
41	50 791	Ensure Compliance	Toxics/AB2588	AB2588 Rev Rpts/Risk Redplans	0.25	0.00	0.25	X
42	50 805	Operational Support	Training	Dist/Org Unit Training	3.10	0.00	3.10	Ib
43	50 825	Operational Support	Union Negotiations	Official Labor/Mgmt Negotiate	0.05	0.00	0.05	Ia
44	50 826	Operational Support	Union Steward Activities	Rep Employees in Grievance Act	0.05	0.00	0.05	Ia
45	50 855	Operational Support	Web Tasks	Creation/Update of Web Content	0.25	0.00	0.25	Ia
<b>Total Engineering &amp; Permitting</b>					161.00	-	161.00	

**Engineering & Permitting  
Line Item Expenditure**

Majmr mbjept / Appmunt # / Appmunt Descriptimn		FY 2018-19 Actuals	FY 2019-20 Admpted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate *	FY 2020-21 Adopted Budget
<b>Salary &amp; Emplmyee Benefits</b>						
51000-52000	Salaries	\$ 15,713,314	\$ 16,271,427	\$ 16,271,427	\$ 15,994,319	\$ 15,450,276
53000-55000	Emplmyee Benefits	8,131,976	9,013,891	9,013,892	8,516,626	9,099,404
Sub-tmtal Salary & Emplmyee Benefits		\$ 23,845,290	\$ 25,285,319	\$ 25,285,319	\$ 24,510,945	\$ 24,549,681
<b>Services &amp; Supplies</b>						
67250	Insurance	\$ -	\$ -	\$ -	\$ -	\$ -
67300	Rents & Leases Equipment	1,200	8,000	8,000	8,000	8,000
67350	Rents & Leases Structure	328	8,000	8,000	8,000	8,000
67400	Household	-	-	-	-	-
67450	Professional & Special Services	972	2,500	8,500	8,500	2,500
67460	Temporary Agency Services	63,937	32,000	32,000	32,000	56,000
67500	Public Notice & Advertising	82,013	140,000	140,000	140,000	116,000
67550	Demurrage	-	250	250	250	250
67600	Maintenance of Equipment	-	-	-	-	-
67650	Building Maintenance	-	-	-	-	-
67700	Auto Mileage	26,989	35,000	35,000	35,000	35,000
67750	Auto Service	-	-	-	-	-
67800	Travel	6,929	18,433	18,433	18,433	18,433
67850	Utilities	-	-	-	-	-
67900	Communications	11,973	6,450	6,450	6,450	6,450
67950	Interest Expense	-	-	-	-	-
68000	Clothing	2,692	4,500	4,500	4,500	4,500
68050	Laboratory Supplies	-	-	-	-	-
68060	Postage	25,495	37,000	28,000	28,000	37,000
68100	Office Expense	101,731	59,296	59,711	59,711	59,296
68200	Office Furniture	-	3,500	3,500	3,500	3,500
68250	Subscriptions & Books	130	400	400	400	400
68300	Small Tools, Instruments, Equipment	-	-	-	-	-
68400	Gas and Oil	-	-	-	-	-
69500	Training/Conference/Tuition/ Board Exp.	3,024	5,500	8,500	8,500	5,500
69550	Memberships	620	1,500	1,500	1,500	1,500
69600	Taxes	-	-	-	-	-
69650	Awards	104	2,000	2,000	2,000	2,000
69700	Miscellaneous Expenses	529	5,000	5,000	5,000	5,000
69750	Prior Year Expense	-	-	-	-	-
69800	Uncollectable Accounts Receivable	-	-	-	-	-
89100	Principal Repayment	-	-	-	-	-
Sub-tmtal Services & Supplies		\$ 328,667	\$ 369,329	\$ 369,744	\$ 369,744	\$ 369,329
77000	<b>Capital mutlays</b>	\$ -	\$ -	\$ -	\$ -	\$ -
79050	<b>Building Remmdeling</b>	\$ -	\$ -	\$ -	\$ -	\$ -
Tmtal Expenditures		\$ 24,173,957	\$ 25,654,648	\$ 25,655,063	\$ 24,880,689	\$ 24,919,010

\* Estimates based on July 2019 through February 2020 actual expenditures and February 2020 budget amendments.

## FINANCE

### SUJATA JAIN CHIEF FINANCIAL OFFICER

<b>At a Glance:</b>	
FY 2019-20 Adopted	\$6.4M
FY 2020-21 Budget	\$6.5M
% of FY 2020-21 Budget	3.8%
Total FTEs FY 2020-21 Budget	49

#### DESCRIPTION OF MAJOR SERVICES:

Finance provides services to internal and external customers and stakeholders, including fee payers, internal divisions, employees, the Mobile Source Air Pollution Reduction Review Committee, the Building Corporation, and the Health Effects of Air Pollution Foundation. These services are provided through three distinct units: Controller, Financial Services, and Procurement. The Controller is responsible for accounting, financial reporting, accounts payable, payroll, state and federal tax reporting, revenue posting, and asset management. The Financial Services Manager is responsible for budget preparation, budgetary reporting, forecasting, grants management, billing services, and ad-hoc internal financial support/analysis. The Procurement Manager is responsible for the procurement of goods and services, contracting, proposal/bid solicitations and advertising, processing supplier deliveries, and controlling/dispensing/reconciling inventory.

#### ACCOMPLISHMENTS:

##### RECENT:

- Continued to expand electronic payment options to include Permit Processing Fee payments for asbestos, dry cleaners, spray booths, gas stations, and a portion of Rule 222 registrations.
- Processed 903 contracts and modifications, issued 39 Request for Proposals/Quotes, and processed 128 proposals/quotation. Processed 1,584 purchase orders and 482 CalCard orders.
- Received the Government Finance Officer's Association's (GFOA) awards for the Annual Budget, Comprehensive Annual Financial Report (CAFR), and Popular Annual Financial Report (PAFR) for the most recent fiscal year.
- Improved the process to track grant receipts and expenditures within PeopleSoft.
- Published South Coast AQMD's FY 2019-20 Budget, which includes goals and priority objectives and a multiyear financial summary of all revenues, expenditures and staffing used by each of South Coast AQMD's divisions.
- Completed FY 2018-19 audited financial statements. These required statements offer short-term and long-term financial information about South Coast AQMD. The statement of net position provides information about the nature and amounts of investments in resources (assets) and obligations (liabilities) at the close of the fiscal year. The financial statements are



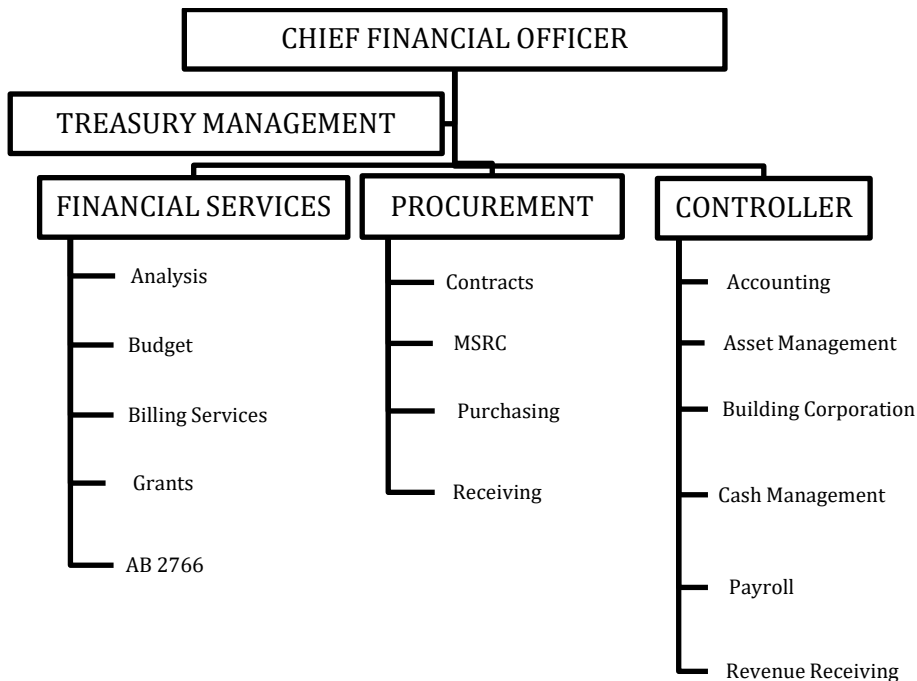
## FINANCE (cont.)

prepared on the accrual basis in accordance with U.S. Generally Accepted Accounting Principles.

### ANTICIPATED:

- Continue to receive GFOA Awards for the Annual Budget, CAFR, and PAFR to ensure South Coast AQMD's financial reports meet the highest professional standards.
- Ensure compliance with all AB 617, AB 134, and VW Mitigation Settlement guidelines for financial reporting and tracking of revenue and expenditures.
- Implement the new lease accounting standards required by Governmental Accounting Standards Board (GASB) Statement Number 87 for recognizing certain lease assets and liabilities for leases that were operating leases previously, which will impact South Coast AQMD starting with FY 2020-21.
- Continue to identify and implement additional opportunities for electronic payments.

### ORGANIZATIONAL CHART:



**FINANCE (cont.)**

**POSITION SUMMARY: 49 FTEs**

Finance Units	Amended FY 2019-20	Change	Budget FY 2020-21
Office Administration	3	-	3
Controller	20	-	20
Financial Services	16	-	16
Procurement	10	-	10
Total	49	-	49

**POSITION DETAIL:**

<u>FTEs</u>	<u>Title</u>
2	Accounting Technician
1	Chief Financial Officer
2	Contracts Assistant
1	Controller
1	District Storekeeper
5	Financial Analyst
1	Financial Services Manager
7	Fiscal Assistant
1	Payroll Supervisor
3	Payroll Technician
1	Procurement Manager
2	Purchasing Assistant
1	Purchasing Supervisor
2	Secretary
3	Senior Accountant
1	Senior Administrative Secretary
2	Senior Fiscal Assistant
9	Senior Office Assistant
1	Staff Assistant
1	Staff Specialist
1	Stock Clerk
<u>1</u>	Supervising Office Assistant
49	Total FTEs

**Finance  
Work Program by Office**

Program Code	Program Category	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Revenue Categories
1 04 1002	Customer Service and Business Assistance	AB2766/Mobile Source	Prog Admin: Monitor/Dist/Audit	0.10	0.00	0.10	IX
2 04 1003	Advance Clean Air Technology	AB2766/MSRC	MSRC Program Administration	0.35	0.00	0.35	IX
3 04 1009	Develop Programs	AB 1318 Mitigation	AB 1318 Projects Admn/Impl	0.13	-0.13	0.00	XVII
4 04 1020	Operational Support	Admin/SCAQMD Budget	Analyze/Prepare/Impl/Track WP	2.65	0.06	2.71	la
5 04 1021	Operational Support	Admin/SCAQMD Contracts	Contract Admin/Monitor/Process	3.20	0.00	3.20	la
6 04 1023	Operational Support	Admin/SCAQMD Capital Assets	FA Rep/Reconcile/Inv/Acct	0.70	0.00	0.70	la
7 04 1030	Advance Clean Air Technology	AB134	AB134	2.00	0.00	2.00	IX
8 04 1035	Operational Support	AB617-General	AB617-General	0.50	0.00	0.50	IX
9 04 1038	Operational Support	Admin/Office Management	Fin Mgmt/Oversee Activities	2.75	0.00	2.75	lb
10 04 1045	Operational Support	Admin/Office Budget	Office Budget/Prep/Impl/Track	0.05	0.00	0.05	lb
11 04 1071	Operational Support	Arch Ctgs - Admin	Cost Analysis/Payments	0.04	0.00	0.04	XVIII
12 04 1083	Policy Support	Hlth Effects Air Pollution Fou	Health Effects Air Poll Foundation Support	0.02	0.00	0.02	la
13 04 1085	Operational Support	Building Corporation	Building Corp Acct/Fin Reports	0.02	0.00	0.02	la
14 04 1130	Advance Clean Air Technology	Clean Fuels/Contract Admin	Clean Fuels Contract Admin/Monitor	0.15	0.00	0.15	VIII
15 04 1170	Customer Service and Business Assistance	Billing Services	Answer/Resp/Resolv Prob & Inq	8.00	0.00	8.00	II,III,IV
16 04 1233	Operational Support	Employee Relations	Assist HR/Interpret Salary Res	0.10	0.00	0.10	la
17 04 1260	Customer Service and Business Assistance	Fee Review	Cnte Mtg/Fee-Related Complaint	0.10	0.00	0.10	II,III,IV,XV
18 04 1265	Operational Support	Financial Mgmt/Accounting	Record Accts Rec & Pay/Rpts	6.20	1.07	7.27	la
19 04 1266	Operational Support	Financial Mgmt/Fin Analysis	Fin/SCAQMD Stat Analysis & Audit	0.80	0.00	0.80	la
20 04 1267	Operational Support	Financial Mgmt/Treasury Mgmt	Treas Mgt Anlyz/Trk/Prog/Invst	1.00	0.00	1.00	la
21 04 1268	Operational Support	Financial Systems	CLASS/Rev/Acct/PR/Sys Analyze	0.10	0.00	0.10	la
22 04 1355	Customer Service and Business Assistance	Grants Management	Grant Anlyz/Eval/Negot/Acc/Rpt	1.00	0.00	1.00	IV,V,XV
23 04 1447	Operational Support	Mobile Sources/Accounting	Record Acct Rec & Pay/Special Funds	0.65	0.00	0.65	IX
24 04 1457	Advance Clean Air Technology	Mobile Source/Moyer Adm	Carl Moyer: Contract/Fin Admin	1.02	0.00	1.02	IX
25 04 1493	Operational Support	Outreach/SB/MB/DVBE	Outreach/Incr SB/DVBE Partic	0.05	0.00	0.05	la
26 04 1510	Operational Support	Payroll	Ded/Ret Rpts/PR/St & Fed Rpts	4.10	0.00	4.10	la
27 04 1542	Advance Clean Air Technology	Prop 1B: Goods Movement	Contracts/Finance Admin	0.50	0.00	0.50	IX
28 04 1544	Advance Clean Air Technology	Prop 1B: Low Emiss Sch Bus	Grants/Finance Admin	0.05	0.00	0.05	IX
29 04 1565	Customer Service and Business Assistance	Public Records Act	Comply w/ Public Rec Requests	0.02	0.00	0.02	la
30 04 1570	Operational Support	Purchasing	Purch/Track Svcs & Supplies	2.50	0.00	2.50	la
31 04 1571	Operational Support	Purchasing/Receiving	Receive/Record SCAQMD Purchases	1.20	0.00	1.20	la
32 04 1572	Operational Support	Purchasing-Receiving/Stockroom	Track/Monitor SCAQMD Supplies	1.00	0.00	1.00	la
33 04 1630	Operational Support	Cash Mgmt/Revenue Receiving	Receive/Post Pymts/Reconcile	5.25	0.00	5.25	II,III,IV,XI
34 04 1631	Customer Service and Business Assistance	Cash Mgmt/Refunds	Research/Doc/Prep/Proc Refunds	0.30	0.00	0.30	III,IV,XI
35 04 1791	Ensure Compliance	Toxics/AB2588	AB2588 Toxics HS Fee Collection	0.15	0.00	0.15	X
36 04 1805	Operational Support	Training	Continuing Education/Training	0.20	0.00	0.20	lb
37 04 1825	Operational Support	Union Negotiations	Official Labor/Mgmt Negotiate	0.02	0.00	0.02	la
38 04 1826	Operational Support	Union Steward Activities	Rep Employees in Grievance Act	0.01	0.00	0.01	la
39 04 1827	Operational Support	VW-General Admin	VW-General Admin	1.00	0.00	1.00	XVII
40 04 1855	Operational Support	Web Tasks	Create/edit/review web content	0.02	0.00	0.02	la

<b>Total Finance</b>	48.00	1.00	49.00
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Finance						
Line Item Expenditure						
Major Object / Account # / Account Description		FY 2018-19 Actuals	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate *	FY 2020-21 Adopted Budget
<b>Salary &amp; Employee Benefits</b>						
51000-52000	Salaries	\$ 3,600,307	\$ 3,634,399	\$ 3,726,780	\$ 3,649,457	\$ 3,650,089
53000-55000	Employee Benefits	2,249,639	2,335,967	2,335,968	2,316,705	2,423,141
Sub-total Salary & Employee Benefits		\$ 5,849,946	\$ 5,970,366	\$ 6,062,748	\$ 5,966,162	\$ 6,073,230
<b>Services &amp; Supplies</b>						
67250	Insurance	\$ -	\$ -	\$ -	\$ -	\$ -
67300	Rents & Leases Equipment	-	-	-	-	-
67350	Rents & Leases Structure	-	-	-	-	-
67400	Household	-	900	900	900	900
67450	Professional & Special Services	146,597	155,178	155,178	155,178	168,178
67460	Temporary Agency Services	45,365	63,000	63,000	63,000	63,000
67500	Public Notice & Advertising	-	7,000	7,000	7,000	7,000
67550	Demurrage	-	780	780	780	780
67600	Maintenance of Equipment	614	1,860	1,860	1,860	1,860
67650	Building Maintenance	-	-	-	-	-
67700	Auto Mileage	3,315	4,468	4,468	4,468	4,468
67750	Auto Service	-	-	-	-	-
67800	Travel	4,603	6,000	6,000	6,000	6,000
67850	Utilities	-	-	-	-	-
67900	Communications	1,657	9,000	9,000	9,000	9,000
67950	Interest Expense	-	-	-	-	-
68000	Clothing	1,012	1,200	1,200	1,200	1,200
68050	Laboratory Supplies	-	-	-	-	-
68060	Postage	163,503	111,038	111,038	111,038	111,038
68100	Office Expense	35,266	36,120	35,705	35,705	36,120
68200	Office Furniture	-	-	-	-	-
68250	Subscriptions & Books	1,962	3,470	3,470	3,470	3,470
68300	Small Tools, Instruments, Equipment	-	-	-	-	-
68400	Gas and Oil	-	-	-	-	-
69500	Training/Conference/Tuition/ Board Exp.	4,681	27,250	27,250	27,250	27,250
69550	Memberships	2,875	2,793	2,793	2,793	2,793
69600	Taxes	-	-	-	-	-
69650	Awards	-	-	-	-	-
69700	Miscellaneous Expenses	3,084	5,200	5,200	5,200	5,200
69750	Prior Year Expense	(61)	-	-	-	-
69800	Uncollectable Accounts Receivable	-	-	-	-	-
89100	Principal Repayment	-	-	-	-	-
Sub-total Services & Supplies		\$ 414,472	\$ 435,257	\$ 434,842	\$ 434,842	\$ 448,257
77000	<b>Capital Outlays</b>	\$ -	\$ -	\$ -	\$ -	\$ -
79050	<b>Building Remodeling</b>	\$ -	\$ -	\$ -	\$ -	\$ -
Total Expenditures		\$ 6,264,418	\$ 6,405,623	\$ 6,497,590	\$ 6,401,004	\$ 6,521,487
* Estimates based on July 2019 through February 2020 actual expenditures and February 2020 budget amendments.						



**SOUTH COAST**

**AIR QUALITY MANAGEMENT DISTRICT**

## INFORMATION MANAGEMENT

### RON MOSKOWITZ CHIEF INFORMATION OFFICER

<b>At a Glance:</b>	
FY 2019-20 Adopted	\$12.2M
FY 2020-21 Budget	\$12.2M
% of FY 2020-21 Budget	7.1%
Total FTEs FY 2020-21 Budget	57

#### DESCRIPTION OF MAJOR SERVICES:

Information Management (IM) provides a wide range of information management systems and services in support of all South Coast AQMD operations. In addition to IM's administrative unit which provides for overall planning, administration and coordination of all IM activities, IM is comprised of two Information Technology (IT) units, and a Project Management unit. The two IT units are distinguished from each other in that one is primarily concerned with hardware and network issues (while acquiring and applying software to integrate systems and functions), whereas the other focuses on system development (while integrating communication functions and the latest computer technologies). Due to the increasing convergence between hardware, software and digital technologies, the work performed by the two IT units often overlaps and requires close coordination. Areas where the two units overlap include workflow automation, imaging, automatic system messaging (e.g., through email), GIS, etc. The Project Management unit performs project management functions along with other projects as they arise.

#### ACCOMPLISHMENTS:

##### RECENT:

- AB617 Monitoring Web Site
- Affordable Care Act Reporting Support
- Annual Emissions Reporting (AER)
- South Coast AQMD-Mobile App/Android
- Bank of America (BoFA) Check Image Platform upgrade
- BofAlink Lockbox Rewrite
- BofAlink Transmittal Platform Change
- Clear Air Awards Nomination Website
- Compliance Deployment (Emission Categorization)
- Facility Information Detail (FIND) System
- Fiscal Year End & Tax Update

## INFORMATION MANAGEMENT (cont.)

- Flare Event Notification System
- INGRES 11 Migration (application updates)
- Media Office Web page
- Mentoring Software (River) implementation
- Onbase Version Upgrade (application updates)
- Online Equipment Form Filing & Submittal (400-E-XX) - Phase I - 10 Forms
- Online Filing and Registration System (R222)
- Online Payment FIS platform upgrade
- Online Training System
- PeopleSoft 457 limit
- PeopleSoft Benefit Enrollment
- PeopleSoft eRequisition
- PeopleSoft Payroll Tax Update
- PeopleSoft Payroll Union Negotiation Implementation
- Permit Application Status Dashboard
- Permitting PAATS/PPS rule 301 update
- Rule 1113/314 Upgrade
- Rule 1415 Refrigerant Filing System
- Rule 2202 On Line Plan Submission
- Replace your Ride Phase III
- Rideshare Survey Application
- Rule 1180 Refinery Fence Line Monitoring
- Security Portal Crash recovery
- VW Mitigation
- Wildfire monitoring support (Thermal, Getty, Martinez)
- Year End Tax Reporting Support (W-2, 1099)
- AB617 DMS Azure Implementation
- AER Annual Update and Bug Fixes
- South Coast AQMD mobile application development Support
- AQ-SPEC System Implementation in Azure
- ArcGIS Server Version Patch Updates and ArGIS Pro Upgrade
- Auto-Extraction & Redaction of Inspection Reports
- Azure Data Center and VPN Implementation
- Azure Next Gen Firewall
- Backfile Scanning of Paper Documents
- Blade Server Upgrades
- Cable TV Implementation
- Carl Moyer Program Online Application Annual Updates and Bug Fixes
- Cubicle Re-configurations
- Cybersecurity Awareness Training for Employees
- Cybersecurity Newsletter
- Database Implementation of 1403 Enhancements

## INFORMATION MANAGEMENT (cont.)

- DBA-Ingres Upgrade Version 11
- Emergency Notification Systems
- Enterprise GIS Phase II Web Application
- Flare Event Notification System (FENS) Database Implementation
- GeoJobe Version Upgrade
- GIS API Server
- Help Desk Tickets Resolved 3,709
- Ingres 11 patch 15466 Upgrade
- Ingres 11 patch 15475 Upgrade
- Ingres Net Client Upgrade to Version 11 with Patches
- Internet Proxy Server Upgrade (Zscaler)
- Laptop and Desktop Upgrades
- Load Balance CLASS Databases
- New Backup Solution for VMs
- Next Generation Firewall Implementation
- Office 365 Phase II (Office 365 Email, OneDrive, and Office Desktop)
- OnBase Legal Implementation
- Planning, Rule Development and Area Source Org Unit Storage and Server Upgrade
- Public Records Enhancements
- Public Records Requests Processed, over 4,500
- Rule 461 Bug Fixes
- Redis Cache Server Implementation
- Redundant Core Switch Implementation
- Renewal of HP Server Maintenance & Support
- Request To Speak System
- RFQ 2019-20 Hardware, Software and Services Approved Vendors List
- Rule 1173 file upload form
- Sacramento shared office workstation and network setup
- SAN expansion and fiber channel switch purchase and implementation
- Source Test Upload Form
- Storage Space Direct
- Technology Advancement Office – Prop 1B Inspection Form & Workflow
- Title V Alternate Format Permits
- Upgrade OnBase servers to 2016
- Windows Server OS Upgrades

### ANTICIPATED:

- Agenda Tracking System
- AQ-Spec Phase 2 (Multiple Data source input)
- AQ-Spec Phase I / AB617 Data Management System
- Compliance Upgrade
- Emergency/Major incident notification system



## INFORMATION MANAGEMENT (cont.)

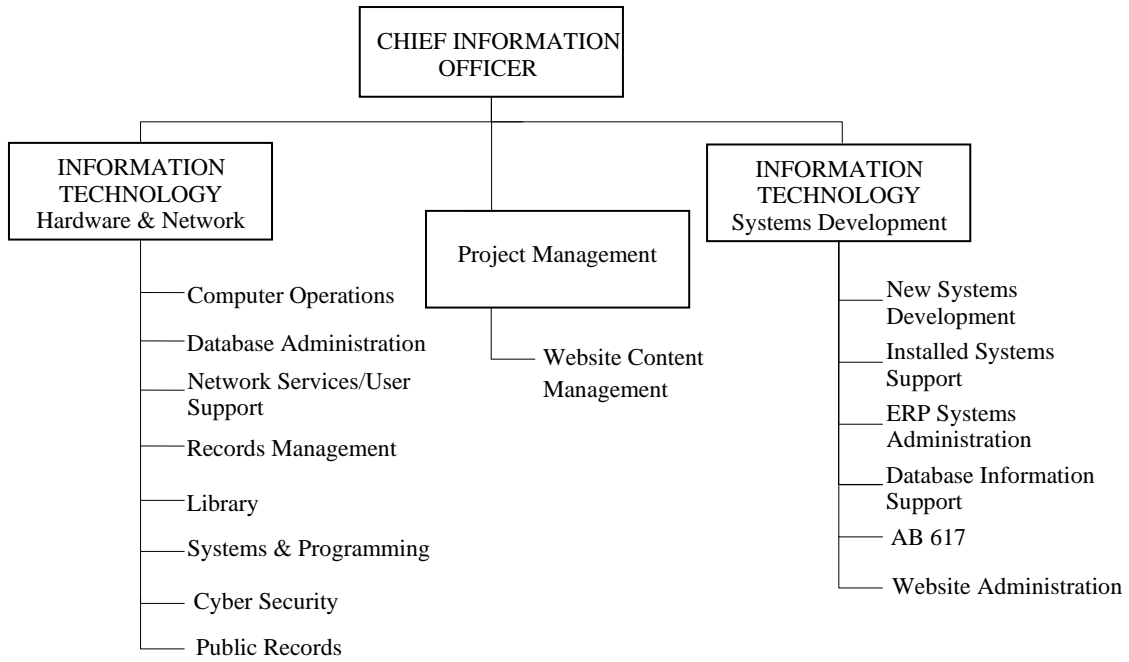
- Legal Office System
- Mobile App Phase 3 Enhancements (Spanish +)
- New Air Quality support system (Hourly Forecast, Interpolated AQI)
- Online Application Filing - Paperless workflow
- Online Equipment Form Filing & Submittal (400-E-XX) - Phase I - 10 Forms
- Online Equipment Form Filing & Submittal (400-E-XX) - Phase II - 10 Forms
- PeopleSoft eRequisition
- Rule 1403 Enhancements
- Rule 2202 Transportation Online Plan Submission
- Security Portal Upgrade
- Source Test Tracking System
- Special Monitoring Web site rewrite
- TV Compliance e-Reporting System/Portal
- VW Phase 2 and 3 (Administration and Tracking)
- Building Security System Server Upgrades
- Computer Room HVAC Replacement
- Cybersecurity Assessment
- Cybersecurity Policies and Standards
- First Floor Network Expansion
- Ingres version upgrade Actian X 11-1
- Internet Bandwidth Upgrade to 2G
- Long Beach Office Network Expansion
- Mobile App YouTube API
- Network and firewall zoning
- Network Security Redesign - Telemetry Air Monitor Sites
- Virtualize All Physical Servers on the Blade Servers
- Application Security Testing
- ArcGIS Version Upgrade
- Azure DevOps
- Cell Phone Upgrades
- Computer Training Room Upgrade
- Disaster Recovery Implementation in Azure
- Emission Reporting System (ERS) Replacement
- High Fluoride (HF) Station Replacement
- Hurricane MTA Server Upgrade
- IT Service Management Software
- Laptop and Desktop Upgrades
- Load Balancer Implementation All Web Servers
- Microfiche Conversion
- Network Traffic Analysis System
- Office 365 Phase III
- Office 365 upgrade to Microsoft 365

## **INFORMATION MANAGEMENT (cont.)**

- OnBase Version Upgrade (EP)
- Outdoor WIFI Coverage
- Security Information and Event Management (SIEM) Implementation
- Telephone System Upgrade
- Vulnerability Scanning and Management Solution
- Windows Server OS and Hardware Upgrades

## INFORMATION MANAGEMENT (cont.)

### ORGANIZATIONAL CHART:



### POSITION SUMMARY: 57 FTEs

Information Management Units	Amended FY 2019-20	Change	Budget FY 2020-21
Office Administration	2	-	2
Hardware & Network	33	(1)	32
Systems Development	21	-	21
Project Management	2	-	2
<b>Total</b>	<b>58</b>	<b>(1)</b>	<b>57</b>

## INFORMATION MANAGEMENT (cont.)

### POSITION DETAIL:

<u>FTEs</u>	<u>Title</u>
1	Assistant Database Administrator
3	Assistant Information Technology Specialist
1	Chief Information Officer
1	Database Administrator
2	Information Technology Manager
1	Information Technology Specialist I
3	Information Technology Supervisor
4	Office Assistant
1	Public Affairs Specialist
2	Secretary
1	Senior Administrative Secretary
6	Senior Information Technology Specialist
4	Senior Office Assistant
2	Supervising Office Assistant
14	Systems Analyst
<u>11</u>	Systems and Programming Supervisor
57	Total FTEs

**Information Management  
Work Program by Office**

#	Program Code	Program Category	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Revenue Categories
1	27 1035	Operational Support	AB617-General	AB617-General	8.00	0.00	8.00	IX
2	27 1038	Operational Support	Admin/Office Management	Overall Direction/Coord of IM	2.00	0.00	2.00	Ib
3	27 071	Operational Support	Arch Ctgs - Admin	Database Dev/Maintenance	0.25	0.00	0.25	XVIII
4	27 160	Operational Support	Computer Operations	Oper/Manage Host Computer Sys	5.25	0.00	5.25	la
5	27 173	Operational Support	CyberSecurity	CyberSecurity	0.00	1.00	1.00	la
6	27 184	Operational Support	Database Information Support	Ad Hoc Reports/Bulk Data Update	1.00	0.00	1.00	la
7	27 185	Operational Support	Database Management	Dev/Maintain Central Database	2.25	0.00	2.25	la
8	27 215	Operational Support	Annual Emission Reporting	System Enhancements for GHG	0.50	0.00	0.50	II,XVII
9	27 370	Operational Support	Information Technology Svcs	Enhance Oper Effic/Productivity	2.75	0.00	2.75	la
10	27 420	Operational Support	Library	General Library Svcs/Archives	0.25	0.00	0.25	la
11	27 470	Operational Support	Network Operations/Telecomm	Operate/Maintain/Implem SCAQMD	9.25	-1.00	8.25	la
12	27 480	Operational Support	New System Development	Dev sys for special oper needs	2.50	-0.50	2.00	II,IV
13	27 481	Customer Service and Business Assistance	New System Development	Dev sys in supp of Dist-wide	1.75	-0.50	1.25	la,III
14	27 523	Timely Review of Permits	Permit Streamlining	Permit Streamlining	0.25	0.00	0.25	III
15	27 565	Customer Service and Business Assistance	Public Records Act	Comply w/ Public Req for Info	4.75	0.00	4.75	la
16	27 615	Operational Support	Records Information Mgmt Plan	Plan/impl/Dir/Records Mgmt plan	1.25	0.00	1.25	la
17	27 616	Operational Support	Records Services	Records/Documents processing	3.75	0.00	3.75	la,III,IV
18	27 735	Operational Support	Systems Maintenance	Maintain Existing Software Prog	4.50	0.00	4.50	II,III,IV
19	27 736	Operational Support	Systems Implementation/Peoples	Fin/HR PeopleSoft Systems impl	1.50	0.00	1.50	la
20	27 770	Timely Review of Permits	Title V	Dev/Maintain Title V Program	1.50	0.00	1.50	III
21	27 791	Ensure Compliance	Toxics/AB2588	AB2588 Database Software Supp	0.50	0.00	0.50	X
22	27 827	Operational Support	VW-General Admin	VW-General Admin	0.00	1.00	1.00	XVII
23	27 855	Operational Support	Web Tasks	Create/edit/review web content	3.25	0.00	3.25	la

**Total Information Management**

57.00	-	57.00
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**Information Management  
Line Item Expenditure**

Major Object / Account # / Account Description		FY 2018-19 Actuals	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate *	FY 2020-21 Adopted Budget
<b>Salary &amp; Employee Benefits</b>						
51000-52000	Salaries	\$ 5,832,411	\$ 5,889,051	\$ 5,968,257	\$ 6,275,888	\$ 5,827,294
53000-55000	Employee Benefits	3,434,894	3,567,551	3,567,551	3,567,551	3,662,975
Sub-total Salary & Employee Benefits		\$ 9,267,305	\$ 9,456,602	\$ 9,535,808	\$ 9,843,439	\$ 9,490,269
<b>Services &amp; Supplies</b>						
67250	Insurance	\$ -	\$ -	\$ -	\$ -	\$ -
67300	Rents & Leases Equipment	-	1,880	1,880	1,880	1,880
67350	Rents & Leases Structure	-	-	-	-	-
67400	Household	-	1,250	1,100	1,100	1,250
67450	Professional & Special Services	1,407,577	1,404,121	1,245,484	1,245,484	1,404,121
67460	Temporary Agency Services	103,871	347,199	240,699	240,699	347,198
67500	Public Notice & Advertising	-	-	-	-	-
67550	Demurrage	-	650	650	650	650
67600	Maintenance of Equipment	98,143	157,750	154,260	154,260	157,750
67650	Building Maintenance	-	-	-	-	-
67700	Auto Mileage	3,269	1,250	4,000	4,000	1,250
67750	Auto Service	-	-	-	-	-
67800	Travel	23,522	2,160	13,418	13,418	2,160
67850	Utilities	-	-	-	-	-
67900	Communications	14,127	36,900	36,900	36,900	36,900
67950	Interest Expense	-	-	-	-	-
68000	Clothing	-	-	-	-	-
68050	Laboratory Supplies	-	-	-	-	-
68060	Postage	1,108	5,500	5,500	5,500	5,500
68100	Office Expense	1,085,223	673,912	1,078,409	1,078,409	673,912
68200	Office Furniture	4,761	-	1,000	1,000	-
68250	Subscriptions & Books	73,349	30,000	97,804	97,804	30,000
68300	Small Tools, Instruments, Equipment	247	2,000	2,000	2,000	2,000
68350	Film	-	-	-	-	-
68400	Gas and Oil	-	-	-	-	-
69500	Training/Conference/Tuition/ Board Exp.	117,592	46,575	126,421	126,421	46,575
69550	Memberships	85	1,320	1,320	1,320	1,320
69600	Taxes	-	1,000	1,000	1,000	1,000
69650	Awards	-	-	-	-	-
69700	Miscellaneous Expenses	235	-	-	-	-
69750	Prior Year Expense	(2,919)	-	-	-	-
69800	Uncollectable Accounts Receivable	-	-	-	-	-
89100	Principal Repayment	-	-	-	-	-
Sub-total Services & Supplies		\$ 2,930,190	\$ 2,713,467	\$ 3,011,845	\$ 3,011,845	\$ 2,713,466
77000	<b>Capital Outlays</b>	\$ 2,498,890	\$ 35,000	\$ 2,217,760	\$ 2,217,760	\$ 35,000
79050	<b>Building Remodeling</b>	\$ -	\$ -	\$ -	\$ -	\$ -
Total Expenditures		\$ 14,696,385	\$ 12,205,069	\$ 14,765,413	\$ 15,073,044	\$ 12,238,734

\* Estimates based on July 2019 through February 2020 actual expenditures and February 2020 budget amendments.

## LEGAL

### BAYRON T. GILCHRIST GENERAL COUNSEL

<b>At a Glance:</b>	
FY 2019-20 Adopted	\$7.1M
FY 2020-21 Budget	\$7.1M
% of FY 2020-21 Budget	4.1%
Total FTEs FY 2020-21 Budget	35

#### **DESCRIPTION OF MAJOR SERVICES:**

The General Counsel's Office is responsible for advising the South Coast AQMD Board and staff on all legal matters and enforcing South Coast AQMD rules and state laws related to air pollution control. Attorneys review and assist in the drafting of South Coast AQMD rules and regulations to ensure they are within South Coast AQMD's authority and are written in a clear and enforceable manner. Attorneys ensure that all legal requirements for noticing, public workshop, CEQA analysis, and socioeconomic analysis of proposed rules and air quality management plans are satisfied.

The General Counsel's Office is also responsible for representing the South Coast AQMD Board and staff in court proceedings and administrative hearings related to matters arising out of staff's performance of official duties as South Coast AQMD officers and employees.

The Office is responsible for the enforcement of all South Coast AQMD rules and regulations and applicable state law. In addition, staff attorneys represent the Executive Officer in all matters before the South Coast AQMD Hearing Board, including variances, permit appeals, and abatement orders. Staff investigators support civil penalty and litigation and settlement efforts, including the minor source penalty program which is handled by investigators.

#### **ACCOMPLISHMENTS:**

##### **RECENT:**

- Staff advised and participated in the negotiation of Memoranda of Understanding (MOUs) with each of the five commercial airports in the Basin – Los Angeles International Airport (LAX), John Wayne Orange County Airport (SNA), Hollywood Burbank Airport (BUR), Ontario International Airport (ONT), and Long Beach Airport (LGB). The MOUs included schedules for the implementation of specified measures from each airport's air quality improvement plans that are eligible for State Implementation Plan credit.
- Staff advised on AB 617 implementation and reviewed and commented on all Community Emissions Reduction Plans (CERPs) for the first-year communities.

## LEGAL (cont.)

- Staff advised and participated in the preparation and submittal of the Contingency Measure Plan defining the South Coast AQMD's 182(e)(5) measures.
- Staff obtained over \$11 million in civil penalties for air pollution violations in 2019. Penalties obtained included \$7 million in penalties from Home Depot, and \$1.6 million in penalties from Lowe's to address alleged violations of Rule 1143 at the two home improvement stores. Home Depot and WM Barr voluntarily discontinued further sales of denatured alcohol in the South Coast AQMD. In addition, Lowe's voluntarily discontinued further sales of denatured alcohol, turpentine, and kerosene in the South Coast AQMD.
- Staff continued to implement and enforce the objectives of the Community Air Toxics Initiative. Staff's work included, but was not limited to, obtaining a Stipulated Order for Abatement against Trojan Battery requiring significant improvements at the facility. Trojan Battery also agreed to pay penalties of \$755,000.
- Staff submitted an amicus brief in support of United States' position that the Chemical Safety Board's demands for information from Exxon-Mobil with respect to the Torrance refinery's modified hydrofluoric acid (MHF) alkylation unit were relevant to its investigation into the 2015 explosion, even though no MHF was released. The Ninth Circuit agreed that such information was relevant.
- Staff reviewed and processed over 1,000 contracts from various departments within the District.
- Staff participated in the completion of first phases of the development of new legal office software for case management.

### ANTICIPATED:

- Provide legal advice regarding the development of facility-based mobile source measures for warehouses and ports.
- Provide legal advice for the transition away from RECLAIM, including the development of (Best Available Retrofit Control Technology (BARCT) rules, and working with U.S. EPA to identify potential solutions for New Source Review (NSR) permitting and the lack of Emission Reduction Credits (ERC) in the open market.
- Provide legal advice regarding AB 617, including potential enforcement actions based on the CERPs for the first-year communities, and implementation advice for the development of CERPs in the second-year communities.
- Revise the South Coast AQMD records retention policy and providing training to staff on the requirements.
- Participate in litigation challenging the legality of U.S. EPA's revocation of the Clean Air Act waiver conferred on California's Advanced Clean Cars Program.
- Participate in litigation challenging the legality of the National Highway Transportation Administration's regulation preempting zero emission vehicle mandates.



**LEGAL (cont.)**

**ORGANIZATIONAL CHART:**



**POSITION SUMMARY: 35 FTEs**

Legal Units	Amended FY 2019-20	Change	Budget FY 2020-21
Office Administration	4	-	4
General Counsel	26	-	26
Investigations	5	-	5
<b>Total</b>	<b>35</b>	<b>-</b>	<b>35</b>

LEGAL (cont.)

POSITION DETAIL:

<u>FTEs</u>	<u>Title</u>
4	Administrative Secretary/Legal
1	Assistant Chief Deputy – Major Prosecutions
1	Chief Deputy Counsel
1	General Counsel
4	Investigator
3	Legal Secretary
1	Office Assistant
2	Paralegal
4	Principal Deputy District Counsel
10	Senior Deputy District Counsel
1	Senior Office Assistant
1	Senior Paralegal
1	Staff Specialist
<u>1</u>	Supervising Investigator
35	Total FTEs

Legal Work Program by Office							
Program Code	Program Category	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Revenue Categories
1	08 1001	Advance Clean Air Technology	AB2766 Mob Src/Legal Advice	AB2766 Leg Adv: Trans/Mob Source	0.05	0.00	IX
2	08 1003	Advance Clean Air Technology	AB2766/MSRC	Legal Advice: MSRC Prog Admin	0.10	0.00	IX
3	08 1010	Develop Programs	AQMP	AQMP Revision/CEQA Review	0.10	0.00	II,IV,IX
4	08 1025	Operational Support	Admin/SCAQMD-Legal Research	Legal Research/Staff/Exec Mgmt	1.20	0.00	la
5	08 1030	Advance Clean Air Technology	AB134	AB134	1.50	0.00	IX
6	08 1035	Operational Support	AB617-General	AB617-General	2.50	0.00	IX
7	08 1038	Operational Support	Admin/Office Management	Attorney Timekeeping/Perf Eval	3.50	0.00	lb
8	08 071	Operational Support	Arch Ctgs - Admin	Rule Dev/TA/Reinterpretations	0.05	0.00	XVIII
9	08 072	Ensure Compliance	Arch Ctgs - End User	Case Dispo/Rvw, Track, Prep NOV's	0.05	0.00	XVIII
10	08 073	Ensure Compliance	Arch Ctgs - Other	Case Dispo/Rvw, Track, Prep NOV's	0.05	0.00	XVIII
11	08 102	Operational Support	CEQA Document Projects	CEQA Review	0.75	0.00	II,III,IX
12	08 115	Ensure Compliance	Case Disposition	Trial/Dispo-Civil Case/Injunct	4.75	0.00	II,IV,V,VII,XV
13	08 131	Advance Clean Air Technology	Clean Fuels/Legal Advice	Legal Advice: Clean Fuels	0.15	0.00	VIII
14	08 154	Ensure Compliance	Compliance/NOV Administration	Review/Track/Prep NOV's/MISAs	0.75	0.00	IV
15	08 185	Ensure Compliance	Database Management	Support IM/Dev Tracking System	1.00	0.00	IV
16	08 227	Operational Support	Employee/Employment Law	Legal Advice: Employment Law	0.50	0.00	la
17	08 235	Ensure Compliance	Enforcement Litigation	Maj Prosecutions/Civil Actions	2.00	0.00	IV
18	08 275	Operational Support	Governing Board	Legal Advice:Attend Board/Cmte Mtgs	1.00	0.00	la
19	08 366	Ensure Compliance	Hearing Board/Legal	Hear/Disp-Variant/Appeal/Rev	3.00	0.00	IV,V,XV
20	08 380	Ensure Compliance	Interagency Coordination	Coordinate with Other Agencies	0.20	0.00	II,V
21	08 401	Operational Support	Legal Advice/SCAQMD Programs	General Advice: Contracts	2.00	0.00	la
22	08 403	Ensure Compliance	Legal Rep/Litigation	Prep/Hearing/Disposition	3.50	0.00	la,II
23	08 404	Policy Support	Legal Rep/Legislation	Draft Legis/SCAQMD Position/Mtgs	0.25	0.00	II,IX
24	08 416	Policy Support	Legislative Activities	Lobbying: Supp/Promote/Influence legis/Adm	0.10	0.00	la
25	08 457	Advance Clean Air Technology	Mob Src/C Moyer/Leg Advice	Moyer/Implem/Program Dev	0.10	0.00	IX
26	08 465	Ensure Compliance	Mutual Settlement	Mutual Settlement Program	1.50	0.00	IV
27	08 516	Timely Review of Permits	Permit Processing/Legal	Legal Advice: Permit Processing	0.10	0.00	III
28	08 565	Customer Service and Business Assistance	Public Records Act	Comply w/ Public Rec Requests	1.50	0.00	la
29	08 651	Develop Rules	Rules/Legal Advice	Legal Advice: Rules/Draft Regs	1.20	0.00	II
30	08 661	Develop Rules	Rulemaking/RECLAIM	RECLAIM Legal Adv/Related Iss	0.50	0.00	II
31	08 681	Customer Service and Business Assistance	Small Business/Legal Advice	Legal Advice: SB/Fee Review	0.05	0.00	II,III
32	08 717	Policy Support	Student Interns	Gov Board/Student Intern Program	0.10	0.00	la
33	08 770	Timely Review of Permits	Title V	Leg Advice: Title V Prog/Perm Dev	0.05	0.00	II,IV
34	08 772	Timely Review of Permits	Title V Permits	Leg Advice: New Source Title V Permit	0.05	0.00	III
35	08 791	Ensure Compliance	Toxics/AB2588	AB2588 Legal Advice: Plan & Impl	0.05	0.00	X
36	08 805	Ensure Compliance	Training	Continuing Education/Training	0.75	0.00	lb

35.00	-	35.00
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Total Legal

Legal Line Item Expenditure						
Major Object / Account # / Account Description		FY 2018-19 Actuals	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate *	FY 2020-21 Adopted Budget
<b>Salary &amp; Employee Benefits</b>						
51000-52000	Salaries	\$ 3,921,191	\$ 4,282,146	\$ 4,282,146	\$ 4,068,039	\$ 4,192,355
53000-55000	Employee Benefits	2,189,836	2,411,122	2,411,123	2,328,057	2,491,256
Sub-total Salary & Employee Benefits		\$ 6,111,027	\$ 6,693,269	\$ 6,693,269	\$ 6,396,096	\$ 6,683,610
<b>Services &amp; Supplies</b>						
67250	Insurance	\$ -	\$ -	\$ -	\$ -	\$ -
67300	Rents & Leases Equipment	-	-	-	-	-
67350	Rents & Leases Structure	-	-	-	-	-
67400	Household	-	-	-	-	-
67450	Professional & Special Services	802,544	246,001	696,001	696,001	246,001
67460	Temporary Agency Services	-	7,250	7,250	7,250	7,250
67500	Public Notice & Advertising	-	2,500	2,500	2,500	2,500
67550	Demurrage	568	4,000	4,000	4,000	4,000
67600	Maintenance of Equipment	-	500	500	500	500
67650	Building Maintenance	-	-	-	-	-
67700	Auto Mileage	497	1,600	1,600	1,600	1,600
67750	Auto Service	-	-	-	-	-
67800	Travel	8,294	15,000	15,000	15,000	15,000
67850	Utilities	-	-	-	-	-
67900	Communications	1,607	10,300	10,300	10,300	10,300
67950	Interest Expense	-	-	-	-	-
68000	Clothing	430	500	500	500	500
68050	Laboratory Supplies	-	-	-	-	-
68060	Postage	1,717	4,750	4,750	4,750	4,750
68100	Office Expense	17,255	16,000	16,000	16,000	16,000
68200	Office Furniture	-	4,500	4,500	4,500	4,500
68250	Subscriptions & Books	124,491	115,000	115,000	115,000	115,000
68300	Small Tools, Instruments, Equipment	-	-	-	-	-
68400	Gas and Oil	-	-	-	-	-
69500	Training/Conference/Tuition/ Board Exp.	14,035	17,500	17,500	17,500	17,500
69550	Memberships	150	750	750	750	750
69600	Taxes	-	-	-	-	-
69650	Awards	-	-	-	-	-
69700	Miscellaneous Expenses	1,837	2,000	2,000	2,000	2,000
69750	Prior Year Expense	-	-	-	-	-
69800	Uncollectable Accounts Receivable	-	-	-	-	-
89100	Principal Repayment	-	-	-	-	-
Sub-total Services & Supplies		\$ 973,426	\$ 448,151	\$ 898,151	\$ 898,151	\$ 448,151
77000	<b>Capital Outlays</b>	\$ -	\$ -	\$ -	\$ -	\$ -
79050	<b>Building Remodeling</b>	\$ -	\$ -	\$ -	\$ -	\$ -
Total Expenditures		\$ 7,084,452	\$ 7,141,420	\$ 7,591,420	\$ 7,294,247	\$ 7,131,761

\* Estimates based on July 2019 through February 2020 actual expenditures and February 2020 budget amendments.

**LEGISLATIVE & PUBLIC AFFAIRS/MEDIA OFFICE**

**DERRICK ALATORRE  
DEPUTY EXECUTIVE OFFICER**

<b>At a Glance:</b>	
FY 2019-20 Adopted	\$10.1M
FY 2020-21 Budget	\$10.4M
% of FY 2020-21 Budget	6.0%
Total FTEs FY 2020-21 Budget	56

**DESCRIPTION OF MAJOR SERVICES:**

Legislative & Public Affairs/Media Office provides a broad range of services to internal and external stakeholders. These services include:

**Legislative/Communications**

**State and Federal Relations**

State and Federal Relations works with all levels of elected officials and their staff, agencies, and other stakeholders to support South Coast AQMD’s legislative priorities. Efforts are focused on policy and funding issues that support South Coast AQMD’s Air Quality Management Plan to meet state and federal clean air standards. This unit also works to defend against legislative activities by others detrimental to the goals and priorities of clean air.

**Local Government/Community Relations**

Local Government and Community Relations works in all four counties of South Coast AQMD’s jurisdiction, including 86 cities in Los Angeles County, 34 cities in Orange County, 27 cities in Riverside County and 16 cities in San Bernardino County. Activities include monitoring government actions on all levels (local, state and federal); facilitating a two-way flow of communication between South Coast AQMD and stakeholders; assisting with inquiries from government offices, community members, health and environmental justice organizations, and business organizations; and, promoting and providing information on South Coast AQMD programs and initiatives.

**Communications & Public Information Center**

The Communications & Public Information Center serves and assists members of the public who wish to report air quality complaints, contact District staff or acquire additional information regarding South Coast AQMD programs. The Communications Center and its associated toll-free numbers, along with South Coast AQMD’s main telephone line, provide easy access to the public for reporting of a wide variety of air quality related concerns. The Public Information Center (PIC), which is located in the South Coast AQMD lobby, serves as a walk-up resource for all visitors to South Coast AQMD. The PIC assists with other inquiries made by the public, which can range from requests for information to consultations on South Coast AQMD programs and regulations.

## **LEGISLATIVE & PUBLIC AFFAIRS/MEDIA OFFICE (cont.)**

### **Small Business Assistance**

The Small Business Assistance (SBA) program is required under Section 40448 of the California Health and Safety Code to provide administrative, technical services and information to small businesses and the public.

### **Environmental Justice**

South Coast AQMD's Environmental Justice initiatives focus on a wide variety of programs to partner with disadvantaged communities to address air pollution related issues. Specific programs such as the Environmental Justice Community Partnership program and the Environmental Justice Advisory Group seek to build community capacity to empower residents and to reduce air pollution in areas of cumulative impact.

### **AB 617**

The South Coast AQMD is actively conducting comprehensive community-based efforts that focus on improving air quality and public health in environmental justice communities. For Year 1 of the program, AB 617 implementation efforts continue in three (3) South Coast AQMD communities: Wilmington/Carson/West Long Beach, San Bernardino/Muscoy and Boyle Heights/East Los Angeles/West Commerce.

### **Media**

The Media Relations Office serves as the agency's official liaison with news media in its many forms, including the Internet; newspapers and radio; broadcast, cable and satellite TV; books, magazines and newsletters; digital and social media. The Media Relations Office also supports programs and policies of South Coast AQMD and its Board with a wide range of proactive media and public relations programs. The Office provides strategic counsel to the Executive Officer, Board members and their staff and Executive Council members on sensitive, high-profile media relations issues as well as building public awareness of air quality issues.

### **Social Media**

South Coast AQMD's Social Media program maintains, builds awareness of, and monitors South Coast AQMD's social media websites. The agency is active on Facebook, Twitter and Instagram on a daily basis.

### **Graphics**

The Graphics Department is responsible for providing all graphic services for the agency, from conceptual design to final design and completion of projects.

## LEGISLATIVE & PUBLIC AFFAIRS/MEDIA OFFICE (cont.)

### ACCOMPLISHMENTS:

#### RECENT:

##### State Legislative

- Assisted with efforts to secure \$50 million statewide to air districts to implement AB 617, Community Air Toxics Program.
- Actively worked to garner \$245 million statewide to air districts for incentives to accelerate turnover to cleaner vehicles and equipment.
- Worked to secure \$132 million statewide to air districts for reducing agricultural emissions through diesel engine replacement and upgrades.
- South Coast AQMD sponsored bill SB 1502, to modernize the public notice requirement to allow for electronic communications, signed into law.
- Secured amendments to SB 1260 (Jackson) to allow South Coast AQMD to issue controlled burn permits for open fires in mechanized burners within Los Angeles County, to promote fire hazard mitigation and reduce air pollution, signed into law.
- Prevented diversion of \$26 million in statewide tire fee revenue from the Carl Moyer Program.

##### Federal Legislative

- Worked with the Administration and Members of Congress to move forward the U.S. Environmental Protection Agency (EPA) Clean Trucks Initiative which focuses on a proposed rule for an Ultra-Low NOx Emission Standard for Heavy Duty Trucks.
- Organized and staffed four trips to Washington, D.C. with Governing Board and Executive Council members to educate the Administration and Members of Congress on South Coast AQMD and our specific air quality-related issues.
- Worked with our Congressional Delegation to increase and/or protect funding for:
  - The Diesel Emission Reductions Act (DERA), which grew from \$75 million in Fiscal Year (FY) 2018 to \$87 million in FY 2019
  - Targeted Airshed (TAS) grants, which grew from \$40 million in FY 2018 to \$53 million in FY 2019; and
  - ,
  - Section 103/105 funding remained level at \$228.2 million despite the Administration's initial budget proposal to significantly decrease this account.
- A visit and tour of the South Coast Air Basin by Assistant EPA Administrator Bill Wehrum and key staff.
- Chairman of the House Subcommittee on Interior, Environmental, and Related Agencies, Congressman Ken Calvert visited South Coast AQMD for meetings, a tour of the laboratory and a display of near-zero and zero emission medium and heavy-duty vehicles.

##### Communications & Public Information Center

- Assisted the Small Business Assistance Unit by performing nearly 1,300 initial calls to businesses with expired permits to remind them about the expired status of the permits, and to encourage them to bring the permits current.

## LEGISLATIVE & PUBLIC AFFAIRS/MEDIA OFFICE (cont.)

- Processed 2,650 walk-up inquiries through the Public Information Center booth in the South Coast AQMD Lobby.
- Assisted in the updating/publishing of about 230 web pages, including specific web pages relating to: 1) the Aliso Canyon Natural Gas Leak; 2) ongoing air monitoring activities in Paramount and Compton; 3) Sunshine Canyon Landfill; 4) Torrance Refinery; and 5) the Exide lead battery recycling facility.

### Local Government/Community Affairs

- Regular attendance at regional and community meetings throughout the four counties including League of California Cities, the Councils of Governments, and Chambers of Commerce and business organizations.
- Assisted with communications, outreach and issue management for high profile items such as the Special Toxics Investigations in Paramount and Compton, Torrance Refinery (formerly ExxonMobil), SoCalGas Aliso Canyon Storage Facility, Sunshine Canyon Landfill, Coastal Odors and several other facilities.
- Organized logistics, conducted outreach and staffed for 15 public meetings such as Town Hall/Community Meetings, Rule-related meetings, Hearings; and Committees.
- Participated in and represented South Coast AQMD throughout the four-county region at 52 community events such as health and environmental justice resources fairs, Council of Government General Assemblies, and air quality related forums and conferences.
- Planned, organized and produced the 2019 “Martin Luther King, Jr. Day of Service Forum” which had more than 400 attendees.
- Planned, organized and produced the 2019 “Cesar Chavez Day of Remembrance” which had more than 350 attendees.
- Planned, organized and produced the 2018 “Clean Air Awards” which honored ten individuals, businesses, and organizations. Over 400 attended the event.
- Completed 32 Visiting Dignitaries and Speakers Bureau presentations and tours.
- On an administrative level, the team met on a regular weekly basis to share information on administrative business, rule-related activity, high profile topics, and events, programs and initiatives, including specific items of interest in each of the counties. These meetings included the Environmental Justice staff as well, to better facilitate programs and share information across the department.

### Environmental Justice

- Organized and staffed four Environmental Justice Advisory Group meetings.
- Held three Environmental Justice Community Partnership Advisory Council meetings.
- Hosted an Inter-Agency Task Force Summit to facilitate coordination between agencies within Los Angeles County process their environmental complaints, and to discuss ways in which environmental complaints can be processed more collaboratively and efficiently.
- Held the 4th Annual Environmental Justice Conference: “Technology’s Role in the Future of Environmental Justice.”
- Organized, conducted outreach for and staffed four Environmental Justice Community Partnership (EJCP) Workshops.



## LEGISLATIVE & PUBLIC AFFAIRS/MEDIA OFFICE (cont.)

- Held meetings of the Young Leaders Advisory Council (YLAC), which will educate and engage young adults regarding the region's clean air issues.

### AB 617

- Organized and staffed the kick-off meetings for the AB 617 program including 13 Meetings attended by 525 stakeholders.
- Assisted with the process to identify the first-year AB 617 communities through an extensive scientific and outreach process. The three communities approved by CARB are:
  - Boyle Heights, East Los Angeles, West Commerce
  - Wilmington, West Long Beach, Carson
  - San Bernardino, Muscoy
- Coordinated with other South Coast AQMD Departments to form three Community Steering Committees including 91 total Community Steering Committee Members.
- Held six Steering Committee meetings attended by approximately 450 stakeholders.

### Media

- Implemented the Google and YouTube campaign for "The Right to Breathe" including the completion of an updated video.
- Developed AB 617/134 hot topics webpage as well as monitored and update other major issue webpages.
- Participated and implemented web improvements such as the streamlining of the "All Videos" webpage and the production of home page announcement banners.
- Oversaw the implementation of the Check Before You Burn program including AMC movie theater ads, Power106 radio promotion spots, and three videos for social media.
- Provided media relations services and strategic counsel for high-profile media issues through press releases, media advisories, talking points, in-person and on-camera interviews, and opinion pieces and letters to the editor.
- Handled 987 media interactions on behalf of South Coast AQMD.
- Wrote and issued 39 news releases; issued a total of 34 Smoke Advisories, Odor Advisories, and No-burn Alerts.

### Small Business Assistance

- Conducted 83 on-site consultations.
- Provided assistance to businesses relating to 2,556 permit applications.
- Approved and processed 728 Air Quality Permit Checklist submittals.
- Provided technical support to 255 businesses to understand South Coast AQMD rules and regulations.
- Provided 10 businesses with recordkeeping training.
- Issued four dry cleaning grants.
- Assisted three businesses file variances before the South Coast AQMD Hearing Board.
- Participated in 12 small business-related events.
- Outreached to 588 facilities as part of the Expired Permit Program.

## LEGISLATIVE & PUBLIC AFFAIRS/MEDIA OFFICE (cont.)

### Social Media

- Increased followers:
  - Facebook – approximately 20 percent;
  - Twitter – approximately 36 percent; and
  - Instagram – over 75 percent.
- Began streaming community meetings on Facebook Live including all AB 617 meetings.
- Continued event coverage (Clean Air Awards, MLK Day of Service, Cesar Chavez Day of Remembrance Day, EJ Conference and other EJ events) utilizing live tweets/quotes, photo and video.
- Timely reaction to publishing news/advisories resulting in extended news media and outside government agency exposure.

### Graphics

- Created approximately 500 major graphics projects/assignments including:
  - 2017 Annual Report;
  - Collateral brochures and promotional items;
  - Bi-Monthly Advisor Publication;
  - Quarterly Governing Board Member Newsletters;
  - Annual Clean Car Buying Guide;
  - Program Announcements;
  - Educational Materials;
  - Advertisements;
  - Signage;
  - Video projects;
  - Newspaper Advertorials; and,
  - Informational materials for Town Hall Meetings, Community Meetings and Events (including the Clean Air Awards, the Martin Luther King Jr. Day event, the Cesar Chavez Day event, the Environmental Justice Conference, multiple environmental justice workshops and senior events).

### ANTICIPATED:

#### State Legislative

- Sponsor Voter District Authorization Legislation for South Coast AQMD.
- Seek \$50 million statewide to continue implementation of the AB 617 program.
- Work to secure \$500 million statewide to accelerate turnover to cleaner vehicles and equipment.
- Strengthen our state legislative outreach and communication by increased engagement with the Governor's Office and state legislators and Capitol staff (members and committees), to promote South Coast AQMD's legislative priorities, sponsored legislation, and to support 2016 AQMP efforts.
- Strengthen our educational outreach related to legislation to build increased engagement with all stakeholders, including, but not limited to, government entities, business,

## LEGISLATIVE & PUBLIC AFFAIRS/MEDIA OFFICE (cont.)

environmental groups and the community, to promote South Coast AQMD's legislative priorities, sponsored legislation, and to support 2016 AQMP efforts.

- Continue to work with South Coast AQMD departments to improve efficiency and ease with which existing data can be extracted on a recurring basis for specified, approved purposes for the benefit of public outreach and governmental relations. (CLASS and PeopleSoft.)

### Federal Legislative

- Work with U.S. EPA, Members of Congress and stakeholders to ensure the rule-making process for the Ultra-Low NOx Emissions Standard is transparent with equitable stakeholder participation.
- Support and secure funding for air quality issues through existing and new opportunities – Infrastructure, Climate Change, and other types of incentives (tax benefits).
- Participate in the administrative and legislative process to educate policymakers on climate change initiatives and other air quality-related policies as they relate to and impact the South Coast region.
- Support legislation and/or administrative efforts to protect science-driven and health-based determinations of the National Ambient Air Quality Standards (NAAQS).
- Work to ensure that the federal government does its fair share to reduce air pollution by:
  - Providing funding or regulatory authority adequate for nonattainment areas to attain NAAQS by upcoming federal deadlines, and in particular, South Coast AQMD to implement the 2016 AQMP and attain federal ozone and particulate matter standards by upcoming federal deadlines;
  - Reauthorizing and expanding funding for Diesel Emission Reduction Act (DERA);
  - Increasing funding for the TAS program;
  - Authorizing and funding new programs which will reduce air pollution through the adoption and deployment of zero and near-zero emission technologies, fuels and recharging/refueling infrastructure;
  - Establishing programs or policies that incentivize the federal government to purchase and use advanced clean technologies and eliminate the use of technologies generating NOx and particulate matter emissions; and
  - Incentivizing individuals, businesses, states, and local governments to purchase and use advanced clean technologies and eliminate the use of technologies generating NOx and particulate matter emissions.
- Partner with stakeholders on educational outreach efforts, including, but not limited to, government entities, business, environmental groups and health advocacy groups, on federal legislation (such as the Transportation Infrastructure bill and the Energy bill) to support clean air and engage with regional issues related to clean air.

### Local Government/Community Relations

- Continue to build and maintain relationships with stakeholders to foster a two-way flow of communication in support of South Coast AQMD's mission.

## **LEGISLATIVE & PUBLIC AFFAIRS/MEDIA OFFICE (cont.)**

- Support with educational and informational outreach on regional, state and federal Initiatives, such as, but not limited to:
  - Voter District Authorization legislation;
  - U.S. EPA Rule for Ultra-Low NOx Emissions Standard for Heavy-Duty Trucks; and,
  - Funding & Policy Issues.
- Elevate awareness on South Coast AQMD and air quality issues through participation in community events region wide, the Visiting Dignitaries and Speaker's Bureau program and hosting signature and major events.
- Oversee the contract for and implement the High School Air Quality Education program.
- Facilitate interaction with stakeholders on high profile issues such as Paramount, Torrance Refinery and coastal odors.
- Conduct outreach, issues management and community meetings on various South Coast AQMD programs and mission-centered efforts.
- Increase relationship building with all levels of government, community, health, environmental, business and other stakeholder groups. A focused subset of this outreach will be on environmental justice.
- Enhance database and list management to increase successful communications.
- Work with Small Business Assistance (SBA) to provide information on their programs and services. Support SBA efforts by facilitating relationships with cities/counties, business organizations, and community groups. Improve community access to SBA programs through outreach efforts as directed by the Public Advisor and SBA Supervisor.
- Collaborate and assist other South Coast AQMD departments on major initiatives and projects including, but not limited to, Title V permits and other permits, compliance and enforcement issues, rule making process, AQMP, AB2588 Toxic "Hot Spots" program, AB2766 outreach to cities, incentive programs, "Check Before You Burn," and other projects.
- Partner with environmental education organizations, develop and implement an educational outreach program to reach children and their families. It is possible that South Coast AQMD can provide technical expertise to an existing educational program that is being implemented.
- Build relationships with organizations to expand air quality awareness among young adults and professionals.

### **Communications Center & Public Information**

- Increase role for Communications and Public Information staff to provide excellent customer service.
- Receive and process about 48,000 – 52,000 main line calls from the public in the form of Cut Smog calls, after hour calls, Spanish line calls, and Clean Air Connection calls. These calls also include air quality complaints, reports of equipment breakdowns, and emergency response requests.
- Assist the Small Business Assistance Unit by contacting about 1,400 businesses with expired permits to remind them about the expired status of the permits, and to encourage them to bring the permits current.

## **LEGISLATIVE & PUBLIC AFFAIRS/MEDIA OFFICE (cont.)**

- Process 2,900-3,200 walk-up inquiries via the PIC in the South Coast AQMD Lobby.
- Assist in updating / publishing web pages, including specific web pages relating to various key issues/items, including ongoing air monitoring activities in various communities within the South Coast region.
- Implement TTY software system for the hearing impaired in the Communication Center.

### **Environmental Justice**

- Further develop and implement the Los Angeles Inter-Agency Task Force and Task Force Steering Committee focused on environmental justice complaint issues including a complaint resource guide for stakeholders.
- Develop and implement the Environmental Justice Community Partnership Student Assembly Air Quality Educational Program targeting elementary schools.
- Environmental Justice Community Partnership Advisory Council: South Coast AQMD will host four Environmental Justice Community Partnership Advisory Council meetings to discuss how South Coast AQMD can better implement environmental justice efforts. Members of this group include community group leaders, scholars, lawyers, activists, residents, business owners, and public health professionals.
- Organize and hold four Environmental Justice Advisory Group meetings.
- Coordinate and implement two Environmental Justice Student Bus Tours for high school and college students.

### **AB 617**

- Convene monthly Steering Committee meetings for each of the three communities which will include more than 30 meetings from January through October.
- Organize and implement additional AB 617 meetings including the Technical Advisory Group meetings and community updates.
- Implement Year 2 AB 617 Communities including the initial outreach process and formation of the Community Steering Committees.
- Assist with the process to support first year AB 617 plans presentation to South Coast AQMD Board in July and work related to submitting to CARB in September.

### **Small Business Assistance**

- Expand the awareness of South Coast AQMD's Small Business Assistance Program by outreaching to trade organizations, municipalities, and other agencies to inform them about our services.
- Provide timely and accurate information to all persons seeking information from the Small Business Assistance Program.
- Provide easy to understand information about compliance, permit application requirements, and incentive programs offered to small businesses, to business in general and the general public.
- Develop, collect and coordinate information concerning air quality compliance methods and technologies for small businesses by actively participating in South Coast AQMD rulemaking workshops and hearings.

## LEGISLATIVE & PUBLIC AFFAIRS/MEDIA OFFICE (cont.)

- Assist small businesses in determining applicable requirements, applying for permits, and petitioning for variances.
- Conduct more “no-fault” inspections to provide compliance audits on the operations of small businesses.
- Assist small businesses with air pollution control and air pollution prevention by providing information concerning alternative technologies, process changes, products, and methods of operation that reduce air pollution.
- Conduct outreach for the dry-cleaner program and work with cities on permit issues.

### Media

- Develop a strategic communications plan for overall agency messaging and critical issues and crisis management communications.
- Provide media relations services and strategic counsel for high-profile media issues as well as ongoing South Coast AQMD programs and projects through press releases, media advisories, talking points, in-person and on-camera interviews, opinion pieces and letters to the editor.
- Review requests from partner agencies, organizations and firms for quotes from South Coast AQMD officials for articles and press releases.
- Continue the implementation of Google ad campaign for “The Right to Breathe.”
- Implement story maps on the South Coast AQMD website and continue to update and maintain hot topics webpages.
- Produce videos for AB 617.
- Implement South Coast AQMD photo library.
- Design and implement the FY 20-21 Check Before You Burn program.
- Continue to help focus/narrow Public Records Requests (PRR) from news media; review PRR documents provided to news media and advise management of potential news stories that could result from them.
- Write advertorials for newspapers as part of South Coast AQMD sponsorships.

### Social Media

- Continue follower growth (goal of 30% increase from 2019).
- Streamline the Advisory publishing process to ensure the public gets content in a timely manner.
- Utilize more original South Coast AQMD content, including new up-to-date photos and content from various South Coast AQMD departments.

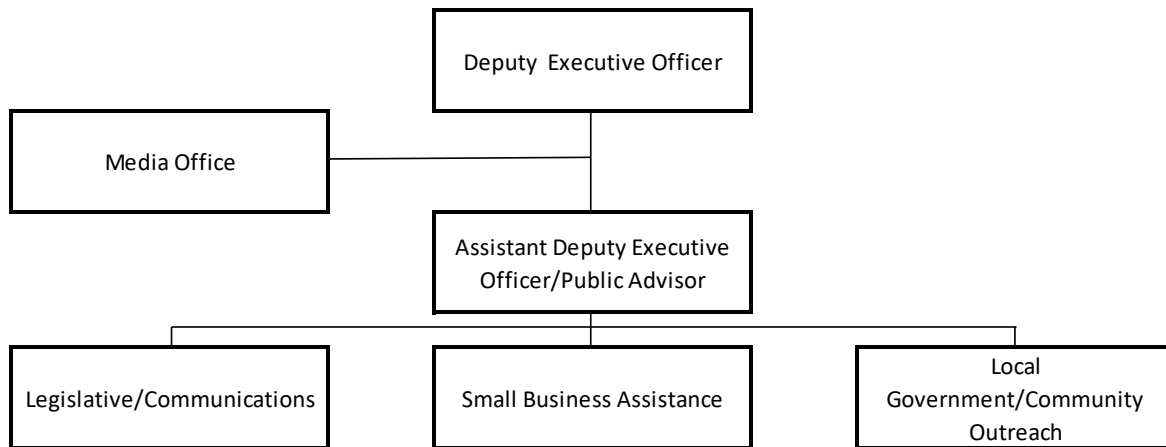
### Graphics

- Complete graphics projects/assignments, including: 1) collateral brochures and promotional items; 2) Bi-Monthly Advisor publication; 3) Quarterly Governing Board Member Newsletters; 4) Yearly Clean Car Buying Guide; 5) signage, and informational materials for Town Hall Meetings, community meetings and events, etc.; 6) educational materials; 7) advertisements; 8) Program Announcements; and 9) video projects.

**LEGISLATIVE & PUBLIC AFFAIRS/MEDIA OFFICE (cont.)**

- In coordination with a Director of Communications, redesign and redevelop South Coast AQMD core collaterals and electronic and social media content to ensure consistent themes and messaging and to create focused and clear branding of South Coast AQMD throughout all South Coast AQMD collateral materials and electronic content provided to elected officials, agency staff, stakeholders, impacted communities and the public at large.

**CURRENT ORGANIZATIONAL CHART:**



**POSITION SUMMARY: 56 FTEs**

Legislative & Public Affairs/Media Office Units	Amended FY 2019-20	Change	Budget FY 2020-21
Administration	7	-	7
Legislative & Public Affairs	44	-	44
Media Office	5	-	5
Total	56	-	56

## LEGISLATIVE & PUBLIC AFFAIRS/MEDIA OFFICE (cont.)

### POSITION DETAIL:

<u>FTEs</u>	<u>Title</u>
1	Administrative Secretary
2	Air Quality Engineer
2	Air Quality Specialist
1	Assistant Deputy Executive Officer
1	Community Relations Manager
1	Deputy Executive Officer
1	Director of Communications
3	Graphic Illustrator II
1	Legislative Assistant
1	Office Assistant
3	Public Affairs Manager
1	Program Supervisor
1	Public Affairs Specialist
3	Secretary
2	Senior Administrative Secretary
9	Senior Office Assistant
1	Senior Public Affairs Manager
19	Senior Public Information Specialist
1	Senior Staff Specialist
1	Staff Assistant
<u>1</u>	Supervising Office Assistant
56	Total FTEs



**Legislative & Public Affairs/Media Office  
Work Program by Office**

Program Code	Program Category	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Revenue Categories
1 35 1037	Customer Service and Business Assistance	AB617-Outreach	AB617-Outreach	5.00	0.00	5.00	IX
2 35 1046	Customer Service and Business Assistance	Admin/Prog Mgmt	Admin Office/Units/SuppCoord Staff	5.02	0.00	5.02	Ib
3 35 111	Ensure Compliance	Call Center/CUT-SMOG	Smoking Vehicle Complaints	8.00	0.00	8.00	IX,XV
4 35 126	Customer Service and Business Assistance	Clean Air Connections	Coord of region-wide community group	1.00	0.00	1.00	II,IX
5 35 205	Customer Service and Business Assistance	Environmental Education	Curriculum Dev/Project Coord	0.25	0.00	0.25	II,IX,XV
6 35 240	Customer Service and Business Assistance	Environmental Justice	Impl Board's EJ Pgrms/Policies	2.00	1.00	3.00	II,IV
7 35 260	Customer Service and Business Assistance	Fee Review	Cnte Mtg/Fee-Related Complaint	0.50	0.00	0.50	II,III,IV,XV
8 35 280	Policy Support	Advisory Group/Ethnic Comm	GB Ethnic Comm Advisory Group	0.40	0.00	0.40	II,IX
9 35 281	Policy Support	Advisory Group/Small Business	SBA Advisory Group Staff Support	0.50	0.00	0.50	IV,IX
10 35 283	Policy Support	Governing Board Policy	Brd sup/Respond to GB req	0.55	0.00	0.55	Ia
11 35 345	Policy Support	Goods Mvmt&Financial Incentive	Goods Movement & Financial Incentives Progr	1.00	0.00	1.00	IX
12 35 350	Operational Support	Graphic Arts	Graphic Arts	2.00	0.00	2.00	Ia
13 35 381	Customer Service and Business Assistance	Interagency Liaison	Interact Gov Agns/Promote SCAQMD	0.15	0.00	0.15	Ia,XV
14 35 390	Customer Service and Business Assistance	Intergov/Geographic Deployment	Dev/Impl Local Govt Outreach	10.50	0.00	10.50	II,IX
15 35 412	Policy Support	Legislation/Federal	Lobbying/Analyses/Tracking/Out	0.25	0.00	0.25	Ia
16 35 413	Policy Support	Legislation/Exec Office Support	Coord Legis w/ EO, EC, Mgmt	0.25	0.00	0.25	Ia
17 35 414	Policy Support	Legislation-Effects	Lobbying/Analyses/Tracking/Out	0.80	0.00	0.80	Ia,IX
18 35 416	Policy Support	Legislative Activities	Supp/Promote/Influence Legis/Adm	0.50	0.00	0.50	Ia
19 35 491	Customer Service and Business Assistance	Outreach/Business	Chambers/Business Meetings	1.00	0.00	1.00	II,IV
20 35 492	Customer Service and Business Assistance	Public Education/Public Events	Pub Events/Conf/Rideshare Fair	2.00	0.00	2.00	II,V,IX,XV
21 35 494	Policy Support	Outreach/Collateral/Media	Edits, Brds, Talk shows, Commercl	5.60	0.00	5.60	Ia
22 35 496	Customer Service and Business Assistance	Outreach/Visiting Dignitary	Tours/Briefings-Dignitary	0.25	0.00	0.25	Ia
23 35 514	Customer Service and Business Assistance	Permit: Expired Permit Program	Assist w Permit Reinstatement	0.30	0.00	0.30	IV
24 35 555	Customer Service and Business Assistance	Public Information Center	Inform public of unhealthy air	1.00	0.00	1.00	II,V,IX
25 35 560	Develop Programs	Public Notification	Public notif of rules/hearings	0.50	0.00	0.50	II,IV,IX
26 35 565	Customer Service and Business Assistance	Public Records Act	Comply w/ Public Req for Info	0.10	0.00	0.10	Ia
27 35 679	Customer Service and Business Assistance	Small Business Assistance	Small Business/Financial Assistance	1.00	0.00	1.00	III
28 35 680	Timely Review of Permits	Small Business/Permit Streamlin	Asst sm bus to comply/SCAQMD req	3.95	0.00	3.95	II,III,IV,V,XV
29 35 710	Customer Service and Business Assistance	Speakers Bureau	Coordinate/conduct speeches	0.10	0.00	0.10	Ia
30 35 717	Policy Support	Student Interns	Student Interns	0.10	0.00	0.10	Ia
31 35 791	Customer Service and Business Assistance	Toxics/AB2588	Outreach/AB 2588 Air Toxics	0.01	0.00	0.01	X
32 35 825	Operational Support	Union Negotiations	Official Labor/Mgmt Negotiate	0.01	0.00	0.01	Ia
33 35 826	Operational Support	Union Steward Activities	Union Steward Activities	0.01	0.00	0.01	Ia
34 35 855	Operational Support	Web Tasks	Create/edit/review web content	0.40	0.00	0.40	Ia

**Total Legislative & Public Affairs/Media Office**

55.00	1.00	56.00
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**Legislative & Public Affairs/Media Office  
Line Item Expenditure**

Major Object / Account # / Account Description		FY 2018-19 Actuals	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate *	FY 2020-21 Adopted Budget
<b>Salary &amp; Employee Benefits</b>						
51000-52000	Salaries	\$ 4,453,056	\$ 4,915,612	\$ 5,000,607	\$ 5,145,615	\$ 5,003,376
53000-55000	Employee Benefits	2,747,320	3,087,636	3,087,637	3,193,962	3,310,018
Sub-total Salary & Employee Benefits		\$ 7,200,376	\$ 8,003,247	\$ 8,088,244	\$ 8,339,577	\$ 8,313,394
<b>Services &amp; Supplies</b>						
67250	Insurance	\$ -	\$ -	\$ -	\$ -	\$ -
67300	Rents & Leases Equipment	19,595	7,000	7,000	7,000	7,000
67350	Rents & Leases Structure	9,042	9,000	9,000	9,000	9,000
67400	Household	-	-	-	-	-
67450	Professional & Special Services	2,256,110	1,515,851	1,673,834	1,673,834	1,515,851
67460	Temporary Agency Services	128,447	114,000	104,000	104,000	114,000
67500	Public Notice & Advertising	80,823	26,600	66,600	66,600	26,600
67550	Demurrage	696	-	-	-	-
67600	Maintenance of Equipment	-	9,000	9,000	9,000	9,000
67650	Building Maintenance	-	-	-	-	-
67700	Auto Mileage	25,335	24,800	24,800	24,800	24,800
67750	Auto Service	-	-	-	-	-
67800	Travel	56,309	45,200	45,200	45,200	45,200
67850	Utilities	-	-	-	-	-
67900	Communications	46,022	47,000	47,000	47,000	47,000
67950	Interest Expense	-	-	-	-	-
68000	Clothing	-	-	1,800	1,800	-
68050	Laboratory Supplies	-	-	-	-	-
68060	Postage	26,133	137,800	57,000	57,000	137,800
68100	Office Expense	89,128	45,300	45,300	45,300	45,300
68200	Office Furniture	-	-	-	-	-
68250	Subscriptions & Books	22,969	18,200	33,200	33,200	18,200
68300	Small Tools, Instruments, Equipment	-	-	-	-	-
68400	Gas and Oil	-	-	-	-	-
69500	Training/Conference/Tuition/ Board Exp.	1,480	8,500	8,500	8,500	8,500
69550	Memberships	29,761	26,250	46,250	46,250	26,250
69600	Taxes	-	-	-	-	-
69650	Awards	43,984	49,681	39,681	39,681	49,681
69700	Miscellaneous Expenses	39,360	43,100	43,100	43,100	43,100
69750	Prior Year Expense	(0)	-	-	-	-
69800	Uncollectable Accounts Receivable	-	-	-	-	-
89100	Principal Repayment	-	-	-	-	-
Sub-total Services & Supplies		\$ 2,875,194	\$ 2,127,282	\$ 2,261,265	\$ 2,261,265	\$ 2,127,282
77000	<b>Capital Outlays</b>	\$ -	\$ -	\$ 35,000	\$ 35,000	\$ -
79050	<b>Building Remodeling</b>	\$ -	\$ -	\$ -	\$ -	\$ -
Total Expenditures		\$ 10,075,569	\$ 10,130,529	\$ 10,384,509	\$ 10,635,842	\$ 10,440,676

\* Estimates based on July 2019 through February 2020 actual expenditures and February 2020 budget amendments.

## PLANNING, RULE DEVELOPMENT & AREA SOURCES

### PHILIP FINE DEPUTY EXECUTIVE OFFICER

<b>At a Glance:</b>	
FY 2019-20 Adopted	\$24.6M
FY 2020-21 Budget	\$24.4M
% of FY 2020-21 Budget	14.1%
Total FTEs FY 2020-21 Budget	148

#### **DESCRIPTION OF MAJOR SERVICES:**

Planning, Rule Development and Area Sources (PRDAS) is responsible for the majority of South Coast AQMD's air quality planning and rulemaking functions, including State Implementation Plan (SIP) related activities, air quality management and maintenance plans, reporting requirements and other state and federal Clean Air Act requirements. Key functions include:

- Developing proposals for new and amended rules to implement SIP commitments and to reduce air toxic emissions/exposures.
- Conducting socioeconomic impact and California Environmental Quality Act (CEQA) analyses for rulemaking efforts.
- Commenting on CEQA projects throughout the South Coast Air Basin and acting as the Lead or Responsible Agency for South Coast AQMD permitting projects.
- Developing and implementing mobile source strategies such as:
  - Implementing fleet rules to reduce emissions from public fleets.
  - Developing facility-based measures aimed at achieving emission reductions from the indirect mobile sources associated with ports, airports, railyards, and warehouses.
  - Engaging CARB and U.S. EPA on mobile source rulemaking efforts
- Coordinating closely with Legislative & Public Affairs/Media Office and the Technology Advancement Office (TAO) on state and federal legislative and regulatory issues and on avenues for funding air quality programs and grants.
- Conducting air quality evaluations, modeling, forecasting, and developing emissions inventories.
- Performing compliance activities related to area sources.
- Coordinating the implementation of AB 617 in priority communities, developing the emission reduction plans in those communities, and implementing many of the action items in those plans.
- Leading the assessment, dissemination, and communication of air quality data through the Multiple Air Toxics Exposure Study (MATES), air quality forecasts, advisories, and alerts, and by providing input and guidance on health effects associated with air quality policies and other air quality-related issues that arise from individual facilities or communities.
- Implementing several key ongoing programs, including the state Toxics "Hot Spots" program (AB 2588), Annual Emissions Reporting program (AER), Employee Commute Trip Reduction (Rule 2202) and the AB 2766 Subvention fund program.
- Developing South Coast AQMD policy for climate change, energy, and other air quality related subjects.

## PLANNING, RULE DEVELOPMENT & AREA SOURCES (cont.)

### ACCOMPLISHMENTS:

#### Recent:

##### AB 617

- Continued convening Community Steering Committees for each of the three communities selected for Year 1 implementation.
- Participated in AB 617 meetings with CARB, CAPCOA and other stakeholders.
- Adopted three Community Emissions Reduction Plans for Wilmington/Carson/West Long Beach; East Los Angeles/Boyle Heights/West Commerce; and San Bernardino/Muscoy.
- Completed technical evaluation and community selection process for Year 2 communities, recommended two communities to CARB, and began community engagement.

##### AB 2588

- Approved a risk reduction plan (RRP) for Aircraft and rejected another for Anaplex, both of which are Potentially High-Risk Level facilities in Paramount.
- Conducted three public notifications (Glendale Water and Power/Kirckhill Industries/ So. Cal Gas Playa del Rey Storage Facility) sending out approximately 8,300 notices.
- Revised the Facility Prioritization Procedures (September 6, 2019).
- Calculated priority scores for 68 facilities, also in support of AB 617.
- Conducted 49 facility audits of quadrennial emissions inventories.
- Reviewed 31 and approved 11 Air Toxic Inventory Reports.
- Reviewed 11, approved five, and rejected one Health Risk Assessment.
- Reviewed four, approved two, and rejected one Risk Reduction Plan.
- Reviewed five and approved one Voluntary Risk Reduction Plan (VRRP).

##### Air Quality Assessment

- Implemented software enhancements to improve the accuracy of the air quality forecast and reduce required forecaster time.
- Issued daily air quality forecasts.
- Developed and deployed hourly air quality forecasts and “cleanest time of day” products, which are issued daily. Developed and deployed a wildland and agricultural burn outlook product.
- Issued 100 advisories in 2019. Designed software to streamline the issuance of advisories.
- Reviewed 13 permit modeling requests.
- Answered over 200 air quality related emails and phone calls.
- Created community-facing interactive maps to support AB 617 efforts.
- Completed several geostatistical analysis projects to support AB 617 community prioritization and community emission reduction plans.
- Developed tools to analyze PM2.5 and PM10 exceptional events for future demonstrations.
- Drafted PM2.5 exceptional event demonstrations for wildfire and firework exceedances.
- Made significant progress in the development of a gridded real-time air quality map to increase the accuracy and spatial resolution of monitored air quality.

## PLANNING, RULE DEVELOPMENT & AREA SOURCES (cont.)

- Developed and deployed a residential wood smoke forecasting model to improve winter PM2.5 forecast accuracy and guide outreach and compliance efforts related to the Check Before You Burn (CBYB) program.

### Air Quality Modeling/Emissions Inventory

- Developed the Net Emissions Analysis Tool (NEAT) to estimate the emission benefits and costs associated with switching residential appliances to cleaner and more efficient technologies.
- Developed emissions inventory of Air Toxics to estimate cancer exposure risk for MATES V.
- Developed AB 617 community-based detailed emissions inventory and source attribution for the three first year communities and for the two second year communities.
- Hosted Technical Advisory Group meeting to assist AB 617 community source attribution analysis.
- Continued collaboration with NASA and other academic and research agencies to utilize satellite retrieved data in air quality modeling and analysis.
- Developed a methodology to estimate biogenic VOC emissions from urban areas
- Continued improving air quality model predictability to be state-of-the-science and appropriate for Air Quality Management Plan (AQMP) attainment demonstrations.
- Continued refining AQMP/SIP emissions inventory to assist implementation of the AQMP.
- Reviewed General Conformity requirements for projects submitted to South Coast AQMD.

### Annual Emissions Reporting

- Updated the Annual Emissions Reporting (AER) web tool software to implement Rule 301 amendments, improved reporting under AB 617, and on-line payments and certifications.
- Identified and notified approximately 2,200 facilities subject to South Coast AQMD's AER program.
- Reviewed AER reports ultimately generating \$16.2 million in annual emission fees.
- Audited more than 250+ Emission Reports.
- Assisted facilities with emission reporting process through three multi-hour workshops and AER hotline during the first quarter of 2019.
- Compiled and submitted 2019 device level emission data to CARB.
- Continued providing input to CARB and coordinating with CAPCOA regarding drafting their Criteria Pollutant and Toxics Emissions Reporting (CTR) regulation section of AB 617.

### AQMP/SIP

- Adopted Contingency Measure Plan for the 1997 8-hour ozone standard for the Basin to address Clean Air Act Section 182(e)(5) requirements and submitted to U.S. EPA through CARB.
- Submitted a request to U.S. EPA to reclassify Coachella Valley from Severe to Extreme nonattainment for the 1997 8-hour ozone standard.
- Submitted 2019 Quantitative Milestone Report for 2012 Annual PM2.5 NAAQS.
- Prepared a RACT demonstration for the 2015 8-hour ozone standard.
- Continued execution and implementation of the contracts for the 26 awarded incentive projects designed to reduce emission/toxic exposure and technology demonstration and deployment.

### CEQA

- Prepared CEQA documents for 19 South Coast AQMD rule projects, oversaw the preparation of CEQA documents for four permit projects, and conducted 33 CEQA pre-screenings.

## PLANNING, RULE DEVELOPMENT & AREA SOURCES (cont.)

- Reviewed on over 1,200 CEQA documents prepared by other lead agencies and provided comments on over 350 CEQA documents.
- Provided technical consultation for local and tribal ongoing development projects including the I-710 corridor, Inglewood Basketball and Entertainment Center, Santa Susana Field Laboratory, California High Speed Rail, Morongo Casino Expansion, and Los Angeles Airport Airfield and Terminal Modernization Project.

### Facility Based Mobile Source Measures

- Developed and adopted Memorandum of Understanding (MOU) between the South Coast AQMD and five commercial airports in the Basin, Los Angeles International Airport, Long Beach Airport, Hollywood Burbank Airport, Ontario International Airport, and John Wayne Airport, based on each airport's Air Quality Improvement Plan or Air Quality Improvement Measures and by working with the Airports MOU Working Group and through the public process.
- Continued development of indirect source rules on warehouses and railyards.
- Continued development of the MOU with the Ports of Los Angeles (LA) and Long Beach (LB) through the Ports MOU Working Group and Ports MOU Technical Working Group.
- Continued developing the Pacific Rim Initiative for Maritime Emission Reductions (PRIMER) to partner with Asian and west coast ports to incentivize cleaner vessels that will call at the Ports of LA and LB and other Pacific Rim ports and assisted TAO with developing a pilot project to demonstrate a retrofit technology for ships.
- Conducted oversight of several studies, including the potential impacts of an indirect source rule on the warehousing industry, the potential national economic impacts of accelerated deployment of ZE/NZE trucks, and PRIMER incentive optimization for vessels frequently calling Pacific Rim ports.

### Health Effects

- Continued implementation of the MATES V study including extensive advanced monitoring.
- Participated in inter-agency environmental justice efforts, including the Southern California Association of Governments (SCAG) Environmental Justice Working Group, and the Department of Toxics and Substances Control (DTSC) working group, for implementation of SB 673.
- Oversaw the completion of two research contracts and continued work on two additional research contracts through the Health Effects of Air Pollution Foundation.
- Completed 11 media interviews on air pollution and health-related topics.

### Fleet Rules

- Continued implementation of South Coast AQMD Fleet Rules.
- Continued technical evaluation of Rule 1610 Mobile Source Emission Reduction Credits (MSERC) applications and Rule 2202 Electric Vehicle Charging Station Projects.
- Evaluated CARB's proposed regulations for zero-emission airport shuttle buses and innovative clean transit and provided comments and testimony.

### Stationary Source Rule Development

- Amended Rule 102 to add definition of "South Coast AQMD" as an additional abbreviation for South Coast Air Quality Management District.
- Amended Rule 445 to include contingency provisions in the event the region fails to attain the PM2.5 standards or reasonable further progress requirements.

## PLANNING, RULE DEVELOPMENT & AREA SOURCES (cont.)

- Rescinded Rule 1106.1 and amended Rule 1106 to be consistent with the U.S. EPA Control Techniques Guidelines and National Emission Standards for Hazardous Air Pollutants (NESHAP) for Shipbuilding and Ship Repair.
- Amended Rule 1107 to remove exemptions for certain categories.
- Amended Rule 1110.2 to reduce NOx emissions from stationary engines subject to RECLAIM.
- Amended Rule 1111 to extend the compliance date for condensing and non-condensing furnaces in locations greater than 4,200 feet above sea level until October 1, 2020.
- Amended Rule 1407 to establish additional emission control requirements to reduce emissions of arsenic, cadmium, and nickel from non-chromium metal melting operations.
- Adopted Rule 1480 to establish a process that requires a facility, if it meets specific criteria, to conduct ambient monitoring and sampling of metal toxic air contaminants.
- Amended Rule 2001 to remove the opt-out provision and prevent facilities from exiting the RECLAIM program until all applicable rules that need to be updated are adopted and approved.
- The following rule development projects were initiated before or during the fiscal year and are expected to be adopted or amended in the next fiscal year:
  - Proposed Amended Rule 1117 (glass melting furnaces)
  - Proposed Amended Rule 1134 (gas turbines)
  - Proposed Rule 1109.1 (refinery equipment)
  - Proposed Amended/Adopted Rule 1147 series (miscellaneous sources)
  - Proposed Rule 1150.3 (combustion equipment at landfills)
  - Proposed Rule 1179.1 (combustion equipment at publicly owned treatment work facilities)
  - Proposed Rule 1410 (HF use at refineries) but removed from rule calendar per Board direction
  - Proposed Rule 1407.1 (chromium metal melting)
- Conducted monthly RECLAIM meetings and held over 50 individual facility or industry-specific meetings. The RECLAIM general working group meetings have shifted focus to address New Source Review issues for the transition.
- Launched an updated web-based Flare Event Notification System (FENS) for refineries with a flare map to highlight where and when flaring is occurring and the reason for the flare event.

### Socioeconomic Analysis

- Completed Socioeconomic Impact Assessments for all new rules and rule amendments.
- Conducted oversight of several studies, including two focused on improving the public welfare benefits analysis in future AQMPs, and another evaluating the potential revenue that could be generated by a future sales tax.
- Developed new computer model that helps optimize spending of incentive funding.

### Transportation Programs

- Assisted 162 local governments with the implementation of AB 2766 funds to reduce emissions, including 358 projects in their communities using approximately \$22M of Motor Vehicle revenues.
- Conducted 15 AB 2766 training sessions for 96 representatives of 71 local governments attended.
- Developed an MOU with CARB that transferred management of the AB 2766 reporting software to South Coast AQMD for the purpose of developing a future web-based submittal portal.
- Assisted regulated employers in the development of their Rule 2202 plans. Evaluated and processed approximately 1,350 Rule 2202 plan submittals.

## PLANNING, RULE DEVELOPMENT & AREA SOURCES (cont.)

- Conducted 22 Rule 2202 Employee Transportation Coordinator (ETC) certification classes in which 281 new ETCs were trained.

### Other

- Developed comment letters on key U.S. EPA initiatives, including the proposed glider kit rule, Corporate Average Fuel Economy (CAFE) standards, and transparency in regulatory science, as well as successfully advised U.S. EPA to take action on revising the heavy-duty NOx emission standard.
- Completed contract management for three PM control related projects funded by AB 1318.
- Continued working with stakeholders to develop protocols and conduct NOx characterization study of residential and commercial food service equipment (ovens, fryers, griddles, etc.).
- Completed underfired charbroiler PM control testing at UCR CE-CERT.
- Continued inventory, implementation and enforcement of rules for area sources of emissions.
- Initiated audits for approved Rule 1111 alternate compliance plans.
- Launched Rule 1415 on-line refrigerant registration program.

### **ANTICIPATED:**

#### AB 617

- Conduct outreach and develop recommendations for the selection and prioritization of communities for community emissions reduction plans and/or community air monitoring for Year 3 (2020).
- Work with Year 2 (2019) communities to develop community emissions reduction plans.
- Begin implementation of community emissions reduction plans for Year 1 (2018) communities.
- Convene Technical Advisory Group meetings to discuss modeling approaches, emissions data and numerical methodologies in depth.
- Participate in AB 617 conference calls and meetings with CARB, other air agencies and stakeholders.

#### AB 2588

- Update the Industry-Wide AB 2588 Health Risk Assessments (HRA) for gas stations using new health risk guidelines from Office of Environmental Health Hazard Assessment (OEHHA) (pending adoption) and revised emission factors and Industry-Wide HRA Guidelines from CARB. The CARB Industry-Wide HRA Guidelines is estimated to be released mid-2019.
- Continue work with CARB regarding an updated and expanded list of toxic substances under AB 2588.
- Work with consultants on quicker verification of priority scores, approval of ATIRs, HRAs, and VRRPs.
- Develop priority scores for facilities conducting required quadrennial emissions reporting.
- Continue updating the Rule 1402 & AB 2588 Guidelines as necessary.
- Conduct as many as 12 public meetings regarding facility health risk levels.

#### Air Quality Assessment

- Continue to develop tools to allow rapid preparation of PM2.5 and PM10 exceptional event demonstrations. Prepare such demonstrations for PM2.5 in the South Coast Air Basin.
- Continue to improve the dissemination of forecasts and advisories thorough the South Coast AQMD website, AirNOW, Enviroflash, and the South Coast AQMD app.
- Continue developing and disseminating the hourly and higher-spatial resolution predictions of PM2.5, PM10, and O3 throughout South Coast AQMD's jurisdiction.
- Continue the development of software to predict high-wind dust events to facilitate timely PM10 dust advisories.



## PLANNING, RULE DEVELOPMENT & AREA SOURCES (cont.)

- Continue the development of interactive maps and GIS data analysis to support AB 617 efforts. Continue to develop and improve gridded real-time AQI products.
- Continue supporting program functions through air quality forecasting, issuing advisories, calculating air quality trends, responding to public inquiries via phone and email, and conducting point-source permit modeling.

### Air Quality Modeling/Emissions Inventory

- Develop 2<sup>nd</sup> version of the Net Emissions Analysis Tool (NEAT) to incorporate a dynamic dispatch model to reflect the State of California's renewable energy goal.
- Complete the development of Toxic Air Contaminant emissions inventory and the estimation of cancer exposure risk for MATES V.
- Continue technical assistance to the AB 617 program, especially to identify the sources of major air contaminants for each community.
- Continue collaboration with regulatory agencies and academic institutions to improve air quality models to be the state-of-the-science and appropriate for AQMP attainment demonstrations.
- Host Science, Technology, Model Peer-Review (STMPR) meeting as a part of the 2022 AQMP.
- Complete the development of urban biogenic emissions and incorporate the new emissions in the 2022 AQMP modeling attainment demonstration.
- Continue refining AQMP/SIP emissions inventory to assist the implementation of AQMP.
- Continue reviewing General Conformity requirements of the projects submitted to South Coast AQMD and tracking the usage of SIP/ South Coast AQMD General Conformity account.
- Continue assisting inter- and intra-divisional projects that require regional modeling, SIP emissions inventory and Geographical Information System (GIS) based geospatial analysis.

### Annual Emissions Reporting

- Continue evaluating submissions of emissions inventories and annual emissions fees.
- Continue to improve AER on-line reporting system to facilitate data entry for users and incorporate changes to facilitate emission reporting required under AB 617.
- Continue to work with CARB and CAPCOA on the development and implementation of the Criteria Pollutant and Toxics Emissions Reporting (CTR) regulation section of AB 617.
- Continue to improve AER mailing list generator program to facilitate inclusion of facilities subject to AB 617 for emissions reporting.

### AQMP/SIP

- Begin preparation of the 2022 AQMP to address 2015 8-hour ozone standard.
- Prepare a SIP update for the 1997 8-hr ozone standard for Coachella Valley.
- Evaluate PM2.5 design values for attainment status of the 2006 24-hr PM2.5 standard for the Basin.
- Continue developing funding to implement the incentive control measures in the 2016 AQMP.
- Execute contracts for stationary source projects that reduce emissions and toxic exposure.
- Develop a tracking system for emission reductions achieved as a co-benefit to existing climate change programs.

## PLANNING, RULE DEVELOPMENT & AREA SOURCES (cont.)

### CEQA

- Continue working group process to establish guidance to reflect the 2015 Revised OEHHA Guidelines for estimating health risk.
- Continue working group process to update South Coast AQMD's localized significance thresholds (LSTs) to reflect the latest air dispersion model (AERMOD) and meteorological data.
- Continue working group process to develop guidance on how to address and disclose the health effects from significant adverse air quality impacts pursuant to the Friant Ranch CEQA case.
- Continue preparing and reviewing CEQA Lead Agency projects (rules and permitting projects) and commenting on other agencies' CEQA documents.

### Facility-Based Mobile Source Measures

- Bring indirect source rules and other measures for warehouses and railyards to Governing Board for consideration in 2020.
- Initiate compliance program for facilities covered by indirect source rules and MOUs.
- Track implementation of MOUs with the commercial airports to ensure progress.
- Continue developing the MOU (or other regulatory approaches) with the Ports of Los Angeles and Long Beach.
- Continue collaborations with key stakeholders at international ports, to develop incentive-based framework to accelerate deployment of cleaner vessels to trans-Pacific shipping routes.
- Continue to assist TAO on collaborations with marine technology manufacturers and shipping lines to identify and demonstrate promising retrofit technologies.

### Health Effects

- Work with Monitoring and Analysis staff to complete MATES V, including completing data validation of monitoring data, implementation of the Advanced Monitoring component, health risk modeling, report writing and data visualization.

### Mobile Sources

- Continue working on implementation of existing fleet rules including compliance verification activities; implement mobile source 2016 AQMP measures, such as fleet rule amendments.
- Secure SIP credits for mobile source incentive projects working with CARB and U.S. EPA.
- Track development of mobile source regulations by CARB and U.S. EPA.

### Stationary Source Rule Development

- Continue monthly RECLAIM Working Group Meetings to discuss the transition of RECLAIM facilities to a command and control regulatory structure consistent with the 2016 AQMP control measure CMB-05 and AB 617, as well as New Source Review issues pertaining to the transition and adopt/amend the following proposed or proposed amended rules for the RECLAIM transition:
  - Amend Rule 1134 to address U.S. EPA requirements comments for stationary turbines.
  - Amend Rule 1135 to address U.S. EPA requirements for electricity generating facilities.
  - Continue the development of Proposed Amended Rules 218/218.1 to establish monitoring, reporting, and recordkeeping requirements for facilities with Continuous Emissions Monitoring (CEMS) exiting RECLAIM .

## PLANNING, RULE DEVELOPMENT & AREA SOURCES (cont.)

- Adopt Proposed Rule 1109.1 that will establish Best Available Retrofit Control Technology (BARCT) requirements for refineries that are transitioning from RECLAIM to command and control.
- Amend Rule 1147 to implement BARCT for miscellaneous combustion sources at RECLAIM facilities that will transition to command-and-control.
- Adopt Proposed Rules 1147.1 (large miscellaneous combustion sources) that will establish requirements for facilities that are transitioning from RECLAIM to command and control.
- Amend Rule 1117 to update the emission standard to incorporate BARCT for glass melting equipment and incorporate provisions for facilities that are transitioning from NOx RECLAIM to command and control.
- Amend Rule 1100 that will establish the implementation schedule for specific NOx RECLAIM facilities that are transitioning to command and control.
- Amend Regulation XIII (New Source Review) and Regulation XX (RECLAIM) to revise New Source Review provisions to address facilities that are transitioning from RECLAIM to command-and-control. Propose amendments to Regulation XX to coordinate amendments to Regulation XIII.
- Adopt/Amend the following Rules:
  - Propose Rule 1407.1 to reduce air toxics from chromium alloy melting operations.
  - Propose Amended Rule 1469.1 to reduce hexavalent chromium emissions from spraying operations using chromium primers or coatings.
  - Propose Rules 1150.3 (landfills) and 1179.1 (Publicly Owned Treatment Works) to establish NOx emission requirements for facility-specific combustion equipment.
- Initiate rulemaking on the following rule projects:
  - Propose Rule 1138 to regulate emissions from restaurant operations.
  - Propose Rule 1450 to reduce exposure to methylene chloride from furniture stripping.
  - Propose Amended Rule 1426 to reduce air toxics from metal finishing operations.
  - Propose Rule 1435 to reduce point source and fugitive toxic air contaminants including hexavalent chromium emissions from heat treating processes.
  - Propose Rule 1147.2 (Metal Melting and Heat-Treating Furnaces) and 1147.3 (Aggregate Facilities) to establish NOx BARCT requirements for the RECLAIM transition.
  - Propose Amended Rule 1142 for VOC emissions from marine vessel operations.
  - Propose Amended Rule 2202 to streamline implementation for regulated entities.
- Continue working with stakeholders to assess implementation of Rule 1111.

### Socioeconomic Analysis

- Continue conducting socioeconomic analyses for rules and other special projects.
- Continue managing consultants to develop improved methods for evaluating socioeconomic impacts for the next AQMP.

### Transportation Programs

- Continue conducting Employee Transportation Coordinator certification sessions, and review and analyze Rule 2202 annual program submittals.
- Complete the development of EMovers, an on-line Rule 2202 plan submittal process.

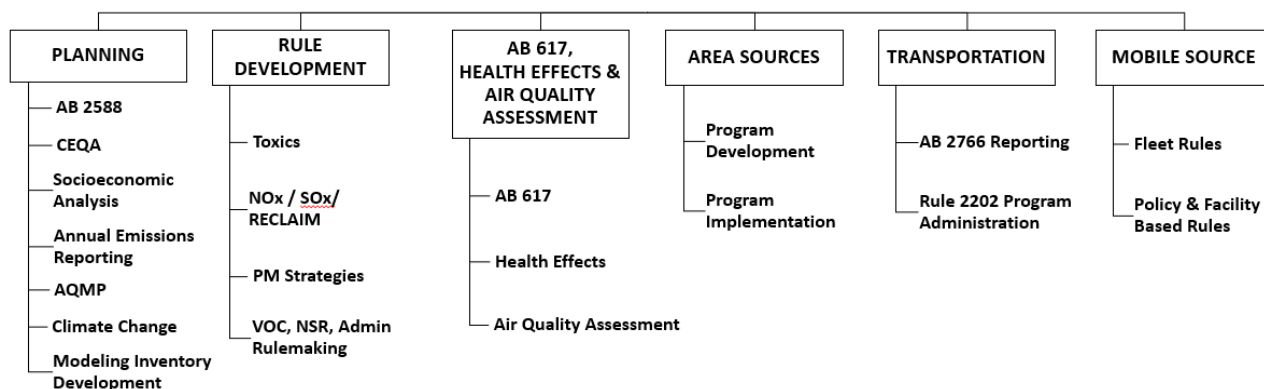
### Other

- Continue implementation of rules and compliance verification activities for area sources.

## PLANNING, RULE DEVELOPMENT & AREA SOURCES (cont.)

- Establish two technical assessments for Rule 1118.1 (beneficial use of gas handling and impacts from food waste diversion) and others as needed.
- Continue development of the new web-based Flare Event Notification System (FENS).
- Complete development and launch on-line Rule 1415 registration.
- Continue working with CE-CERT to characterize and quantify the mechanisms leading to hexavalent chromium emissions during heat treating.

### ORGANIZATIONAL CHART:



### POSITION SUMMARY: 148 FTEs

Planning, Rule Development and Area Sources Units	Amended FY 2019-20	Change	Budget FY 2020-21
Office Administration	9	-	9
Planning	60	-	60
Rule Development	21	-	21
Area Sources	8	-	8
Transportation Programs	11	-	11
Health Effects	3	-	3
Mobile Source	9	-	9
AB 617	27	-	27
Total	148	-	148

## PLANNING, RULE DEVELOPMENT & AREA SOURCES (cont.)

### POSITION DETAIL:

<u>FTEs</u>	<u>Title</u>
1	Administrative Secretary
10	Air Quality Engineer II
4	Air Quality Inspector II
1	Air Quality Inspector III
63	Air Quality Specialist
2	Assistant Deputy Executive Officer
1	Contracts Assistant
1	Deputy Executive Officer - Planning, Rule Development & Area Sources
1	Director of Strategic Initiatives
1	Director of Community Air Programs/Health Effects Officer
4	Office Assistant
8	Planning and Rules Manager
26	Program Supervisor
10	Secretary
3	Senior Administrative Secretary
4	Senior Air Quality Engineer
1	Senior Meteorologist
4	Senior Office Assistant
<u>3</u>	Senior Staff Specialist
148	Total FTEs

**Planning, Rule Development & Area Sources  
Work Program by Office**

Program Code	Program Category	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Revenue Categories
1 26 1002	Develop Programs	AB2766/Mobile Source	AB2766 Mobile Source Outreach	2.70	0.50	3.20	IX
2 26 1007	Customer Service and Business Assistance	AB2766/MSRC	AB2766 Prov Tech Asst to Cities	0.00	0.00	0.00	IX
3 26 1010	Develop Programs	AQMP	AQMP Special Studies	1.60	1.20	2.80	IV,V,IX,XV
4 26 1031	Develop Rules	AB617-BACT Cirghouse Dev	AB617-BARCT Rulemaking	16.20	-4.25	11.95	IX
5 26 1033	Develop Programs	AB617-Em Inventory	AB617-Emission Inventory	3.00	0.00	3.00	IX
6 26 1034	Develop Programs	AB617-Em Reduc Plns	AB617-Emission Reduction Plans	10.15	-0.05	10.10	IX
7 26 1035	Develop Rules	AB617-General	AB617-General	4.15	0.00	4.15	IX
8 26 1038	Develop Programs	Admin/Office Management	Coordinate Off/Admin Activities	4.55	0.75	5.30	Ib
9 26 1050	Develop Rules	Admin/Rule Dev/PRA	Admin: Rule Development	1.10	0.00	1.10	Ib
10 26 1061	Monitoring Air Quality	Air Quality Evaluation	Air Quality Evaluation	2.50	-0.50	2.00	IX
11 26 1068	Develop Programs	SCAQMD Projects	Prepare Environmental Assessments	3.35	1.00	4.35	II,IV,IX
12 26 1071	Develop Rules	Arch Ctgs - Admin	Rdev/Aud/DB/TA/SCAQMD/Rpts/AER	0.50	0.00	0.50	XVIII
13 26 1072	Ensure Compliance	Arch Ctgs - End User	Compliance/Rpts/Rule Implementation	1.00	-0.25	0.75	XVIII
14 26 1073	Ensure Compliance	Arch Ctgs - Other	Compliance/Rpts/Rule Implementation	1.00	0.00	1.00	XVIII
15 26 1076	Ensure Compliance	Area Sources/Compliance	Area Source Compliance	4.50	0.00	4.50	II,IV,V,IX,XV
16 26 1077	Develop Rules	Area Sources/Rulemaking	Dev/Eva/Impl Area Source Prog	0.50	-0.25	0.25	II,IX
17 26 1083	Policy Support	Hlth Effects Air Pollution Fou	Health Effects Air Poll Foundation Support	0.10	0.00	0.10	Ia,II,IV
18 26 1102	Develop Programs	CEQA Document Projects	Review/Prepare CEQA Comments	3.75	0.00	3.75	II,IX
19 26 1104	Develop Programs	CEQA Policy Development	ID/Develop/Impl CEQA Policy	0.50	0.00	0.50	IV,IX
20 26 1121	Develop Programs	China Cln Shipping	China Partnership Cleaner Shpng	1.00	0.00	1.00	IX
21 26 1128	Develop Programs	Cln Communities Pln	Cln Communities Plan Adm/Impl	0.00	0.00	0.00	II,IX
22 26 1148	Policy Support	Climate/Energy/Incentives	GHG/Climate Change Policy Development	2.00	-1.50	0.50	IV,XVII
23 26 1165	Develop Rules	Conformity	Monitor Transp. Conformity	0.25	0.00	0.25	V,IX
24 26 1215	Ensure Compliance	AER Gen/Rev/Am/Aud	AER General/Review/Amend/Audit	11.00	0.00	11.00	II,V
25 26 1217	Develop Programs	Emissions Inventory Studies	AER Hotline/Support	0.75	0.00	0.75	II,V,IX,XV
26 26 1218	Develop Programs	AQMP/Emissions Inventory	Dev Emiss Inv: Forecasts/RFPs	1.25	0.00	1.25	II,IX
27 26 1240	Policy Support	EI-AQ Guidance Document	AQ Guidance Document	0.10	-0.10	0.00	II,IX
28 26 1257	Develop Rules	Fac Based Mob Src	Facility Based Mobile Src Meas	6.25	2.00	8.25	IX
29 26 1276	Policy Support	Advisory Group/Home Rule	Governing Board Advisory Group	0.50	0.00	0.50	Ia
30 26 1277	Policy Support	Advisory Group/AQMP	Governing Board AQMP Advisory Group	0.05	0.45	0.50	II,IX
31 26 1278	Policy Support	Advisory Group/Sci,Tech,Model	Scientific/Tech/Model Peer Rev	0.10	0.30	0.40	II,IX
32 26 1358	Ensure Compliance	GHG Rules-Compl	Green House Gas Rules-Compliance	1.00	0.00	1.00	IV
33 26 1362	Develop Rules	Health Effects	Study Health Effect/Toxicology	0.70	0.00	0.70	II,III,IX
34 26 1368	Develop Programs	Incentive RFP Emiss Red Projs	Incentive Projects Admin	1.00	0.00	1.00	XVII
35 26 1385	Develop Rules	Criteria Pollutants/Mob Srcs	Dev/Impl Intercredit Trading	0.75	-0.55	0.20	IV,IX
36 26 1397	Develop Programs	Lead Agency Projects	Prep Envrnmt Assmnts/Perm Proj	2.50	0.00	2.50	III
37 26 1416	Policy Support	Legislative Activities	Supp/Promote/Influence Legis/Adm	0.50	0.00	0.50	Ia
38 26 1443	Monitoring Air Quality	MATES V	MATES V	0.30	0.90	1.20	XVII
39 26 1444	Monitoring Air Quality	MATES V Refinery	MATES V Refinery	0.10	0.00	0.10	XVII
40 26 1445	Monitoring Air Quality	Meteorology	ModelDev/Data Analysis/Forecast	2.50	-0.50	2.00	II,V,IX

**Planning, Rule Development & Area Sources (Cont.)  
Work Program by Office**

Program Code	Program Category	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Revenue Categories
41 26 1449	Develop Rules	Mob Src/SCAQMD Rulemaking	Prepare SCAQMD Mob Src rulemaking proposals	3.60	-2.60	1.00	IX
42 26 451	Develop Programs	Mob Src/CARB/EPA Monitoring	CARB/US EPA Mob Src Fuel Policies	0.50	-0.10	0.40	IX
43 26 452	Develop Programs	Mob Src/CEC/US DOE Monitoring	CEC/US DOE Mob Src rulemaking proposals	0.20	0.00	0.20	IX, XVII
44 26 460	Develop Rules	Regional Modeling	Rule Impact/Analyses/Model Dev	5.00	0.00	5.00	II, V, IX
45 26 461	Timely Review of Permits	Permit & CEQA Modeling Review	Review Model Permit/Risk Assmt	1.00	0.00	1.00	III
46 26 503	Develop Programs	PM Strategies	PM10 Plan/Analyze/Strategy Dev	1.00	1.00	2.00	II, V, XV
47 26 530	Monitoring Air Quality	Photochemical Assessment	Photochemical Assessment	0.00	0.00	0.00	II, V
48 26 565	Customer Service and Business Assistance	Public Records Act	Comply w/ Public Rec Requests	0.79	0.00	0.79	la
49 26 620	Ensure Compliance	Refinery Pilot Project	Refinery Pilot Project	1.80	1.00	2.80	II
50 26 645	Ensure Compliance	Rule 1610 Plan Verification	Rule 1610 Plan Verification	0.50	0.00	0.50	V, IX
51 26 646	Develop Rules	R1180 Community Mon	R1180 Comm Monitoring Refinery	0.20	0.00	0.20	XVII
52 26 654	Develop Rules	Rulemaking/NOX	Rulemaking/NOX	0.90	0.00	0.90	II, IV, XV
53 26 655	Develop Rules	NSR/Adm Rulemaking	Amend/Develop NSR & Admin Rules	0.90	0.00	0.90	II, V, XV
54 26 656	Develop Rules	Rulemaking/VOC	Dev/Amend VOC Rules	3.00	-2.50	0.50	II, IV, XV
55 26 659	Develop Rules	Rulemaking/Toxics	Develop/Amend Air Toxic Rules	8.75	2.65	11.40	II, XV
56 26 661	Develop Rules	Rulemaking/RECLAIM	RECLAIM Amend Rules/Related Is	1.50	0.00	1.50	II
57 26 685	Develop Programs	Socio-Economic	Apply econ models/Socio-econ	4.00	0.50	4.50	II, IV
58 26 717	Policy Support	Student Interns	Gov Bd/Student Intern Program	0.50	0.00	0.50	la
59 26 745	Develop Programs	Rideshare	Dist Rideshare/Telecommute Prog	0.55	0.00	0.55	IX
60 26 788	Customer Service and Business Assistance	AB2588 Mailing/Venue	AB2588 Mailing/Venue	0.05	-0.05	0.00	XVII
61 26 794	Ensure Compliance	Toxics/AB2588	AB2588/Toxics	13.00	0.00	13.00	X
62 26 805	Operational Support	Training	Training	0.54	0.00	0.54	lb
63 26 816	Develop Programs	Transportation Regional Progs	Dev AQMP Meas/Coord w/Reg Agn	0.40	0.35	0.75	V, IX
64 26 825	Operational Support	Union Negotiations	Official Labor/Mgmt Negotiate	0.04	0.00	0.04	la
65 26 826	Operational Support	Union Steward Activities	Rep Employees in Grievance Act	0.08	0.00	0.08	la
66 26 833	Customer Service and Business Assistance	Rule 2202 ETC Training	Rule 2202 ETC Training	1.15	1.00	2.15	XI
67 26 834	Develop Programs	Rule 2202 Implement	Rule 2202 Proc/Sub Plans/Tech Eval	2.15	-0.29	1.86	XI
68 26 836	Develop Programs	Rule 2202 Support	R2202 Supt/CmptMaint/WebSubmt	2.05	-0.06	1.99	V, XI
69 26 855	Operational Support	Web Tasks	Create/edit/review web content	0.10	-0.05	0.05	la

**Total Planning, Rule Development, and Area Sources**

148.00	(0.00)	148.00
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**Planning, Rule Development & Area Sources  
Line Item Expenditure**

Major Object / Account # / Account Description		FY 2018-19 Actuals	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate *	FY 2020-21 Adopted Budget
<b>Salary &amp; Employee Benefits</b>						
51000-52000	Salaries	\$ 12,610,708	\$ 14,726,917	\$ 14,726,917	\$ 13,852,516	\$ 14,254,554
53000-55000	Employee Benefits	6,832,924	8,299,872	8,299,871	7,662,815	8,458,911
Sub-total Salary & Employee Benefits		\$ 19,443,633	\$ 23,026,789	\$ 23,026,788	\$ 21,515,331	\$ 22,713,465
<b>Services &amp; Supplies</b>						
67250	Insurance	\$ -	\$ -	\$ -	\$ -	\$ -
67300	Rents & Leases Equipment	-	-	-	-	-
67350	Rents & Leases Structure	1,203	2,000	2,000	2,000	2,000
67400	Household	-	-	-	-	-
67450	Professional & Special Services	1,039,665	894,000	824,000	776,000	894,000
67460	Temporary Agency Services	101,655	20,000	76,024	76,024	20,000
67500	Public Notice & Advertising	90,660	105,300	105,300	105,300	255,300
67550	Demurrage	753	1,000	4,177	4,177	1,000
67600	Maintenance of Equipment	-	5,000	8,600	8,600	5,000
67650	Building Maintenance	-	1,000	1,000	1,000	1,000
67700	Auto Mileage	5,377	8,500	8,500	8,500	8,500
67750	Auto Service	-	-	-	-	-
67800	Travel	75,912	70,000	70,000	70,000	70,000
67850	Utilities	-	-	-	-	-
67900	Communications	30,600	50,000	50,000	50,000	50,000
67950	Interest Expense	-	-	-	-	-
68000	Clothing	2,288	1,500	1,500	1,500	1,500
68050	Laboratory Supplies	-	-	-	-	-
68060	Postage	105,907	100,000	100,000	100,000	100,000
68100	Office Expense	202,402	161,484	182,897	182,897	161,484
68200	Office Furniture	4,357	-	-	-	-
68250	Subscriptions & Books	1,127	2,000	2,000	2,000	2,000
68300	Small Tools, Instruments, Equipment	-	-	-	-	-
68400	Gas and Oil	-	-	-	-	-
69500	Training/Conference/Tuition/ Board Exp.	17,476	25,000	21,000	21,000	25,000
69550	Memberships	248	4,000	4,000	4,000	4,000
69600	Taxes	-	-	-	-	-
69650	Awards	-	-	-	-	-
69700	Miscellaneous Expenses	45,507	125,000	114,435	114,435	125,000
69750	Prior Year Expense	-	-	-	-	-
69800	Uncollectable Accounts Receivable	-	-	-	-	-
89100	Principal Repayment	-	-	-	-	-
Sub-total Services & Supplies		\$ 1,725,137	\$ 1,575,784	\$ 1,575,433	\$ 1,527,433	\$ 1,725,784
77000	<b>Capital Outlays</b>	\$ 63,893	\$ -	\$ 24,200	\$ 24,200	\$ -
79050	<b>Building Remodeling</b>	\$ -	\$ -	\$ -	\$ -	\$ -
Total Expenditures		\$ 21,232,663	\$ 24,602,573	\$ 24,626,421	\$ 23,066,964	\$ 24,439,249

\* Estimates based on July 2019 through February 2020 actual expenditures and February 2020 budget amendments.



## SCIENCE & TECHNOLOGY ADVANCEMENT

### MATT MIYASATO CHIEF TECHNOLOGIST/DEPUTY EXECUTIVE OFFICER

At a Glance:	
FY 2019-20 Adopted	\$35.4M
FY 2020-21 Budget	\$37.3M
% of FY 2020-21 Budget	21.6%
Total FTEs FY 2020-21 Budget	231

#### DESCRIPTION OF MAJOR SERVICES:

Science & Technology Advancement is responsible for three key areas of operation: monitoring and analysis; technology research and development; and technology implementation. The Technology Advancement Office (TAO) implements the Clean Fuels Program to commercialize advanced low- and zero-emission technologies and incentive programs such as the AB 617 Community Air Protection (CAP), Carl Moyer, Lower-Emission School Bus, Volkswagen Mitigation Program (VMP), and Proposition 1B-Goods Movement programs (Prop 1B). TAO is also responsible for the administration and implementation of the Enhanced Fleet Modernization Program (EFMP). Staff also provides support for the Mobile Source Air Pollution Reduction Review Committee (MSRC), and Best Available Control Technology programs (BACT). The Monitoring & Analysis Division maintains the South Coast AQMD's (District) air monitoring network, operates the Rule 1180 refinery community air monitoring network, operates the analytical laboratory, conducts source tests and evaluation, conducts local community monitoring in areas of concern, implements quality assurance programs, evaluates low cost sensors, evaluates and implements optical remote sensing (ORS) technologies for emission measurements, and provides meteorological, sampling and analytical support as part of the District's incident response program, wildfire, and special monitoring projects for the agency.

#### ACCOMPLISHMENTS:

##### RECENT:

- Continued the implementation of the Carl Moyer, Surplus Off-Road Opt-In for NOx (SOON), Lower-emission School Bus (LESB), AB 617 CAP incentives, Funding Agricultural Replacement Measures for Emission Reductions (FARMER), VMP, EFMP and the Prop 1B programs with total funding exceeding \$200 million. Implemented program efficiencies for the EFMP in 2019, resulting in a total of 2,191 vouchers funded totaling \$17.98 million in expenditures. For the VMP, worked closely with CARB and the other administering air districts to execute the grant agreement for \$165 million in funding, completed the Implementation Manual, and released the first solicitation for the Combustion Freight and Marine Projects Category. Implemented the Voucher Incentive Program (VIP) for replacement of on-road trucks on a first-come-first-served basis.

## SCIENCE & TECHNOLOGY ADVANCEMENT (cont.)

- Completed CARB and State Controller's Office program reviews of the District's incentive funding programs, including over \$500 million in State grants and matching funds spanning 7 years of incentive program implementation, with no findings. This audit was the most extensive review of State incentive funding programs conducted by CARB to-date.
- Continued the Clean Fuels (CF) program, which is the research, development, demonstration and deployment program for the District. Board approved over \$68 million in projects, comprising of \$7.6 million in CF funds and \$12.1 million in awards from federal and state solicitations, and \$48.3 million in partners cost share; CF funds were leveraged with a ratio of 1:12. Projects in key technical areas include heavy-duty electric drive technologies, near-zero emission medium and heavy-duty engines, in-use emissions testing of HD trucks, local renewable natural gas production, and refueling infrastructure for alternative fuels (natural gas, electricity and hydrogen).
- Supported the development and demonstration of emission control technologies for marine and ocean-going vessels (OGV). Engaged the technology developers and vessel operators who have expertise in the area of shipping, engine technologies, emission control technologies to develop innovative technologies that will result in reducing emissions.
- Updated BACT Guidelines including updates to major and minor source policy and procedures in addition to Lowest Achievable Emission Rate (LAER) BACT determinations.
- Participated and provided input in the development of CARB's AB 617 BACT/Best Available Retrofit Control Technology (BARCT) Clearinghouse web-based portal.
- Continued research, development, demonstration and deployment of in-basin renewable energy and microgrid projects, including fuel cells, solar photovoltaic, energy storage and low NOx combustion technologies.
- Continued to assess ambient air quality in the Basin, operated and maintained approximately 43 air monitoring sites resulting in 202,210 valid pollutant data points per month, collected and analyzed of 1,075 canisters for ambient Volatile Organic Compounds (VOCs) and toxics and over 13,811 filters for components including mass, ions, carbon and metals. This is in support of federal programs including those for National Air Toxics Trends Stations (NATTS), Photochemical Assessment Monitoring Stations (PAMS), National Core (NCORE) PM2.5 Speciation, and Near-Road Monitoring. This data provides the basis for the compliance with the national ambient air quality standards (NAAQS) along with verifying emission models and understanding source contributions for future control measures.
- Performed audits of field laboratory test methods in support of federal monitoring programs and including "in-house" audits for air toxics; performed 2018 data certification and review.
- Continued the District's audit program to improve quality assurance, Total Suspended Particulate (TSP), PM10 and PM2.5 measurements performed by District staff.
- Continued special monitoring efforts to address community concerns and better characterize emissions from oil reclamation activities, metal finishing, metal forging and recycling, battery recycling facilities, and oil and gas operations. Continued PM10 monitoring in the City of Duarte to assess potential impacts from nearby mining operations. Also maintained monitoring efforts near the Salton Sea measuring hydrogen

## SCIENCE & TECHNOLOGY ADVANCEMENT (cont.)

sulfide and PM10 to provide information to alert the public of potential dust and/or odor events.

- Supported and verified compliance with current rules and regulations, analyzed over 880 samples for asbestos from demolition sites based on complaints and concerns about fallout (deposition), analyzed approximately 500 products for VOC and Hazardous Air Pollutants (HAP) content; and conducted over 1,800 Source Test (ST) protocol and report evaluations, Continuous Emissions Monitoring System (CEMS) certifications, Laboratory Approval Program (LAP) application reviews and ST observations.
- Finalized air toxic monitoring for the Multiple Air Toxics Exposure Study (MATES V) at ten fixed locations to characterize and spatially identify hazardous air pollutant exposure in the Basin. Began conducting air monitoring in and around communities neighboring refineries using a combination of standardized, advanced and low-cost methods to assess air pollution levels that may be related to refinery emissions.
- Continued the evaluation of commercially available low-cost air quality sensors in the field and laboratory within the AQ-SPEC program.
- Worked in collaboration with Google Outreach to test the performance of PM2.5, O3 and CO2 sensors on a mobile platform and developed a scientifically robust protocol for using sensor technology to conduct mobile measurements of air pollution.
- Deployed different particle and gas sensors in small networks for specific applications. A network of nine particle sensors has been operating at the fenceline of Rainbow Environmental in Huntington Beach to monitor fugitive emissions of PM2.5 and PM10 from this facility in real time. An additional 90 sensors have been installed throughout the Los Angeles Air Basin for Phase II of the NASA Citizen Science project. Data collected by these sensors will assist NASA scientists to improve our understanding of relationship between satellite aerosol optical depth and surface PM, ultimately leading to better observations of air quality from space. As part of the U.S. EPA Science to Achieve Results (STAR) Grant project, approximately 300 sensors have already been installed to monitor and measure particulate matter at the community level in 14 communities in the State of California. In addition, a network of more than 100 multi-pollutant sensor units measuring O3, NO2, and PM have been operated in the Basin, and procedures have been developed to keep this network calibrated.
- Supported AB 617 community outreach efforts and community steering group orientation by participating in over 10 community meetings in each of three Year 1 AB 617 communities. Developed and began implementation of Community Air Monitoring Plans (CAMP) tailored to each community based on the information gathered from Community Steering Committees (CSC) and considering the past and current air monitoring efforts in those communities.
- Continued the development of state-of-the-art mobile platforms that use advanced measurement technologies to conduct highly resolved ambient concentration of criteria pollutants and air toxics. These mobile platforms are ideal for surveying large areas in a relatively short period of time, identifying pollution hotspots and sources that were previously unknown, providing valuable data for enforcement consideration, and informing emission reduction efforts.

## SCIENCE & TECHNOLOGY ADVANCEMENT (cont.)

- Continued the development of a comprehensive data platform for acquiring, validating, analyzing and mapping air measurement data from the various air monitoring technologies, including real- (and near-real-) time and time-integrated measurements.
- Continued to work with CARB, state and local agencies, and other stakeholders to implement each CAMP tailored to the three Year 1 AB 617 communities. Air monitoring in these communities began before the July 1, 2019 implementation deadline and is currently ongoing. Air monitoring methodologies implemented include a combination of mobile monitoring, real- (or near-real-) time and time-integrated measurements at fixed monitoring stations, and development of sensor networks to provide information on the air pollution impact caused by specific emission sources.
- Continued quarterly implementation of a Community Scale Project funded by the U.S. EPA and used ORS technologies for emission measurements in the Carson/Wilmington/Long Beach areas to characterize and quantify emissions from refineries and to assess their impact on surrounding communities.
- Continued efforts to maintain a network of 31 samplers for the Department of Homeland Security. Approximately 11,315 samples were delivered to the LA County Department of Public Health in support of the program.
- Continued to provide sampling, monitoring, and laboratory analyses in support of the District Incident and Nuisance Response efforts, including recent wildfire smoke incidents and coastal odor investigations.
- Facilitated the Emissions Quantification and Testing Evaluation (EQUATE) group as per the Governing Board resolution to the recent Regulation III amendments to provide input on the source test review process assessment. The EQUATE recommendations include implementation of an electronic source test submission portal and tracking dashboard.
- Conducted a source test measurement at a cannabis facility on their cannabis solvent extraction process. The process previously has not been tested for emissions, and the results will be used as a factor to determine whether controls are needed.
- Conducted source test evaluation of polyfluoroalkyl substances (PFAS) as a follow up to Rule 1469.
- Worked with each major refinery in the Basin and the Western States Petroleum Association (WSPA) to develop refinery fenceline air monitoring plans, with an emphasis on fenceline coverage, data display to the public, public notifications and quality assurance/quality control (QA/QC). Continued working with the refineries on the remaining elements of their plans including communication of data and notifications. Provided formal review and feedback to Rule 1180 Refinery Fenceline monitoring plans.
- Developed a Rule 1180 CAMP and provided to the public for review and comment in November 2019. Hosted four Rule 1180 community workshops providing a status update on the refinery air monitoring plans and introduced concepts for refinery-related community air monitoring and discussed the draft Rule 1180 CAMP.
- Deployed four Rule 1180 community air monitoring stations and began live data reporting for selected pollutants.

### ANTICIPATED:

- Continue the development and demonstration of heavy-duty (HD) zero emission cargo transport trucks and off-road equipment and initiate the development and

## SCIENCE & TECHNOLOGY ADVANCEMENT (cont.)

demonstration of zero emission goods movement corridors. Additionally, develop and demonstrate EV and hydrogen infrastructure supported by energy storage, onsite generation and microgrids to enable large deployments of zero emission HD trucks.

- Continue the implementation of the VIP on a first-come-first-served basis; solicit and complete contracting on- and off-road projects, including marine vessel engine repowering projects, and infrastructure for zero- and near-zero-emission vehicles for the Carl Moyer Program, identify and obtain community support for projects to be funded by CAP incentives and initiate contracting for these projects, continue EFMP implementation and processing over 200 vouchers per month, and obligate all remaining Prop 1B Program funds awarded to the District. Also, issue grants for the replacement of school buses with lower and zero emission buses under the LESB program. Develop and implement the Zero-Emissions Class 8 Truck and Combustion categories under CARB's VMP.
- Continue periodic updates to the BACT Guidelines, specifically major and minor source policy and procedures and LAER/BACT determinations.
- Conduct a BACT technical assessment for flares receiving biogas derived from advanced digestion and/or organic waste digestion or codigestion that considers costs, review of the current scientific literature, existing measurement methods, technology achieved in-practice, reliability issues, and if necessary, field testing. Report back to the Stationary Source Committee within 12 months of rule adoption to present findings and potential recommendations and amend the BACT Guidelines and Rule 1118.1, if necessary.
- Continue to participate in the development of CARB's AB 617 BACT/BARCT web-based portal.
- Continue research, development, demonstration and deployment of low NOx combustion technologies, renewable energy and microgrid projects.
- Develop and implement grant management databases for tracking of demonstration and implementation projects.
- Increase deployment of cleaner construction equipment, locomotives, marine (including OGV), and on-road HD vehicles through the continued implementation of funding incentive programs to meet emission reduction goals in the AQMP.
- Continue to apply for funding opportunities from local, state, and federal programs.
- Provide monitoring, source testing, and analysis for rule development related to upcoming amendments for Rules 1407.1 and 218d.
- Continue source test protocol and report evaluations, CEMS certifications, LAP application reviews and source test observations. Increase throughput on source test evaluations anticipated due to RECLAIM (Regional Clean Air Incentives Market) sunset and permit streamlining efforts.
- Facilitate an ammonia CEMS demonstration project to evaluate whether sources of ammonia can be continuously monitored for emissions. If the demonstration is successful, develop a procedure for validating the CEMS.
- Participate in outreach meetings and develop CAMP for both Year 2 AB 617 communities (South East Los Angeles and Eastern Coachella Valley) approved by CARB and begin implementation of those plans by December 2020.
- Continue working with the refineries towards approval of their Rule 1180 fenceline air monitoring plans. Continue to oversee the implementation of the refinery fenceline air monitoring systems, public data website and public notification systems developed and

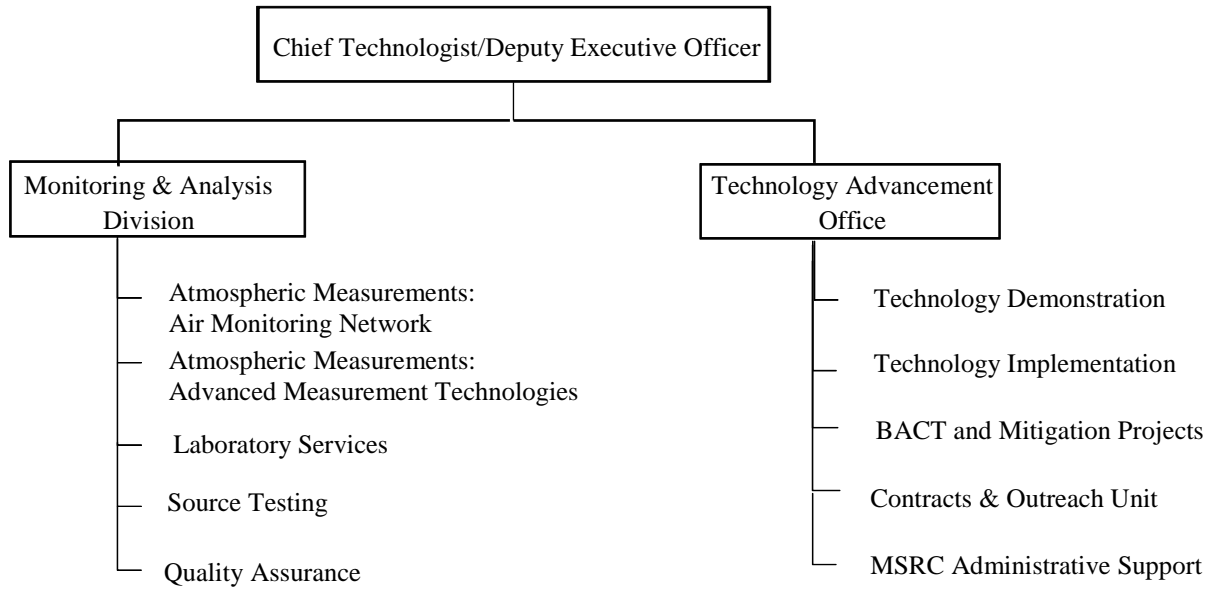
## SCIENCE & TECHNOLOGY ADVANCEMENT (cont.)

implemented by each refinery. Work with each refinery on implementing robust QA/QC of their fence-line air monitoring systems.

- Continue to develop and implement refinery-related community air monitoring as required under Rule 1180.
- Complete technical demonstration of optical tent for real-time monitoring of Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) at the Phillips 66 Wilmington refinery.
- Continue development of the District's air monitoring network and special monitoring efforts critical to the District operations. This includes continued compliance verification and rule development, monitoring efforts in Paramount, West Rancho Dominguez, and East Los Angeles.
- Continue development and implementation of mobile surveying methods to assess pollutants in a large area in a short amount of time.
- Implement enhanced ozone monitoring strategy for the U.S. EPA PAMS program to provide more relevant and robust data sets for VOCs that are ozone precursors. Continue to develop concepts for additional specialized studies or ongoing measurements that would provide information to guide future pollution reduction efforts.
- Continue to enhance and modernize the laboratory instrumentation, methodologies, and analysis capabilities to help with special monitoring projects, incident and wildfire response. Continue operational efficiency improvement by investing in latest software, automated instruments and equipment and other workflow streamlining efforts.
- Continue to enhance and modernize the District's telemetry system and data management system that receives and validates the incoming data from the air monitoring stations and special monitoring locations to additionally include AB 617 data.
- Continue to assess and oversee operational integrity, efficiency and quality assurance through monthly internal audits of laboratory and field monitoring stations. Participate in the U.S. EPA Technical System Audit being conducted.
- Continue with full-scale testing of air quality sensors in AQ-SPEC and share testing results with the public. Develop concept for performance verification and/or certification of low-cost particle and gaseous sensors.
- Deploy and pilot several air quality sensor networks for the purpose of developing new low-cost monitoring capabilities for the District, regulated entities, and the public. Continue to implement the goals and objectives of the STAR grant to engage, educate, and empower California communities on the use and applications of "low-cost" air monitoring sensors and complete the deployment of sensor networks in collaboration with CAPCOA agencies and environmental justice groups and communities.
- Continue with the implementation of the remote sensing technology projects and experimentation with other next generation monitoring technologies and formulate appropriate recommendations to best integrate into the District's current measurement toolbox.
- Continue with the implementation of advanced air monitoring technologies for coastal odor investigations.
- Monitor smoke from prescribed burns that have been scheduled by the U.S Forest Service in the San Bernardino National Forest and San Jacinto Mountain Range.

## SCIENCE & TECHNOLOGY ADVANCEMENT (cont.)

### ORGANIZATIONAL CHART:



### POSITION SUMMARY: 231 FTEs

Science & Technology Advancement Units	Amended 2019-20	Change	Budget FY 2020-21
Office Administration	14	-	14
Monitoring & Analysis	160	-	160
Technology Advancement	57	-	57
Total	231	-	231

## SCIENCE & TECHNOLOGY ADVANCEMENT (cont.)

### POSITION DETAIL:

<u>FTEs</u>	<u>Title</u>
27	Air Quality Chemist
10	Air Quality Engineer II
3	Air Quality Inspector II
22	Air Quality Instrument Specialist I
28	Air Quality Instrument Specialist II
31	Air Quality Specialist
2	Assistant Deputy Executive Officer/Science & Technology Advancement
3	Atmospheric Measurement Manager
14	Contracts Assistant
1	Chief Technologist/Deputy Executive Officer
6	Laboratory Technician
1	Meteorologist Technician
1	Monitoring Operations Manager
4	Office Assistant
2	Planning and Rules Manager
4	Principal Air Quality Chemist
2	Principal Air Quality Instrument Specialist
18	Program Supervisor
6	Secretary
3	Senior Administrative Secretary
11	Senior Air Quality Chemist
4	Senior Air Quality Engineer
12	Senior Air Quality Instrument Specialist
1	Senior Enforcement Manager
5	Senior Office Assistant
1	Senior Public Information Specialist
2	Senior Staff Specialist
1	Source Test Manager
2	Staff Assistant
2	Staff Specialist
1	Supervising Air Quality Engineer
<u>1</u>	Technology Implementation Manager
<b>231</b>	<b>Total FTEs</b>



**Science & Technology Advancement  
Work Program by Office**

Program Code	Program Category	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Revenue Categories
1	44 003	Advance Clean Air Technology	AB2766/MSRC	Mob Src Review Comm Prog Admin	0.50	0.00	0.50 IX
2	44 004	Advance Clean Air Technology	Advisory Group/Small Business	AB2766 Admin Discretionary Prog	3.00	0.00	3.00 IX
3	44 009	Develop Programs	AB 1318 Mitigation	AB 1318 Projects Admn/Impl	0.25	-0.20	0.05 XVII
4	44 012	Advance Clean Air Technology	AQMP/Control Tech Assessment	Tech Supp: Quantify Cost Effec	1.00	0.00	1.00 VIII
5	44 015	Ensure Compliance	Acid Rain Program	Acid Rain CEMS Eval/Cert	0.50	-0.30	0.20 II,IV
6	44 030	Advance Clean Air Technology	AB134	AB134	5.00	0.00	5.00 IX
7	44 035	Monitoring Air Quality	AB617-General	AB617-General	0.00	0.50	0.50 IX
8	44 036	Monitoring Air Quality	AB617-Monitoring	AB617-Monitoring	39.00	0.00	39.00 IX
9	44 038	Monitoring Air Quality	Admin/Office Mgmt/Monitoring	Overall Program Mgmt/Coord	1.40	-0.50	0.90 Ib
10	44 039	Advance Clean Air Technology	Admin/Office Mgt/Tech Adv	Admin Support/Coordination	0.77	0.00	0.77 VIII
11	44 041	Policy Support	Admin/Office Mgmt/Policy Supp	Overall Policy Supp/Mgmt/Coord	0.49	0.00	0.49 Ib
12	44 042	Ensure Compliance	Admin/Office Mgmt/Compliance	Compliance: Assign/Manage/Supp	0.37	0.00	0.37 Ib
13	44 043	Develop Rules	Admin/Office Mgmt/Rules	Rules: Assign/Manage/Supp	0.15	0.00	0.15 Ib
14	44 046	Monitoring Air Quality	Admin/Program Management	STA Program Administration	2.00	0.00	2.00 Ib
15	44 048	Advance Clean Air Technology	Admin/Prog Mgmt/Tech Advance	Overall TA Program Mgmt/Coord	1.55	0.00	1.55 VIII
16	44 063	Monitoring Air Quality	Ambient Air Analysis	Analyze Criteria/Tox/Pollutants	8.91	0.00	8.91 II,V,IX
17	44 064	Monitoring Air Quality	Ambient Network	Air Monitoring/Toxics Network	18.05	2.50	20.55 II,IV,V,IX
18	44 065	Monitoring Air Quality	Air Quality Data Management	AM Audit/Validation/Reporting	1.00	0.00	1.00 II,V,IX
19	44 067	Monitoring Air Quality	Ambient Lead Monitoring	Lead Monitoring/Analysis/Reporting	0.50	0.00	0.50 IV
20	44 069	Develop Programs	AQIP Evaluation	AQIP Contract Admin/Evaluation	0.50	-0.40	0.10 IX
21	44 072	Ensure Compliance	Arch Ctgs - End User	Sample Analysis/Rpts	2.00	0.00	2.00 XVIII
22	44 073	Monitoring Air Quality	Arch Ctgs - Other	Sample Analysis/Rpts	2.00	0.00	2.00 XVIII
23	44 079	Monitoring Air Quality	AQ SPEC	AQ SPEC	6.19	0.00	6.19 XVII
24	44 081	Monitoring Air Quality	Air Filtration EPA	Air Filtration EPA/Admn/Impl	0.15	0.00	0.15 V
25	44 082	Monitoring Air Quality	Air Filtration Other	Air Filtration Other/Admn/Impl	0.10	0.00	0.10 XVII
26	44 095	Advance Clean Air Technology	CA Natural Gas Veh Partnership	CA Natural Gas Veh Partnership	0.10	0.00	0.10 VIII
27	44 105	Ensure Compliance	CEMS Certification	CEMS Review/Approval	6.15	-1.15	5.00 II,III,VI
28	44 121	Advance Clean Air Technology	China Cln Shipping	China Partnership Cleaner Shpng	0.90	0.00	0.90 IX
29	44 130	Advance Clean Air Technology	Clean Fuels/Contract Admin	Admin/Project Supp for TA Cont	3.90	0.00	3.90 VIII
30	44 132	Advance Clean Air Technology	Clean Fuels/Mobile Sources	Dev/Impl Mobile Src Proj/Demo	1.00	0.00	1.00 VIII
31	44 134	Advance Clean Air Technology	Clean Fuels/Stationary Combust	Dev/Demo Clean Combustion Tech	0.30	0.00	0.30 VIII
32	44 135	Advance Clean Air Technology	Clean Fuels/Stationary Energy	Dev/Demo Alt Clean Energy	0.55	0.00	0.55 VIII
33	44 136	Advance Clean Air Technology	Clean Fuels/Tech Transfer	Disseminate Low Emiss CF Tech	1.80	0.00	1.80 VIII
34	44 161	Monitoring Air Quality	Comm Air Tox Init	Community Air Toxics Initiative	0.00	0.00	0.00 XVIII
35	44 175	Ensure Compliance	DB/Computerization	Develop Systems/Database	0.44	0.00	0.44 II,IV,VI
36	44 187	Advance Clean Air Technology	DERA Sch Bus Repl	DERA Sch Bus Repl Admin/Impl	0.10	0.00	0.10 V
37	44 188	Advance Clean Air Technology	DERA FY 13 Veh Repl	DERA Vehicle Repl Admin/Impl	0.10	0.00	0.10 XVII
38	44 190	Advance Clean Air Technology	Diesel Projects EPA	Diesel Projects EPA/Admn/Impl	0.20	-0.20	0.00 V
39	44 203	Advance Clean Air Technology	EFMP Program Support	EFMP Program Support	5.00	0.00	5.00 XVII
40	44 240	Monitoring Air Quality	Environmental Justice	Implement Environmental Justice	0.45	-0.45	0.00 II,IX

**Science & Technology Advancement (Cont.)  
Work Program by Office**

#	Program Code	Program Category	Program	Activities	FTEs		+/-	Revenue Categories	
					FY 2019-20	FY 2020-21			
41	44	248	Monitoring Air Quality	EPA Community Scale AQ-SPEC	EPA Community Scale AQ-SPEC	1.00	0.00	1.00	V,XVII
42	44	258	Advance Clean Air Technology	FARMER Grant	Fund Ag Replacement Measures	2.50	-1.00	1.50	XVII
43	44	276	Policy Support	Advisory Group/Technology Adva	Tech Adv Advisory Group Supp	0.10	0.00	0.10	VIII
44	44	356	Advance Clean Air Technology	GGRF ZEDT Demo	GGRF ZEDT Demo Admin	1.10	0.00	1.10	XVII
45	44	368	Develop Programs	Incentive RFP Emis Red Projs	Incentive Projects Admin	3.00	0.00	3.00	XVII
46	44	396	Develop Programs	Lawnmower Exchange	Lawn Mower Admin/Imp/Outreach	0.30	0.00	0.30	XVII
47	44	410	Policy Support	Legislation	Support Pollution Reduction thru Legislatio	0.50	0.00	0.50	IX
48	44	450	Ensure Compliance	Microscopic Analysis	Asbestos/PM/Metals Analysis	2.00	1.00	3.00	VI
49	44	453	Advance Clean Air Technology	Mob Src: Emis Inven Method	Rw CARB/US EPA emissions inven methodology	1.50	0.00	1.50	VIII,IX
50	44	456	Develop Rules	MS & AQMP Control Strategies	AQMP Control Strategies	0.30	0.00	0.30	VIII
51	44	457	Advance Clean Air Technology	Mob Src/C Moyer Adm/Outreach	Carl Moyer: Imp/Admin Grant	13.10	0.80	13.90	IX
52	44	458	Develop Programs	Mobile Source Strategies	Implement Fleet Rules	1.00	0.00	1.00	VIII
53	44	459	Advance Clean Air Technology	Mob Src/C Moyer/Imp/Prg Dev	Moyer/Implem/Program Dev	3.00	1.00	4.00	IX
54	44	460	Advance Clean Air Technology	VIP Admin	VIP Admin/Outreach/Imp	0.50	0.00	0.50	IX
55	44	468	Monitoring Air Quality	NATTS(Natl Air Tox Trends Sta)	NATTS (Natl Air Tox Trends)	1.00	0.00	1.00	II,V,IX
56	44	469	Monitoring Air Quality	Near Roadway Mon	Near Roadway Monitoring	1.50	-1.50	0.00	IV,V,IX
57	44	500	Ensure Compliance	PM2.5 Program	Est/Operate/Maint PM2.5 Network	10.30	0.00	10.30	II,V,IX
58	44	505	Monitoring Air Quality	PM Sampling Program (DHS)	PM Sampling Program - Addition	8.41	0.00	8.41	V
59	44	507	Monitoring Air Quality	PM Sampling Spec	PM Sampling Special Events	0.10	0.00	0.10	V
60	44	530	Monitoring Air Quality	Photochemical Assessment	Photochemical Assess & Monitor	3.00	0.00	3.00	V,IX
61	44	533	Advance Clean Air Technology	POLB AMECS Demo	POLB AMECS Demo-Admin/Impl	0.10	0.00	0.10	XVII
62	44	542	Develop Programs	Prop 18:Goods Movement	Prop 18:Goods Movement	2.00	0.00	2.00	IX
63	44	545	Timely Review of Permits	Protocols/Reports/Plans	Eval Test Protocols/Cust Svc	0.10	0.00	0.10	III,IV
64	44	546	Timely Review of Permits	Protocols/Reports/Plans	Eval Test Protocols/Compliance	6.15	0.00	6.15	IV,VI
65	44	565	Customer Service and Business Assistance	Public Records Act	Comply w/ Public Req for Info	0.17	0.45	0.62	Ia
66	44	585	Monitoring Air Quality	Quality Assurance	Quality Assurance Branch	7.00	-1.00	6.00	II,V,IX
67	44	646	Monitoring Air Quality	R1180 Community Mon	R1180 Comm Monitoring Refinery	9.00	5.00	14.00	XVII
68	44	653	Develop Rules	Rulemaking/BACT	Dev/Amend BACT Guidelines	1.50	0.00	1.50	II
69	44	657	Develop Rules	Rulemaking/Support PRA	Assist PRA w/ Rulemaking	0.05	1.15	1.20	II
70	44	663	Monitoring Air Quality	Salton Sea Monit	Mon/Analyze Hydrogen Sulfide	0.25	0.00	0.25	XVII
71	44	677	Advance Clean Air Technology	School Bus/Lower Emission Prog	School Bus Program Oversight	2.00	0.00	2.00	IX
72	44	700	Ensure Compliance	Source Testing/Compliance	Conduct ST/Prov Data/Compl	2.25	0.00	2.25	VI
73	44	701	Customer Service and Business Assistance	Source Testing/Customer Svc	Conduct ST/Prov Data/Cust Svc	0.05	0.00	0.05	VI
74	44	702	Develop Programs	ST Methods Development	Eval ST Methods/Validate	0.95	0.00	0.95	II
75	44	704	Ensure Compliance	ST/Sample Analysis/Compliance	Analyze ST Samples/Compliance	4.00	0.00	4.00	VI
76	44	705	Develop Programs	ST Sample Analysis/Air Program	Analyze ST Samples/Air Prgrms	0.25	0.00	0.25	II
77	44	706	Develop Rules	ST Sample Analysis/Air Program	Analyze ST Samples/Rules	0.25	0.00	0.25	II
78	44	707	Ensure Compliance	VOC Sample Analysis/Compliance	VOC Analysis & Rptg/Compliance	7.00	-0.50	6.50	IV,XV
79	44	708	Develop Rules	VOC Sample Analysis/Rules	VOC Analysis & Rptg/Rules	0.25	0.00	0.25	II,XV
80	44	709	Customer Service and Business Assistance	VOC Sample Analysis/SBA/Other	VOC Analysis & Reptg/Cust Svc	0.50	-0.50	0.00	VI
81	44	715	Monitoring Air Quality	Spec Monitoring/Emerg Response	Emergency Response	0.50	0.00	0.50	II

**Science & Technology Advancement (Cont.)  
Work Program by Office**

#	Program Code	Program Category	Program	Activities	FTEs FY 2019-20	+/-	FTEs FY 2020-21	Revenue Categories
82	44 716	Ensure Compliance	Special Monitoring	Rule 403 Compliance Monitoring	2.20	0.00	2.20	III,IV,IX,XV
83	44 725	Timely Review of Permits	Permit Processing/Support E&C	Assist EAC w/ Permit Process	0.05	0.30	0.35	III
84	44 738	Advance Clean Air Technology	Target Air Shed EPA	Targeted Air Shed Admin/Impl	0.50	0.00	0.50	V,XVII
85	44 740	Advance Clean Air Technology	Tech Adv/Commercialization	Assess CFs/Adv Tech Potential	0.25	0.00	0.25	VIII
86	44 741	Advance Clean Air Technology	Tech Adv/Non-Combustion	Dev/Demo Non-Combustion Tech	0.60	0.00	0.60	VIII
87	44 794	Ensure Compliance	Toxics/AB2588	Eval Protocols/Methods/ST	3.25	-1.25	2.00	X
88	44 795	Ensure Compliance	Toxics/Engineering	R1401 Toxics/HRA Prot/Rpt Eval	0.05	1.25	1.30	VI,X
89	44 816	Advance Clean Air Technology	Transportation Research	Transport Research/Adv Systems	0.10	0.00	0.10	VIII
90	44 825	Operational Support	Union Negotiations	Labor/Mgmt Negotiations	0.05	0.00	0.05	la
91	44 826	Operational Support	Union Steward Activities	Rep Employees in Grievance Act	0.05	0.00	0.05	la
92	44 827	Advance Clean Air Technology	VW-General Admin	VW-General Admin	4.00	-2.00	2.00	XVII
93	44 840	Advance Clean Air Technology	VW-ZE Trucks-South Coast	VW-ZE Trucks-South Coast	0.00	1.00	1.00	XVII
94	44 841	Advance Clean Air Technology	VW-Combustion-South Coast	VW-Combustion-South Coast	0.00	1.00	1.00	XVII

**Total Science & Technology Advancement**

FTEs FY 2019-20	226.00	+/-	5.00	FTEs FY 2020-21	231.00
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**Science & Technology Advancement  
Line Item Expenditure**

Major Object / Account # / Account Description		FY 2018-19 Actuals	FY 2019-20 Adopted Budget	FY 2019-20 Amended Budget	FY 2019-20 Estimate *	FY 2020-21 Adopted Budget
<b>Salary &amp; Employee Benefits</b>						
51000-52000	Salaries	\$ 16,970,789	\$ 20,252,169	\$ 20,570,292	\$ 18,654,155	\$ 20,155,907
53000-55000	Employee Benefits	9,420,742	11,778,087	11,778,083	10,537,687	12,135,074
Sub-total Salary & Employee Benefits		\$ 26,391,531	\$ 32,030,256	\$ 32,348,375	\$ 29,191,842	\$ 32,290,980
<b>Services &amp; Supplies</b>						
67250	Insurance	\$ 1,000	\$ -	\$ 40,000	\$ 40,000	\$ -
67300	Rents & Leases Equipment	103,735	36,800	104,027	104,027	36,800
67350	Rents & Leases Structure	216,037	169,000	853,024	853,024	443,000
67400	Household	950	500	2,500	2,500	500
67450	Professional & Special Services	2,408,177	1,455,000	1,433,102	1,433,102	1,705,000
67460	Temporary Agency Services	616,801	141,600	512,600	512,600	141,600
67500	Public Notice & Advertising	22,249	22,000	27,200	27,200	22,000
67550	Demurrage	67,052	55,000	84,578	84,578	55,000
67600	Maintenance of Equipment	406,379	205,000	729,031	729,031	205,000
67650	Building Maintenance	104,728	170,000	1,339,821	1,339,821	170,000
67700	Auto Mileage	98,137	3,909	147,386	147,386	18,909
67750	Auto Service	(199)	-	3,197	3,197	-
67800	Travel	112,347	48,403	148,925	148,925	48,403
67850	Utilities	134	-	20,000	20,000	30,000
67900	Communications	269,233	231,000	499,989	499,989	431,000
67950	Interest Expense	-	-	-	-	-
68000	Clothing	14,638	4,000	12,697	12,697	4,000
68050	Laboratory Supplies	419,982	295,000	599,714	599,714	545,000
68060	Postage	21,476	17,318	56,874	56,874	17,318
68100	Office Expense	244,892	41,393	318,645	318,645	66,393
68200	Office Furniture	31,648	-	166,312	166,312	-
68250	Subscriptions & Books	343	1,527	2,027	2,027	1,527
68300	Small Tools, Instruments, Equipment	288,915	87,246	441,172	441,172	162,246
68400	Gas and Oil	-	-	-	-	-
69500	Training/Conference/Tuition/ Board Exp.	168,665	107,000	120,520	120,520	107,000
69550	Memberships	161,107	2,250	163,250	163,250	2,250
69600	Taxes	3,584	2,000	2,000	2,000	2,000
69650	Awards	-	-	-	-	-
69700	Miscellaneous Expenses	6,518	2,600	30,020	30,020	2,600
69750	Prior Year Expense	(19,109)	-	-	-	-
69800	Uncollectable Accounts Receivable	-	-	-	-	-
89100	Principal Repayment	-	-	-	-	-
Sub-total Services & Supplies		\$ 5,769,421	\$ 3,098,546	\$ 7,858,611	\$ 7,858,611	\$ 4,217,546
77000	<b>Capital Outlays</b>	\$ 1,528,951	\$ 285,000	\$ 8,817,594	\$ 8,817,594	\$ 816,000
79050	<b>Building Remodeling</b>	\$ -	\$ -	\$ -	\$ -	\$ -
Total Expenditures		\$ 33,689,903	\$ 35,413,802	\$ 49,024,580	\$ 45,868,047	\$ 37,324,526

\* Estimates based on July 2019 through February 2020 actual expenditures and February 2020 budget amendments.

## South Coast AQMD Quick Facts

- Created by the 1977 Lewis Air Quality Management Act; amended by 1988 Lewis-Presley Air Quality Management Act (Health & Safety Code §40400-40540).
  - Regional governmental agency (Special District)
- Jurisdiction for comprehensive air pollution control over all of Orange County, all of Los Angeles County except for the Antelope Valley, the non-desert portion of western San Bernardino County and the western and Coachella Valley portion of Riverside County
  - 10,743 Square Miles; Population of 17,127,040 (2018)
  - Boundaries are Pacific Ocean to the west; San Gabriel, San Bernardino and San Jacinto Mountains to the north and east, and the San Diego County line to the south
  - Vehicle Registrations - 13,828,182 (2018); Average Daily Miles Traveled Per Vehicle – 28 (2018)
  - Two of the world’s busiest seaports are within its boundaries, Port of Los Angeles and Port of Long Beach, who combined handle almost 4,000 vessel calls (2019) and more than 17 million 20-foot long container units or 20-foot equivalent units (TEUs) annually (2019)
- Responsibilities include:
  - Monitoring air quality - 45 air monitoring stations
  - Planning, implementing, and enforcing programs to attain and maintain state and federal ambient air quality standards
    - Developing air quality rules and regulations that regulate stationary source emissions from such facilities as oil refineries, power plants, paint spray booths, incinerators, manufacturing plants, dry cleaners, and service stations
    - Establishing permitting requirements and issuing permits for stationary sources (26,873 operating locations with 69,085 permits)
- Decision-making body is a 13-member Governing Board
  - Ten elected officials with four appointed by the Board of Supervisors from each of the four counties and six appointed by cities within the South Coast AQMD
  - Three members appointed by the Governor, the Speaker of the State Senate, and the Rules Committee of the State Senate

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**  
**Operating Indicators by Function**  
**Last Ten Fiscal Years**

<u>Program Category</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>
<b>Advance Clean Air Technology</b>									
Contracts awarded	530	526	556	938	523	1,047	421	403	357
Total Funding awarded (\$M)	\$180.7	\$131.4	\$82.5	\$207.2	\$216.1	\$123.2	\$153.9	\$137.4	\$170.4
<b>Ensure Compliance with Clean Air Rules</b>									
Inspections	33,735	33,560	34,191	32,535	29,501	22,871	24,037	21,419	24,695
Notices of Violations	1,530	1,254	1,211	965	956	811	499	632	1,626
Hearing Board Orders for Abatement	35	47	93	51	46	411	23	27	24
Hearing Board Appeals	20	2	7	3	7	-	3	3	1
<b>Customer Service</b>									
Public Information Requests	3,821	3,410	3,543	3,460	4,505	4,012	4,958	5,282	4,676
Community/Public Meetings attended	202	190	274	294	264	217	239	210	156
Small Business Assistance Contacts	2,578	2,497	2,574	2,266	1,850	1,711	1,865	2,834	4,073
<b>Develop Programs to Achieve Clean Air</b>									
Transportation Plans processed	1,372	1,385	1,392	1,371	1,333	1,329	1,337	1,348	1,356
Emission Inventory Updates	703	521	530	408	460	336	356	244	343
<b>Develop Rules to Achieve Clean Air</b>									
Rules Developed	15	40	8	20	24	24	16	15	28
<b>Monitoring Air Quality</b>									
Samples Analyzed by the Laboratory	29,685	28,915	29,520	32,520	29,340	30,824	32,400	38,541	36,342
Source Testing Analyses/Evaluations/Review	740	1,030	952	1,035	968	996	936	952	714
<b>Timely Review of Permits</b>									
Applications Processed	9,627	13,044	12,225	14,153	13,217	9,495	10,116	11,780	10,913
Applications Received-Small Business	694	798	732	615	514	629	594	535	605
Applications Received-All Others	10,941	10,769	11,682	11,709	11,156	9,961	9,894	8,376	9,172
<b>Policy Support</b>									
News releases	69	64	57	61	62	76	89	86	120
Media Calls	313	252	520	1,131	774	532	1,450	1,201	-
Media Inquiries Completed	313	252	520	1,131	774	532	1,450	1,201	-
News Media Interactions*	-	-	-	-	-	-	-	-	1,235

\*Tracking of News Media Interactions began in 2018

## FINANCIAL POLICIES

South Coast AQMD is required to follow specific sections of the California Health & Safety Code, which guide South Coast AQMD's overall financial parameters. The Governing Board also provides financial direction to South Coast AQMD staff through the adoption of various financial-related policies. In addition, the Administrative Policies and Procedures offer further financial guidance. Below is an overview of the guidelines and procedures for the applicable financial-related policies.

### California Health & Safety Code (CA H&SC)

- District Budget Adoption – CA H&SC §40130

The South Coast AQMD shall prepare and make available to the public at least 30 days prior to public hearing, a summary of its budget and any supporting documents, including, but not limited to, a schedule of fees to be imposed by the South Coast AQMD to fund its programs. The South Coast AQMD shall notify each person who was subject to fees imposed by the South Coast AQMD in the preceding year of the availability of information. The South Coast AQMD shall notice and hold a public hearing for the exclusive purpose of reviewing the budget and of providing the public with the opportunity to comment upon the proposed South Coast AQMD budget.

- Fee Schedule - CA H&SC §40510

The South Coast AQMD may adopt a fee schedule for the issuance of variances and permits to cover the reasonable cost of permitting, planning, enforcement and monitoring.

- Fees Assessed on Stationary Sources – CA H&SC §40500.1

Fees assessed on stationary sources shall not exceed, for any fiscal year, the actual costs of District programs for the immediately preceding fiscal year with an adjustment not greater than the change in the California Consumer Price Index (CPI), for the preceding calendar year, from January 1 of the prior year to January 1 of the current year. Unless specifically authorized by statute, the total amount of all of the fees collected from stationary sources of emissions in the 1995-96 fiscal year, and in each subsequent fiscal year, shall not exceed the level of expenditure in the 1993-94 fiscal year, except that the total fee amount may be adjusted annually by not more than the percentage increase in the California CPI. Any new state or federal mandate that is applicable to the South Coast AQMD on and after January 1, 1994 shall not be subject to this section.

- Limitation on Increase in Permit Fees – CA H&SC §40510.5

Existing permit fees shall not increase by a percentage greater than any percentage increase in the California CPI for the preceding calendar year, unless the board makes a

## FINANCIAL POLICIES (cont.)

finding, based upon relevant information in a rulemaking record, that the fee increase is necessary and will result in an apportionment of fees that is equitable. Any fee increase above CPI shall be phased in over a period of at least two years.

### South Coast AQMD Governing Board Policy

- Administrative Code

The Administrative Code of Rules and Procedures prescribes the responsibilities, conduct and specified reimbursements of v employees and South Coast AQMD Board members. Sections include, but are not limited to, mileage reimbursement, travel expenses, tuition reimbursement, professional licenses and memberships, and bilingual pay.

- Annual Investment Policy

The Annual Investment Policy sets forth the investment guidelines for all general, special revenue, trust, agency and enterprise funds of the South Coast AQMD. The purpose of this policy is to ensure all of South Coast AQMD's funds are prudently invested to preserve principal and provide necessary liquidity, while earning a market average rate of return. The South Coast AQMD Annual Investment Policy conforms to the California Government Code as well as customary standards of prudent investment management.

The objectives of the policy, in priority order, are Safety of Principal, Liquidity, and Market Rate of Return. The policy establishes and defines investable funds, authorized instruments, credit quality requirements, maximum maturities and concentrations, collateral requirements, and qualifications of brokers, dealers, and financial institutions doing business with or on behalf of the South Coast AQMD.

The policy provides the Governing Board, the Treasurer, the Chief Financial Officer, and the Investment Oversight Committee with set duties and responsibilities to execute the policy.

- Budget Advisory Committee

Established by the South Coast AQMD Governing Board, the Budget Advisory Committee serves in an advisory capacity to the South Coast AQMD on budgeting and financial planning matters. The committee, made up of members from the business and environmental community, provides additional insight during the annual budget process by reviewing and commenting on the proposed budget. The Budget Advisory Committee's comments are required to be provided to the Governing Board by April 15<sup>th</sup> of each year pursuant to South Coast AQMD Rule 320.



## FINANCIAL POLICIES (cont.)

- Fund Balance Use

When both restricted and unrestricted resources are available for use, it is South Coast AQMD's policy to use restricted resources first and then unrestricted resources as they are needed. When using unrestricted fund balance amounts, South Coast AQMD's Governing Board approved policy is to use committed amounts first, followed by assigned and then unassigned.

- Procurement Policy and Procedure

The Procurement Policy and Procedure provides the guidelines for the contracting and/or purchasing of services, material, equipment, supplies and fixed assets (i.e. capital outlays) by the South Coast AQMD under the direction of the Procurement Manager. These guidelines include, but are not limited to, purchasing methods, bidding procedures, signature authorization levels, fixed asset acquisition and disposition, and publication requirements for advertised procurements.

Procedures are in place to ensure that all businesses including minority business enterprises, women business enterprises, disabled veteran business enterprises and small businesses have a fair and equitable opportunity to compete for and participate in South Coast AQMD contracts and that South Coast AQMD utilizes, when necessary, the most highly qualified outside consultants/contractors to carry out the organization's responsibilities.

- Rule 320 - Automatic Fee Adjustment

Rule 320 provides that all Regulation III fees, with specified exceptions, are automatically adjusted July 1 of each year by the California Consumer Price Index for the preceding calendar year unless the Governing Board decides not to implement a fee adjustment, or to implement a different adjustment for a given year, either for all fees or for a specified fee or fees. The Executive Officer is directed to prepare annually a socioeconomic impact of the effect of the fee adjustment for review by stakeholders and the Governing Board and to hold a public hearing on the automatic fee adjustment to receive any public comments. Public comments and any responses, along with recommendations by the Budget Advisory Committee, are to be forwarded to the Governing Board by April 15 of each year.

- Treasury Operations Contingency Plan and Procedures

The Treasury Operations Contingency Plan and Procedures states the course of action that may be implemented by the South Coast AQMD to protect the safety and liquidity of the South Coast AQMD funds and to protect South Coast AQMD from disruptions to ongoing operations if: 1) the financial stability of Los Angeles County may jeopardize South Coast

## FINANCIAL POLICIES (cont.)

AQMD funds invested through the Los Angeles County Treasurer; and/or 2) the Los Angeles County Treasurer, as Treasurer of South Coast AQMD, can no longer provide the treasury services currently provided in a satisfactory manner.

Under authority granted by Resolution 97-32, the Executive Officer can appoint either the Chief Financial Officer or Controller as Acting Treasurer to immediately begin implementing the defined procedures to safeguard South Coast AQMD funds.

- **Unreserved Fund Balance Policy**

The Unreserved Fund Balance Policy, originally adopted by the Board in June 2005 and adjusted in June 2014, states that the Unreserved Fund Balance in the General Fund should be maintained at a minimum of 20% of revenues. GFOA Recommended Best Practices prescribe a minimum 17% reserve amount plus an additional amount based on the organization's reliance on revenue over which it has no control. The 20% reserve amount is derived from the minimum 17% plus an additional 3% to account for South Coast AQMD's reliance on state subvention (\$4M), U.S. EPA Section 103/105 grants (\$5M), and one-time penalties and settlements (\$5M).

### Executive Officer Administrative Policies and Procedures

- **Contracting for Consulting and Professional Services**

Contracting for Consulting and Professional Services policy provides guidance in contracting for consulting and professional services in both a competitive and sole source environment as addressed in Section VIII of the South Coast AQMD Procurement Policy and Procedure document.

- **Fixed Assets and Controlled Items**

The Fixed Assets and Controlled Items policy provides guidance on the receipt, transfer, inventory, accountability, and disposal of fixed assets and controlled items.

- **Purchasing of Non-Consultant Services and Supplies**

The Purchasing of Non-Consultant Services and Supplies policy provides guidance in implementing the purchase of non-consultant services and supplies as addressed in Section IV of the South Coast AQMD Procurement Policy and Procedure document.

- **Travel**

The Travel Policy provides guidance on allowable travel expenses, travel advances, and documentation requirements.

## FINANCIAL POLICIES (cont.)

- Work Program- Cost Allocation Procedure

The Work Program allocates resources by Office, nine Work Program Categories, and Project which are tied to South Coast AQMD's Goal and Priority Objectives. Cost/Overhead Components of any given work program line can include:

- Salaries and Benefits based on regular and overtime hours charged directly to a specific work program code.
- Services and Supplies and Capital Outlays charged directly to a specific work program code.
- Division specific overhead (charges not attributable to a specific work program code such as benefits and absence time) are allocated to each direct expense work program line within that Division based on Full Time Equivalents (FTEs).
- District General Overhead expenditures associated with the overall operation (such as utilities, insurance, security, interest, etc.) are allocated to all direct program lines based on FTEs.
- Allocatable Division Overhead allocates work program lines within each Division that are Division-specific Administrative, Office, or Management related based on the Division's FTEs.
- District-wide Overhead Allocation spreads work program lines from Divisions that support the entire District (Executive Office, Finance, Legal, etc.) or work program lines without specific revenue streams (Legislative and Public Affairs/Media Office, Public Records Act, Advisory Groups, etc.) based on FTEs.

## BUDGET GLOSSARY

<b>Account</b>	A unique identification number and title for expenditures and revenues; used for budgeting and recording expenditures and revenues.
<b>Administrative Fee</b>	A fee charged to a program or project to recover the administrative costs to manage the program or project.
<b>Adopted Budget</b>	The annual budget for the General Fund that has been approved by South Coast AQMD's Governing Board.
<b>Amended Budget</b>	The adopted budget plus any modifications approved by South Coast AQMD's Governing Board during the fiscal year.
<b>Appropriation</b>	A specific amount of money authorized by South Coast AQMD's Governing Board which permits the South Coast AQMD to incur obligations and to make expenditures of resources.
<b>Assigned Fund Balance</b>	The portion of the fund balance that has been allocated by South Coast AQMD's Governing Board for a specific purpose.
<b>Budget Advisory Committee</b>	A committee made up of representatives from the business and environmental communities who review and provide feedback on South Coast AQMD's financial performance and proposed budget.
<b>Budgetary Basis of Accounting</b>	A form of accounting used in the budget where encumbered amounts are recognized as expenditures.
<b>Balanced Budget</b>	A budget in which planned expenditures do not exceed planned revenues.
<b>Capital Asset</b>	Tangible asset with an initial individual cost of \$5,000 or more and a useful life of at least one year or intangible assets with an individual cost of \$5,000 or more and a useful life of at least one year.
<b>Capital Outlays</b>	Expenditures for capital assets; A Major Object, or classification of expenditures, within South Coast AQMD's budget.
<b>Committed Fund Balance</b>	The portion of the fund balance that includes amounts that can be used only for specific purposes as determined by the South Coast AQMD Governing Board.
<b>Cost Allocation</b>	A process of accounting and recording the full costs of a program or activity by including its share of indirect or overhead costs in addition to its

## BUDGET GLOSSARY (cont.)

<b>Cost Allocation (cont)</b>	direct costs.
<b>CPI-Based Fee Increase</b>	Increases to fees (emission, annual operating, permit processing, Hot Spots, area sources, transportation, source test/analysis, and Hearing Board) based on the change in the Consumer Price Index for the preceding calendar year as reported for California Department of Finance– All Urban Consumer Series. This is in accordance with the California Health and Safety Code §40510.5.
<b>Debt Service</b>	The cost to cover the repayment of interest and principal on a debt for a particular period of time.
<b>Debt Structure</b>	The make-up of long-term debt. South Coast AQMD’s long-term debt has been taken on to fund building and pension obligations.
<b>Designation</b>	A portion of the Fund Balance that has been assigned for specific purposes by actions of South Coast AQMD’s Governing Board.
<b>Encumbrance</b>	An amount of money committed for the payment of goods and services that have not yet been received or paid for.
<b>Expenditures</b>	Charges incurred for goods and services.
<b>Fee Schedule</b>	The State Legislature has authorized air districts to levy fees to support industry related programs which improve air quality. The schedule of fees levied by South Coast AQMD is approved by South Coast AQMD’s Governing Board as part of the annual budget process. (Also see Regulation III.)
<b>Fiscal Year</b>	A period of 12 consecutive months selected to be the budget year. South Coast AQMD’s fiscal year runs from July 1 to June 30.
<b>FTE</b>	Full Time Equivalent; A measure of the level of staffing. One FTE equates to 2,080 hours of paid time within a 12-month period.
<b>Fund Balance</b>	The accumulation of revenues less expenditures within a fund for a specific year. South Coast AQMD’s fund balance is broken out into Reserves (non-spendable and committed) and Unreserved Designations. Unreserved Designations is further broken out into Assigned and Unassigned Fund

## BUDGET GLOSSARY (cont.)

<b>Fund Balance (cont.)</b>	Balance. This terminology is in accordance with GASB 54.
<b>GASB 54</b>	A standard issued by the Government Accounting Standards Board (GASB) to guide fund balance reporting.
<b>General Fund</b>	The primary operating fund for South Coast AQMD where expenditures and revenues associated with the daily operations of South Coast AQMD are accounted for.
<b>Grant</b>	A sum of money given by an organization for a particular purpose. The grants which provide funding to South Coast AQMD's General Fund are primarily received from the U. S. Environmental Protection Agency (EPA), the Department of Homeland Security (DHS), and the California Air Resource Board (CARB).
<b>Inventory</b>	Value at cost of office, computer, cleaning and laboratory supplies at year-end.
<b>Major Object</b>	South Coast AQMD has four expenditure classifications: Salaries and Employee Benefits, Services and Supplies, Capital Outlays, and Building Remodeling. Transfers between Major Objects must be approved by the South Coast AQMD Governing Board.
<b>Mobile Source Revenues</b>	Revenues received from motor vehicle registrations and from the administration of motor vehicle programs aimed at reducing air pollution from motor vehicles.
<b>Nonspendable Fund Balance</b>	Amounts in the fund balance that are not in a spendable form. In South Coast AQMD's General Fund, inventory makes up the nonspendable balance.
<b>Pension Obligation Bonds (POBs)</b>	A method of financing used by South Coast AQMD to refinance its obligations to its employees' pension fund.
<b>Proposed Budget</b>	The annual budget that has been developed by South Coast AQMD and made available to the public for review before being presented to the South Coast AQMD Governing Board for approval.
<b>Regulation III</b>	The rule that establishes the fee rates and schedules associated with permitting, annual renewals, emissions and other activities that help fund

## BUDGET GLOSSARY (cont.)

<b>Regulations III (cont.)</b>	most of South Coast AQMD's regulatory programs and services. (Also see Fee Schedule.)
<b>Reserves</b>	Funding within the Fund Balance that is set aside for a specific future use and not available for any other purpose. It consists of both nonspendable amounts (inventory of supplies) and committed amounts (encumbrances).
<b>Revenue</b>	Monies the South Coast AQMD receives as income. South Coast AQMD's revenue is mainly from fees charged to control or regulate emissions.
<b>SBCERA</b>	San Bernardino County Employment Retirement System manages the retirement plan for South Coast AQMD employees.
<b>Salaries and Employee Benefits</b>	Expenditures for Salary expenses, employee benefits, retirement and insurance benefits. It is a Major Object, or classification of expenditures, within South Coast AQMD's budget.
<b>Services and Supplies</b>	Expenditures for items and services needed for the daily operations of the South Coast AQMD including professional services, utilities, office expenses, maintenance, and debt service. It is a Major Object, or classification of expenditures, within South Coast AQMD's budget.
<b>Special Revenue Fund</b>	A fund used to account for revenues and expenditures from specific sources earmarked for specific purposes. South Coast AQMD's main fund is its General Fund. All other funds are designated as Special Revenue Funds. The South Coast AQMD does not adopt a budget for Special Revenue Funds. Board action is required for all expenditures.
<b>State Subvention</b>	The state of California provides assistance to air districts for on-going operations to perform mandated functions such as compliance and enforcement, planning, and rule development.
<b>Stationary Source Fees</b>	Revenues collected from emission fees, permit fees, and annual operating fees to support activities for improving air quality.
<b>Transfer In/Out</b>	A transfer between different funds within South Coast AQMD's accounting system. For example, a transfer of cash from the General Fund to a Special Revenue Fund would be a Transfer Out for the General Fund and a Transfer In for the Special Revenue Fund.

## BUDGET GLOSSARY (cont.)

<b>Unassigned Fund Balance</b>	The residual fund balance of the General Fund. It is not designated for a specific purpose and can only be used upon approval of South Coast AQMD's Governing Board.
<b>Unreserved Designations</b>	The portion of the Fund Balance that has not been committed by South Coast AQMD's Governing Board or is nonspendable due to specific Board constraints. It is further broken down into either amounts assigned by the Governing Board for specific purposes or an unassigned amount that can only be used upon approval of the Governing Board.
<b>Work Programs</b>	Activities carried out by South Coast AQMD staff. Work Programs are classified into nine Work Program Categories according to the nature of the activity being performed.





South Coast Air Quality Management District

# Air Quality Index Quick Guide

<b>Good</b> AQI: 0-50	Air quality is Good. Outdoor activity is advised for everyone.
<b>Moderate</b> AQI: 51-100	Air quality is acceptable; however, there could be a moderate health concern for people with severe respiratory reactions to smog.
<b>Unhealthy for Sensitive Groups</b> AQI: 101-150	Children and adults over the age of 65, or people with respiratory issues such as asthma may experience health effects and should minimize outdoor activities.
<b>Unhealthy</b> AQI: 151-200	The public may begin to experience health effects and should minimize outdoor activities. Children and adults over the age of 65, or people with respiratory issues such as asthma may experience more serious health effects and should avoid outdoor activities.
<b>Very Unhealthy</b> AQI: 201-300	Everyone may experience health effects. Children and adults over the age of 65, or people with respiratory issues should avoid all outdoor physical activity. Everyone else should avoid prolonged or heavy outdoor activity.
<b>Hazardous</b> AQI: 300+	Emergency health warning triggered. The entire population is more likely to be affected.

21865 Copley Drive, Diamond Bar, CA 91765-4178 • Tel 909 396 2000 • 800 CUT SMOG • [www.aqmd.gov](http://www.aqmd.gov)

@SouthCoastAQMD





**South Coast  
Air Quality Management District**

21865 Copley Drive  
Diamond Bar, CA 91765-4178

[www.aqmd.gov](http://www.aqmd.gov)



South Coast  
Air Quality  
Management District

March 2020



# Clean Fuels Program

2019 Annual Report  
& 2020 Plan Update

Technology Advancement Office

*Driving toward cleaner air*

## **Cover Photo Credits**

Left to right; top to bottom

- Kenworth CNG Hybrid Electric Zero Emissions Capable Class 8 Demonstration Truck
- Class 8 Truck under Chassis Dynamometer Testing for Large-Scale, In-Use Emissions Study
- Charging of Light Duty Battery Electric Vehicle
- Volvo Class 8 Demonstration Truck for LIGHTS Project
- Liquid Hydrogen Storage Unit at OCTA for Heavy-Duty Vehicle Infrastructure Project
- Kenworth Hydrogen Fuel Cell Class 8 Demonstration Truck

## South Coast Air Quality Management District

### Governing Board

***Chairman***

William A. Burke, Ed.D.  
Assembly Speaker Appointee

***County Representatives***

Kathryn Barger  
Supervisor, Los Angeles County

Lisa Bartlett\*  
Supervisor, Orange County

V. Manuel Perez  
Supervisor, Riverside County

Janice Rutherford  
Supervisor, San Bernardino County

***State Representatives***

Vacant  
Governor's Appointee

***Vice Chairman***

Ben Benoit  
Council Member, City of Wildomar  
Riverside County Cities

***Cities Representatives***

Joe Buscaino\*\*  
Council Member, City of Los Angeles  
City of Los Angeles

Michael Cacciotti  
Council Member, City of South Pasadena  
Los Angeles County, Eastern Region  
Cities

Vanessa Delgado  
Senator (Ret.)  
Senate Rules Committee Appointee

Larry McCallon  
Mayor, City of Highland  
San Bernardino County Cities

Judith Mitchell\*  
Council Member, City of Rolling Hills  
Estates  
Los Angeles County, Western Region  
Cities

Carlos Rodriguez\*  
Council Member, City of Yorba Linda  
Orange County Cities

***Executive Officer***

Wayne Nastri

---

\*Technology Committee Members (as of 2/14/20)

\*\*Technology Committee Chairman

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## South Coast Air Quality Management District

### Technology Advancement Office

Matt Miyasato, Ph.D., Deputy Executive Officer, Science & Technology Advancement  
Naveen Berry, Assistant Deputy Executive Officer, Technology Advancement Office  
Joseph Impullitti, Technology Demonstration Manager  
Vicki White, Technology Implementation Manager  
Lourdes Cordova Martinez, Sr. Public Affairs Manager

Al Baez, Program Supervisor  
Phil Barroca, Program Supervisor  
Ping Gui, Program Supervisor  
Patricia Kwon, Program Supervisor  
Tom Lee, Program Supervisor  
Joseph Lopat, Program Supervisor  
Lisa Mirisola, Program Supervisor  
Walter Shen, Program Supervisor  
Mei Wang, Program Supervisor  
Vasken Yardemian, Program Supervisor

Bahareh Brumand, Sr. Air Quality Engineer

Drue Hargis, Sr. Staff Specialist  
Ash Nikravan, Sr. Staff Specialist

Frances Maes, Staff Specialist

Sam Cao, Ph.D., Air Quality Specialist  
Darren Ha, Air Quality Specialist  
Seungbum Ha, Ph.D., Air Quality Specialist  
Alicia Ibarra Martinez, Air Quality Specialist  
Krystle Martinez, Air Quality Specialist  
Yuh Jiun Tan, Air Quality Specialist  
Greg Ushijima, Air Quality Specialist  
Adan Velasco, Air Quality Specialist  
Fan Xu, Air Quality Specialist  
Alyssa Yan, Air Quality Specialist

Kenny Heralal, Air Quality Inspector II

Alan Wang, Air Quality Inspector I

Penny Shaw Cedillo, Sr. Administrative Secretary  
Alejandra Vega, Sr. Administrative Secretary

Maria Allen, Secretary  
Marjorie Eaton, Secretary  
Donna Vernon, Secretary

Christina Kusnandar, Staff Assistant  
Michelle White, Staff Assistant

Tribrina Brown, Contracts Assistant  
Jessie Conaway, Contracts Assistant  
Deanna Doerr, Contracts Assistant  
Liliana Garcia, Contracts Assistant  
Mariel Maranan, Contracts Assistant  
Genette Martinez, Contracts Assistant  
Celina Sanchez, Contracts Assistant  
Benigna Taylor, Contracts Assistant  
Veronica Tejada, Contracts Assistant  
Ana Troccoli, Contracts Assistant

Cynthia Snyder, Sr. Office Assistant

Margarita Cabral, Office Assistant  
Lauren Henninger, Office Assistant  
Kristina Voorhees, Office Assistant

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## EXECUTIVE SUMMARY

### Introduction

The South Coast Air Quality Management District (South Coast AQMD) is the air pollution control agency for all of Orange County and the urban portions of Los Angeles, Riverside and San Bernardino counties. This region, which encompasses the South Coast Air Basin (Basin) as well as small portions of the Mojave Desert and Salton Sea Air Basins, historically experiences the worst air quality in the nation due to the natural geographic and atmospheric conditions of the region, coupled with the high population density and associated mobile and stationary source emissions.

In 1988, SB 2297 (Rosenthal) was signed into law (Chapter 1546). It initially established a “five-year program to increase the use of clean fuels,” but subsequent legislation extended and eventually removed the sunset clause for the Program. That legislation also reaffirmed existence of the Technology Advancement Office (TAO) to administer the Clean Fuels Program. The TAO Clean Fuels Program is an integral part of the South Coast AQMD’s effort to achieve the significant NOx reductions called for in the 2016 Air Quality Management Plan (AQMP) because it affords the South Coast AQMD the ability to fund research, development, demonstration and accelerated deployment of clean fuels and transformative transportation technologies.

Using funding received through a \$1 motor vehicle registration fee, the Clean Fuels Program encourages, fosters and supports clean fuels and transportation technologies, such as hydrogen and fuel cells, advanced natural gas technologies, alternative fuel engines, battery electric vehicles, plug-in hybrid electric vehicles and related fueling infrastructure including renewable fuels. A key strategy of the Program, which allows significant leveraging of the Clean Fuels funding (historically \$4 to every \$1 of Clean Fuels funds), is its public-private partnerships with private industry, technology developers, academic institutions, research institutions and government agencies. Since 1988, the Clean Fuels Program leveraged nearly \$340 million into over \$1.5 billion in projects.

As technologies move towards commercialization, such as battery electric trucks, the Clean Fuels Program has been able to partner with large original equipment manufacturers (OEMs), such as Daimler and Volvo, in order to eventually deploy these vehicles in large numbers. These partnerships with the OEMs allow the Program to leverage the research, product creation and financial resources that are needed to move advanced technologies from the laboratories, to the field and eventually into customers’ hands. The OEMs have the resources and abilities to design, engineer, test, manufacture, market, distribute and service quality products under brand names that are trusted. To obtain the emission reductions needed to meet federal and state ambient air quality standards, large numbers of advanced technology clean-fueled vehicles must be deployed across our region and state.

While South Coast AQMD aggressively seeks to leverage funds, it continues to strive to play a leadership role in technology development and commercialization, along with its partners, to accelerate the reduction of criteria pollutants. As a result, the TAO Clean Fuels Program has traditionally supported a portfolio of technologies, in different stages of maturity, to provide a continuum of emission reductions and health benefits over time. This approach provides the greatest flexibility and enhances the region’s chances toward achieving the National Ambient Air Quality Standards (NAAQS).

California Health and Safety Code (H&SC) 40448.5(e) calls for the Clean Fuels Program to consider, among other factors, the current and projected economic costs and availability of fuels, the cost-effectiveness of emission reductions associated with clean fuels compared with other pollution control

alternatives, the use of new pollution control technologies in conjunction with traditional fuels as an alternative means of reducing emissions, potential effects on public health, ambient air quality, visibility within the region, and other factors determined to be relevant by the South Coast AQMD. The Legislature recognized the need for flexibility, allowing focus on a broad range of technology areas, including cleaner fuels, vehicles and infrastructure, which helps the South Coast AQMD continue to make progress toward achieving its clean air goals.

H&SC 40448.5.1 requires the South Coast AQMD to prepare and submit to the Legislative Analyst each year by March 31, a Clean Fuels Annual Report and Plan Update. The Clean Fuels Annual Report looks at what the Program accomplished in the prior calendar year (CY) and the Clean Fuels Plan Update looks ahead at proposed projects for the next CY, essentially re-calibrating the technical emphasis of the Program.

## Setting the Stage

The overall strategy of TAO’s Clean Fuels Program is based, in large part, on emissions reduction technology needs identified in the Air Quality Management Plan (AQMP) and the South Coast AQMD Board’s directives to protect the health of the almost 18 million residents (nearly half the population of California) in the South Coast Air Basin (Basin). The AQMP, which is updated approximately every four years, is the long-term regional “blueprint” that relies on fair-share emission reductions from all jurisdictional levels (e.g., federal, state and local). The 2016 AQMP, which was adopted by the South Coast AQMD Board in March 2017, is composed of stationary and mobile source emission reductions from traditional regulatory control measures, incentive-based programs, projected co-benefits from climate change programs, mobile source strategies and other innovative approaches, including indirect source measures and incentive programs, to reduce emissions from federally regulated sources (e.g., aircraft, locomotives and ocean-going vessels).

Ground level ozone (a key component of smog) is created by a chemical reaction between NOx and volatile organic compound (VOC) emissions in sunlight. This is noteworthy because the primary driver for ozone formation in the Basin is NOx emissions, and mobile sources contribute approximately 88 percent of the NOx emissions in this region, as shown in Figure 1. Furthermore, NOx emissions, along with VOC emissions, also lead to the formation of PM2.5 [particulate matter measuring 2.5 microns or less in size, expressed as micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ )], including secondary organic aerosols.

The emission reductions and control measures in the 2016 AQMP rely on a mix of currently available technologies as well as the expedited development and commercialization of lower-emitting mobile and stationary advanced technologies to achieve

health-based air quality standards. The 2016 AQMP identifies a 45 percent reduction in NOx required by 2023 and an additional 55 percent reduction by 2031 to achieve ozone standards of 80 ppb and 75 ppb, respectively. Figure 2 illustrates these needed NOx reductions in the Basin. The majority of these NOx reductions must come from mobile sources, both on-road and off-road. Notably, the South Coast

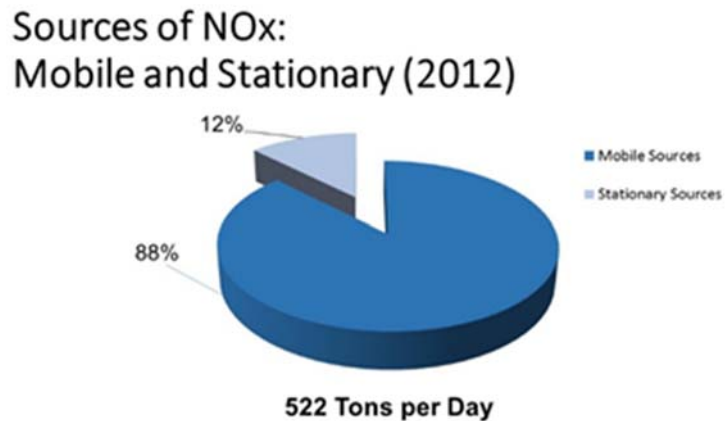
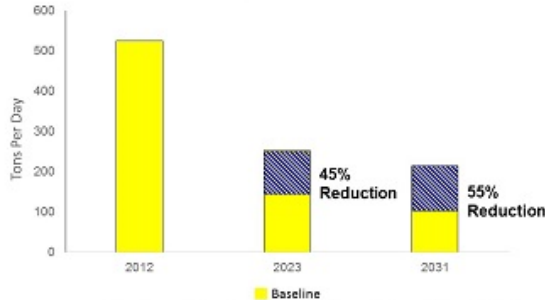


Figure 1: Sources of NOx 2012 Base Year

AQMD is currently only one of two regions in the nation designated as an extreme nonattainment area (the other region is San Joaquin Valley).

## Basin Total NO<sub>x</sub> Emissions



8-hour Ozone strategy targeting 2023 will ensure 1-hour attainment in 2022 as well as 24-hour and annual attainment in 2019 and 2025, respectively

Figure 2: Total NO<sub>x</sub> Reductions Needed

For the first time, the 2016 AQMP identified a means to achieving the federal ambient standards through regulations and incentives for near-zero and zero emission technologies that are commercial or nearing commercialization. This strategy, however, requires a significantly lower state and national heavy-duty truck engine emissions standard with the earliest feasible implementation date, significant additional financial resources, and accelerated fleet turnover on a massive scale.

Current state efforts in developing regulations for on- and off-road vehicles and equipment are expected to reduce NO<sub>x</sub> emissions significantly, but not sufficiently to meet the South Coast AQMD needs, especially in terms of timing.

## Clean Fuels Program

The Clean Fuels Program is a very important mechanism to encourage and accelerate the advancement and commercialization of clean fuel and transportation technologies.

Figure 3 provides a conceptual design of the wide scope of the Clean Fuels Program and the relationship with incentive programs. Various stages of technology projects are funded not only to provide a portfolio of technology choices but to achieve emissions reduction benefits in the near-term as well as over the longer term. The South Coast AQMD’s Clean Fuels Program typically funds projects in the Technology Readiness Level (TRL) ranging between 3-8.



Figure 3: Stages of Clean Fuels Program Funding

Below is a summary of the 2019 Clean Fuels Annual Report and Draft 2020 Plan Update. Every Annual Report and Plan Update is reviewed by two advisory groups--the Clean Fuels Advisory Group, legislatively mandated by SB 98 (chaptered, 1999), and the Technology Advancement Advisory Group, created by the South Coast AQMD Board in 1990. These stakeholder groups serve, among other roles, to review and assess the overall direction of the Program. The two groups meet approximately every six months to provide expert analysis and feedback on potential projects and areas of focus. Key technical experts working in the fields of the Program’s core technologies also typically attend and

provide feedback. Preliminary review and comment are also provided by South Coast AQMD's Board and other interested parties and stakeholders, as deemed appropriate.

## 2019 Annual Report

In CY 2019, the South Coast AQMD Clean Fuels Program executed 68 new contracts, projects or studies and modified 4 continuing project adding dollars toward research, development, demonstration and deployment projects as well as technology assessment and transfer of alternative fuel and clean fuel technologies. Table 1 (page 18) shows our major funding partners in CY 2019. Table 2 (page 32) lists the 72 projects or studies, which are further described in this report. The South Coast AQMD Clean Fuels Program contributed nearly \$11.9 million in partnership with other governmental organizations, private industry, academia and research institutes, and interested parties, with total project costs of approximately \$134 million. The \$11.9 million includes \$3.12 million recognized into the Clean Fuels Fund as pass-through funds from United States Environmental Protection Agency (U.S. EPA) Airshed Grant funds for a battery-electric shuttle bus replacement project. Table 3 (page 34) provides information on this outside funding received into the Clean Fuels Fund. Additionally, in CY 2019, the Clean Fuels Program continued to leverage other outside funding opportunities, securing new awards totaling \$19.9 million from federal, state and local funding opportunities. Table 4 (page 34) provides a comprehensive summary of these federal, state and local revenues awarded to the South Coast AQMD during CY 2019. Like the last couple of years, the significant project scope of a few key contracts executed in 2019 resulted in higher than average leveraging of Clean Fuels dollars. Typical historical leveraging is \$4 for every \$1 in Clean Fuels funding. In 2019, South Coast AQMD continued this upward trend with more than \$14 leveraged for every \$1 in Clean Fuels funds. Leveraging dollars and aggressively pursuing funding opportunities is critical given the magnitude of needed funding identified in the 2016 AQMP to achieve federal ozone air quality standards.

The projects or studies executed in 2019 included a diverse mix of advanced technologies. The following core areas of technology advancement for 2019 executed contracts (in order of funding percentage) include:

1. Electric and Hybrid Vehicle Technologies and Related Infrastructure (emphasizing electric and hybrid electric trucks developed by OEMs and container transport technologies with zero emission operations);
2. Health Impacts Studies (including MATES V);
3. Technology Assessment and Transfer/Outreach;
4. Hydrogen and Mobile Fuel Cell Technologies and Infrastructure;
5. Fuel/Emissions Studies; and
6. Engine Systems/Technologies (emphasizing alternative and renewable fuels for truck and rail applications).

The chart on page 30 (Figure 17) shows the distribution by percentage of executed agreements in 2019 across these core technologies.

During CY 2019, the South Coast AQMD supported a variety of projects and technologies, ranging from near- term to long-term research, development, demonstration and deployment activities. This "technology portfolio" strategy provides the South Coast AQMD the ability and flexibility to leverage state and federal funding while also addressing the specific needs of the Basin. Projects included significant electric and hybrid electric technologies and infrastructure to develop and demonstrate medium- and heavy-duty vehicles in support of transitioning to a near-zero and zero emissions goods movement industry; development, demonstration and deployment of large displacement natural gas and



ultra-low emissions engines; and demonstration of emissions control technologies for heavy-duty engines; and natural gas and renewable natural gas deployment and support.

In addition to the 72 executed contracts and projects, 15 research, development, demonstration and deployment projects or studies and 18 technology assessment and transfer contracts were completed in 2019, as listed in Table 6 (page 52). Appendix C includes two-page summaries of the technical projects completed in 2019. As of January 1, 2020, there were 128 open contracts in the Clean Fuels Program; Appendix B lists these open contracts by core technology.

In accordance with California H&SC Section 40448.5.1(d), this annual report must be submitted to the state legislature by March 31, 2020, after approval by the South Coast AQMD Board.

## 2020 Plan Update

Staff's re-evaluation of the Clean Fuels Program to develop the annual Plan Update is based on a reassessment of the technology progress and direction for the agency. The Program continually seeks to support the development and deployment of lower-emitting technologies with increased collaboration with OEMs in order to get to large scale deployment. The design and implementation of the Clean Fuels Program Plan must balance the needs in the various technology sectors with technology readiness on the path to commercialization, emissions reduction potential and cofunding opportunities. For several years, the state has continued to focus a great deal of its attention on climate change and petroleum reduction goals, but the South Coast AQMD has necessarily remained committed to developing, demonstrating and commercializing technologies that reduce criteria pollutants, specifically NO<sub>x</sub> and toxic air contaminants (TACs). Fortunately, many, if not the majority, of these technologies that address the Basin's need for NO<sub>x</sub> and TAC reductions also garner reductions in greenhouse gases (GHG) and petroleum use. Due to these "co-benefits," the South Coast AQMD has been successful in partnering with the state, which allows the Clean Fuels Program to leverage its funding extensively.

To identify technology and project opportunities where funding can make a significant difference in deploying progressively cleaner technologies in the Basin, the South Coast AQMD employs several outreach and networking activities. These activities range from close involvement with state and federal collaboratives, partnerships and industrial coalitions, to the issuance of Program Opportunity Notices (PONs) to solicit project ideas and concepts as well as issuance of Requests for Information (RFIs) to determine the state of various technologies and the development and commercialization challenges faced by those technologies. Additionally, unsolicited proposals from OEMs and other clean fuel technology developers are regularly received and reviewed. Potential development, demonstration and certification projects resulting from these outreach and networking activities are included conceptually within the Draft 2020 Plan Update. On a related side note, because of Assembly Bill (AB) 617<sup>1</sup>, which requires reduced exposure to communities most impacted by air pollution. TAO conducted additional outreach to AB 617 communities regarding available zero and near-zero emission technologies as well as the incentives to accelerate those cleaner technologies into their communities.

The Plan Update includes projects to develop, demonstrate and commercialize a variety of technologies, from near-term to long-term commercialization, that are intended to provide solutions to the emission control needs identified in the 2016 AQMP. Given the need for significant reductions over the next five to ten years, near-zero and zero emission technologies are emphasized. Areas of focus include:

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<sup>1</sup> <https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/about>

- reducing emissions from port-related activities, such as cargo handling and container movement other technologies, including demonstration and deployment of zero emission drayage trucks;
- developing and demonstrating ultra-low emission, liquid fuel, larger displacement engines and zero emission heavy-duty vehicles;
- developing, demonstrating and deploying advanced natural gas engines and vehicles as well as near-zero and zero emission technologies for high horsepower applications;
- mitigating criteria pollutant emissions from renewable fuels, such as renewable natural gas, diesel and hydrogen as well as other renewable fuels and waste streams;
- producing transportation fuels and energy from renewable and waste stream sources;
- developing and demonstrating electric-drive (fuel cell, battery, plug-in hybrid and hybrid) technologies across light-, medium- and heavy-duty platforms;
- establishing large-scale hydrogen refueling and EV charging infrastructure to accelerate introduction of zero emission vehicles into the market; and
- developing and demonstrating advanced zero emission microgrids for energy storage and demand.

Table 7 (page 71) lists the potential projects across nine core technologies by funding priority:

1. Hydrogen/Mobile Fuel Cell Technologies and Infrastructure (especially large-scale refueling facilities);
2. Engine Systems/Technologies (emphasizing alternative and renewable fuels for truck and rail applications);
2. Electric/Hybrid Vehicle Technologies and Related Infrastructure (emphasizing electric and hybrid electric trucks and container transport technologies with zero emission operations);
4. Fueling Infrastructure and Deployment (predominantly natural gas and renewable fuels);
5. Stationary Clean Fuel Technologies (including microgrids and renewables);
6. Fuel and Emission Studies;
7. Emission Control Technologies;
8. Health Impact Studies; and
9. Technology Transfer/Assessment and Outreach.

These potential projects for 2020 total \$16.1 million, with anticipated leveraging of more than \$4 for every \$1 of Clean Fuels funding for total project costs of \$81.86 million. Some of the proposed projects may also be funded by revenue sources other than the Clean Fuels Program, especially VOC and NOx mitigation and incentive projects.

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# CLEAN FUELS PROGRAM

## Background and Overview

### Program Background

The South Coast Air Basin (Basin), which comprises all of Orange County and the urban portions of Los Angeles, San Bernardino and Riverside counties, has the worst air quality in the nation due to a combination of factors, including high vehicle population, high vehicle miles traveled within the region, and geographic and atmospheric conditions favorable for photochemical oxidant (smog) formation. This region, which encompasses the South Coast Air Basin as well as small portions of the Mojave Desert and Salton Sea Air Basins, is home to almost 18 million residents (nearly half the population of California). Due to this confluence of factors, which present unique challenges, the state legislature enabled the South Coast AQMD to implement the Clean Fuels Program to accelerate the implementation and commercialization of clean fuels and advanced mobile source technologies.

In 1988, SB 2297 (Rosenthal) was signed into law (Chapter 1546). It initially established a “five-year program to increase the use of clean fuels,” but subsequent legislation extended and eventually removed the sunset clause for the Program. That legislation also reaffirmed existence of the Technology Advancement Office (TAO) to administer the Clean Fuels Program. The TAO Clean Fuels Program is an integral part of the South Coast AQMD’s effort to achieve the significant NO<sub>x</sub> reductions called for in the 2016 AQMP.

California H&SC section 40448.5(e) calls for the Clean Fuels Program to consider, among other factors, the current and projected economic costs and availability of fuels, the cost-effectiveness of emission reductions associated with clean fuels compared with other pollution control alternatives, the use of new pollution control technologies in conjunction with traditional fuels as an alternative means of reducing emissions, potential effects on public health, ambient air quality, visibility within the region, and other factors determined to be relevant by the South Coast AQMD. The Legislature recognized the need for flexibility, allowing focus on a broad range of technology areas, including cleaner fuels, vehicles and infrastructure, which helps the South Coast AQMD continue to make progress toward achieving its clean air goals.

In 1999, further state legislation was passed which amended the Clean Fuels Program. Specifically, as stated in the H&SC section 40448.5.1(d), the South Coast AQMD must submit to the Legislature, on or before March 31 of each year, an annual report that includes:

1. A description of the core technologies that the South Coast AQMD considers critical to ensure attainment and maintenance of ambient air quality standards and a description of the efforts made to overcome barriers to commercialization of those technologies;
2. An analysis of the impact of the South Coast AQMD’s Clean Fuels Program on the private sector and on research, development and commercialization efforts by major automotive and energy firms, as determined by the South Coast AQMD;
3. A description of projects funded by the South Coast AQMD, including a list of recipients, subcontractors, cofunding sources, matching state or federal funds and expected and actual results of each project advancing and implementing clean fuels technology and improving public health;
4. The title and purpose of all projects undertaken pursuant to the Clean Fuels Program, the names of the contractors and subcontractors involved in each project and the amount of money expended for each project;
5. A summary of the progress made toward the goals of the Clean Fuels Program; and

6. Funding priorities identified for the next year and relevant audit information for previous, current and future years covered by the project.

Furthermore, H&SC section 40448.5.1(a)(2) requires the South Coast AQMD to find that the proposed program and projects funded as part of the Clean Fuels Program will not duplicate any other past or present program or project funded by the state board and other government and utility entities. This finding does not prohibit funding for programs or projects jointly funded with another public or private agency where there is no duplication. Concurrent with adoption and approval of the annual report and plan update every year, the Board will consider the efforts TAO has undertaken in the prior year to ensure no such duplication has occurred then make a finding through a Resolution attesting such.

The following section describes the various panels of external experts that help review the Clean Fuels Program every year.

## Program Review

In 1990, the South Coast AQMD initiated an annual review of its technology advancement program by an external panel of experts. That external review process has evolved, in response to South Coast AQMD policies and legislative mandates, into two external advisory groups. The Technology Advancement Advisory Group (one of six standing Advisory Groups that make up the South Coast AQMD Advisory Council) is made up of stakeholders representing industry, academia, regulatory agencies, the scientific community and environmental impacts. The Technology Advancement Advisory Group serves to:

- Coordinate the South Coast AQMD program with related local, state and national activities;
- Review and assess the overall direction of the program; and
- Identify new project areas and cost-sharing opportunities.

In 1999, the second advisory group was formed as required by SB 98 (Alarcon). Under H&SC Section 40448.5.1(c), this advisory group must comprise 13 members with expertise in clean fuels technology and policy or public health and appointed from the scientific, academic, entrepreneurial, environmental and public health communities. This legislation further specified conflict-of-interest guidelines prohibiting members from advocating expenditures towards projects in which they have professional or economic interests. The objectives of the SB 98 Clean Fuels Advisory Group are to make recommendations regarding projects, plans and reports, including consulting with regarding approval of the required annual report prior for submittal to the South Coast AQMD Governing Board. Also, in 1999, considering the formation of the SB 98 Clean Fuels Advisory Group, the South Coast AQMD also revisited the charter and membership of the Technology Advancement Advisory Group to ensure their functions would complement each other.

On an as-needed basis, changes to the composition of the Clean Fuels Advisory Group are reviewed by the South Coast AQMD Board while changes to the Technology Advancement Advisory Group are reviewed by the South Coast AQMD Board's Technology Committee.

The charter for the Technology Advancement Advisory Group calls for approximately 12 technical experts representing industry, academia, state agencies, the scientific community and environmental interests. Traditionally, there has been exactly 12 members on this advisory group, but this year staff is recommending to the Board's Technology Committee that it add representatives from the Ports of Long Beach and Los Angeles, as both entities have been integral players and stakeholders in demonstrating near-zero and zero emissions technologies in and around the ports and surrounding environmental justice communities.

As needed, current membership changes to both advisory groups are considered by the South Coast AQMD Board and its Technology Committee, respectively, as part of consideration of each year's Annual Report and Plan Update. The current members of the SB 98 Clean Fuels Advisory Group and Technology Advancement Advisory Group (as of 2/14/20) are listed in Appendix A, with proposed changes, duly noted, subject to either South Coast AQMD Board approval or the Board's Technology Committee, per the advisory group's charters.

The review process of the Clean Fuels Program now includes, at minimum: 1) two full-day retreats of the both Advisory Groups, typically in the summer and winter; 2) review by other technical experts; 3) occasional technology forums or roundtables bringing together interested parties to discuss specific technology areas; 4) review by the Technology Committee of the South Coast AQMD Board; 5) a public hearing of the Annual Report and Plan Update before the full South Coast AQMD Board, along with adoption of the Resolution finding that the proposed program and projects funded as part of the Clean Fuels Program will not duplicate any other past or present program or project funded by the state board and other government and utility entities, as required by the H&SC; and 6) finally submittal of the Clean Fuels Program Annual Report and Plan Update to the Legislature by March 31 of every year.

## The Need for Advanced Technologies & Cleaner Fuels

Achieving federal and state clean air standards in Southern California will require emission reductions from both mobile and stationary sources beyond those expected using current technologies.

Ground level ozone (a key component of smog) is created by a chemical reaction between NO<sub>x</sub> and volatile organic compound (VOC) emissions in sunlight. This is noteworthy because the primary driver for ozone formation in the Basin is NO<sub>x</sub> emissions, and mobile sources contribute approximately 88 percent of the NO<sub>x</sub> emissions in this region, as shown in Figure 1. Furthermore, NO<sub>x</sub> emissions, along with VOC emissions, also lead to the formation of PM<sub>2.5</sub> [particulate matter measuring 2.5 microns or less in size, expressed as micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ )], including secondary organic aerosols.

To fulfill near -and long-term emissions reduction targets, the 2016 AQMP relies on a mix of currently available technology as well as the expedited development and demonstration of advanced

technologies that are not yet ready for commercial use. Significant reductions are anticipated from implementation of advanced control technologies for both on-road and off-road mobile sources. In addition, the air quality standards for ozone (70 ppb, 8-hour average) and fine particulate matter, promulgated by the U.S. EPA, are projected to require additional long-term control measures for both NO<sub>x</sub> and VOC.

The need for advanced mobile source technologies and clean fuels is best illustrated by Figure 2 (page 4) which identifies just how far NO<sub>x</sub> emissions must be reduced to meet federal standards by

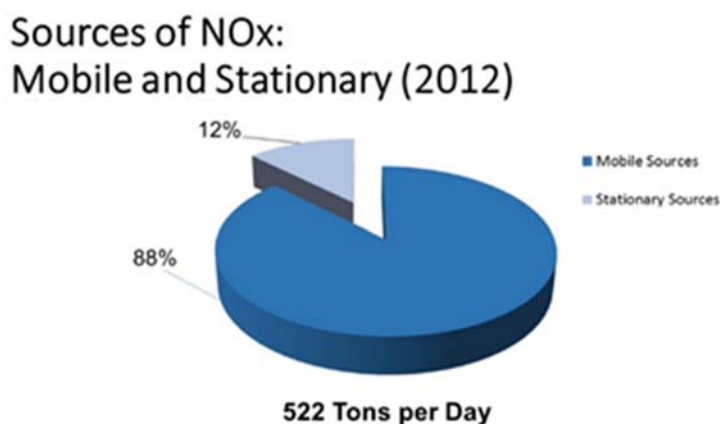
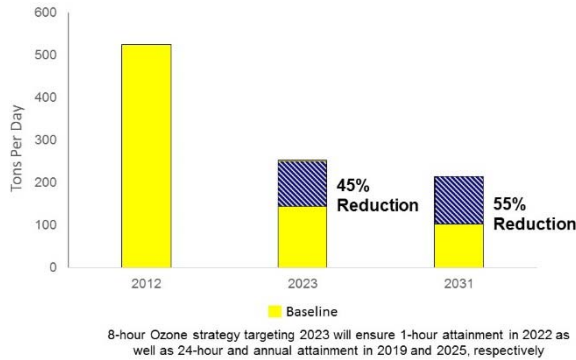


Figure 1: Sources of NO<sub>x</sub> 2012 Base Year

## Basin Total NO<sub>x</sub> Emissions



**Figure 2: Total NO<sub>x</sub> Reductions Needed**

ensuring continued clean performance in use. Current state efforts in developing regulations for on- and off-road vehicles and equipment are expected to reduce NO<sub>x</sub> emissions significantly, but not sufficiently to meet the South Coast AQMD needs, especially in terms of timing.

Health studies also indicate a greater need to reduce NO<sub>x</sub> emissions and toxic air contaminant emissions. For example, the goal of South Coast AQMD’s Multiple Air Toxics Exposure Study (MATES) IV, completed in 2015, like the prior three MATES efforts, was to assess air toxic levels, update risk characterization, and determine gradients from selected sources. However, MATES IV added ultrafine PM and black carbon monitoring components as well. The study found a dramatic decrease in ambient levels of diesel particulate matter and other air toxics. Diesel PM was still the major driver of air toxics health risks. While the levels and exposures decreased, a revision to the methods used to estimate cancer risk from toxics developed by the California Office of Health Hazard Identification increased the calculated risk estimates from these exposures by a factor of up to three. In late 2017, South Coast AQMD initiated MATES V to update the emissions inventory of toxic air contaminants and modeling to characterize risks, including measurements and analysis of ultrafine particle concentrations from major roadways and the regional carcinogenic risk from exposure of air toxics. The MATES V report is expected to be finalized by the end of 2020.

In summary, advanced, energy efficient and renewable technologies are needed not only for attainment, but also to protect the health of those who reside within the South Coast AQMD’s jurisdiction, reduce long-term dependence on petroleum-based fuels, and support a more sustainable energy future. Conventional strategies and traditional supply and consumption need to be retooled to achieve the federal air quality goals. To help meet this need for advanced, clean technologies, the South Coast AQMD Board continues to aggressively carry out the Clean Fuels Program and promote alternative fuels through its Technology Advancement Office (TAO).

As technologies move towards commercialization, such as battery electric trucks, the Clean Fuels Program has been able to partner with large original equipment manufacturers (OEMs), such as Daimler and Volvo, in order to eventually deploy these vehicles in large numbers. These partnerships with the OEMs allow the Program to leverage the research, product creation and financial resources that are needed to move advanced technologies from the laboratories, to the field and eventually into customers’ hands. The OEMs have the resources and abilities to design, engineer, test, manufacture, market, distribute and service quality products under brand names that are trusted. To obtain the emission reductions needed to meet federal and state ambient air quality standards, large numbers of advanced technology clean-fueled vehicles must be deployed across our region and state.

2023 and 2031. The 2016 AQMP’s estimate of needed NO<sub>x</sub> reductions will require the South Coast AQMD Clean Fuels Program to encourage and accelerate advancement of clean transportation technologies that are used as control strategies in the AQMP. Given this contribution, significant cuts in pollution from these sources are needed, therefore proposed AQMP mobile source strategies call for establishing requirements for cleaner technologies (both zero and near-zero) and deploying these technologies into fleets, requiring cleaner and renewable fuels, and

Once advanced technologies and cleaner fuels are commercial-ready, there needs to be a concerted effort to get them into the marketplace and onto the roads. The South Coast AQMD's Carl Moyer Program, which was launched in 1988, helps achieve these results. The two programs produce a unique synergy, with the Carl Moyer Program (and other incentive programs, such as Proposition 1B-Goods Movement and the Community Air Protection Program<sup>2</sup>) providing incentives to push market penetration of the technologies developed and demonstrated by the Clean Fuels Program. This synergy enables the South Coast AQMD to play a leadership role in both technology development and commercialization efforts targeting reduction of criteria pollutants. Funding for both research, development, demonstration and deployment (RD<sup>3</sup>) projects as well as incentives remains a concern given the magnitude of additional funding identified in the 2016 AQMP to achieve federal ozone air quality standards.

The following sections describe program funding, provide a 2019 overview and describe core technologies of the Clean Fuels Program.

## Program Funding

The Clean Fuels Program is established under H&SC Sections 40448.5 and 40512 and Vehicle Code Section 9250.11. This legislation establishes mechanisms to collect revenues from mobile and stationary sources to support the program objectives and identifies the constraints on the use of funds. In 2008, these funding mechanisms were reauthorized under SB 1646 (Padilla), which removed the funding sunset of January 1, 2010, and established the five percent administrative cap instead of the previous cap of two-and-half percent.

Specifically, the Clean Fuels Program is funded through a \$1 fee on motor vehicles registered in the South Coast AQMD. Revenues collected from these motor vehicles must be used to support mobile source projects. Stationary source projects are funded by an emission fee surcharge on stationary sources emitting more than 250 tons of pollutants per year within the South Coast AQMD. This revenue is typically about \$13.5 million and \$350,000, respectively, every year. For CY 2019, the funds available through each of these mechanisms were as follows:

- |   |              |
|---|--------------|
| • Mobile sources (DMV revenues)               | \$13,877,184 |
| • Stationary sources (emission fee surcharge) | \$349,876    |

The South Coast AQMD Clean Fuels Program also receives grants and cost-sharing revenue contracts from various agencies, on a project-specific basis, that supplement the South Coast AQMD program. Historically, such cooperative project funding revenues have been received from the California Air Resources Board (CARB), the California Energy Commission (CEC), the U.S. EPA (including but not limited to their Diesel Emissions Reduction Act or DERA, the Clean Air Technology Initiative or CATI, and Airshed programs), the U.S. Department of Energy (DOE) and the U.S. Department of Transportation (DOT). These supplemental revenues depend in large part on the originating agency, its budgetary and planning cycle and the specific project or intended use of the revenues.

Table 3 (page 34) lists the supplemental grants and revenues totaling \$3.12 million for contracts executed in CY 2019.

Table 4 (page 34) lists the federal and state revenue totaling nearly \$20 million awarded to the South Coast AQMD in 2019 for projects that are part of the overall Clean Fuels Program's RD<sup>3</sup> efforts, even if for financial tracking purposes the revenue is recognized into another special revenue fund other than the Clean Fuels Fund (Fund 31).

<sup>2</sup> <http://www.aqmd.gov/home/programs/business/business-detail?title=vehicle-engine-upgrades>

The final and perhaps most significant funding source can best be described as an indirect source, i.e., funding not directly received by the South Coast AQMD. This indirect source is the cost-sharing provided by private industry and other public and private organizations. In fact, these public-private partnerships with private industry, technology developers, academic institutions, research institutions and government agencies are a key strategy of the Clean Fuels Program. Historically, the Technology Advancement Office has been successful in leveraging its available public funds with \$4 of outside funding for each \$1 of South Coast AQMD funding. Since 1988, the Clean Fuels Program has leveraged nearly \$340 million into more than \$1.5 billion in projects. For 2019, the Clean Fuels Program leveraged each \$1 to more than \$14 of outside funding. Similar to last year, this atypical leverage was the result of a few key contracts with significant project scopes executed in 2019, such as the \$91 million project with Volvo, which includes a nearly \$45 million award to the South Coast AQMD from CY 2018 (see the Project Summaries by Core Technologies for more information on these key projects, as well as the project highlights in the Strategy and Impact section starting on page 17). Through these public-private partnerships, the South Coast AQMD has shared the investment risk of developing new technologies along with the benefits of expedited development and commercial availability, increased end-user acceptance, reduced emissions from the demonstration projects and ultimately increased use of clean technologies in the Basin. While the South Coast AQMD aggressively seeks to leverage funds, it continues to act in a leadership role in technology development and commercialization efforts, along with its partners, to accelerate the reduction of criteria pollutants. Leveraging dollars and aggressively applying for additional funds whenever funding opportunities arise is more important than ever given, as previously noted, the magnitude of additional funding identified in the 2016 AQMP to achieve federal ozone air quality standards. The South Coast AQMD's Clean Fuels Program has also avoided duplicative efforts by coordinating and jointly funding projects with major funding agencies and organizations. The major funding partners for 2019 are listed in Table 1 (page 18).

## 2019 Overview

This report summarizes the progress of the South Coast AQMD Clean Fuels Program for CY 2019. The South Coast AQMD Clean Fuels Program cost-shares projects to develop and demonstrate zero, near-zero and low emissions clean fuels and advanced technologies to push the state-of-the-technology and promote commercialization and deployment of promising or proven technologies not only for the Basin but Southern California and the nation as well. As noted, these projects are conducted through public-private partnerships with industry, technology developers, academic and research institutes and local, state and federal agencies.

This report also highlights achievements and summarizes project costs of the South Coast AQMD Clean Fuels Program in CY 2019. During the period between January 1 and December 31, 2019, the South Coast AQMD executed 68 new contracts/agreements, projects or studies and modified 4 continuing project adding dollars during CY 2019 that support clean fuels and advanced zero, near-zero and low emission technologies (see Table 2, page 32). The South Coast AQMD Clean Fuels Program contribution for these projects was nearly \$12 million, inclusive of \$3 million received into the Clean Fuels Fund as cost-share for one contract executed in this reporting period. Total project costs are nearly \$134 million. These projects address a wide range of issues with a diverse technology mix including near-term emissions reductions and long-term planning efforts. The report not only provides information on outside funding received into the Clean Fuels Fund as cost-share for contracts executed in this period (summarized in Table 3, page 34), but also funds awarded to the South Coast AQMD for projects that fall within the scope of the Clean Fuels Program's RD<sup>3</sup> efforts but may have been recognized (received) into another special revenue fund for financial tracking purposes (nearly \$20 million in 2019, see Table 4, page 34). For example, in 2018, the South Coast AQMD was awarded nearly \$45 million by CARB as project partner with Volvo on their Low Impact Green Heavy Transportation Solutions (LIGHTS) Project, which has an overall project cost of over \$100 million and



will advance and hopefully commercialize electric truck technology. In the 2018 Annual Report reflected this \$45 million award. In CY 2019, the contract with Volvo was executed so it's reflected in Project Summaries (which begin on page 35); in fact, given its significance, the Volvo LIGHTS Project is included in project highlights in this Annual Report (page 18). More details on this financial summary can be found later in this report. The South Coast AQMD will continue to pursue federal, state and private funding opportunities in 2020 to amplify leverage, while acknowledging that support of a promising technology is not contingent on outside cost-sharing and affirming that South Coast AQMD will remain committed to playing a leadership role in developing advanced technologies that lower criteria pollutants.

## Core Technologies

Given the diversity of sources that contribute to the air quality problems in the Basin, there is no single technology or “Silver Bullet” that can solve all the problems. A number of technologies are required, and these technologies represent a wide range of applications, with full emissions benefit “payoffs,” i.e., full commercialization and mass deployment occurring at different times. The broad technology areas of focus – the “Core Technologies” – for the Clean Fuels Program are as follows:

- Hydrogen/Mobile Fuel Cell Technologies and Infrastructure (especially large-scale refueling facilities);
- Engine Systems/Technologies (emphasizing alternative and renewable fuels for truck and rail applications);
- Electric/Hybrid Vehicle Technologies and Related Infrastructure (emphasizing electric and hybrid electric trucks and container transport technologies with zero emission operation);
- Fueling Infrastructure and Deployment (predominantly natural gas and renewable fuels);
- Stationary Clean Fuels Technologies (including microgrids and renewables);
- Fuel and Emissions Studies;
- Emissions Control Technologies;
- Health Impacts Studies; and
- Technology Assessment and Transfer/Outreach.

At its January 2020 retreat, the Technology Advancement and SB-98 Clean Fuels Advisory Groups asked staff to take another look at these core technologies to determine if they still fit within the strategy of the Clean Fuels Program. That effort will be undertaken in 2020.

The South Coast AQMD continually seeks to support the deployment of lower-emitting technologies. The Clean Fuels Program is shaped by two basic factors:

1. Zero, near-zero and low emission technologies needed to achieve clean air standards in the Basin; and
2. Available funding to support technology development within the constraints imposed by that funding.

The South Coast AQMD strives to maintain a flexible program to address dynamically evolving technologies and the latest progress in the state of the technology while balancing the needs in the various technology sectors with technology readiness, emissions reduction potential and cofunding opportunities. Although the South Coast AQMD program is significant, national and international activities affect the direction of technology trends. As a result, the South Coast AQMD program must be flexible to leverage and accommodate these changes in state, national and international priorities. Nonetheless, while the state and federal governments have continued to turn a great deal of their attention to climate change, South Coast AQMD has remained committed to developing, demonstrating and commercializing zero and near-zero emission technologies. Fortunately, many, if not the majority,

of technology sectors that address our need for NO<sub>x</sub> reductions also garner greenhouse gas (GHG) reductions. Due to these “co-benefits,” the South Coast AQMD has been successful in partnering with the state and federal government. Even with the leveraged funds, the challenge for the South Coast AQMD remains the need to identify project or technology opportunities in which its available funding can make a difference in achieving progressively cleaner air in the Basin.

To achieve this, the South Coast AQMD employs various outreach and networking activities as well as evaluates new ways to expand these activities. These activities range from close involvement with state and federal collaboratives, partnerships and industrial coalitions, to the issuance of Program Opportunity Notices (PONs) to solicit project ideas and concepts as well as the issuance of Requests for Information to determine the state of various technologies and the development and commercialization challenges faced by those technologies. Additionally, in the absence of PONs, unsolicited proposals from OEMs and other clean fuel technology developers are accepted and reviewed.

Historically, mobile source projects have targeted low-emission developments in automobiles, transit buses, medium- and heavy-duty trucks and non-road applications. These vehicle-related efforts have focused on advancements in engine design, electric powertrains and energy storage/conversion devices (e.g., fuel cells and batteries); and implementation of clean fuels (e.g., natural gas, propane and hydrogen) including their infrastructure development. Stationary source projects have included a wide array of advanced low NO<sub>x</sub> technologies and clean energy alternatives such as fuel cells, solar power and other renewable and waste energy systems. The focus in recent years has been on zero and near-zero emission technologies with increased attention to heavy- and medium-duty trucks to reduce emissions from mobile sources, which contribute to more than 80 percent of the current NO<sub>x</sub> emissions in this region. However, while mobile sources include both on- and off-road vehicles as well as aircraft and ships, only the federal government has the authority to regulate emissions from aircraft and ships. The South Coast AQMD is exploring opportunities to expand its authority in ways that would allow the agency to do more to foster technology development for ship and train activities as well as locomotives as they relate to goods movement. In the absence of regulatory authority, the South Coast AQMD is expanding its portfolio of RD<sup>3</sup> projects to include marine and ocean-going vessels. Utilizing mitigation funds, funding from San Pedro Bay ports and industry partners, RD<sup>3</sup> projects to demonstrate emissions reduction technology in the marine sector where NO<sub>x</sub> emissions are increasing are being pursued.

The 2016 AQMP included five Facility-Based Mobile Source Measures, also known as indirect source measures. Since then, staff has been developing both voluntary and regulatory measures in a process that has included extensive public input. Indirect source measures are distinct from traditional air pollution control regulations in that they focus on reducing emissions from the vehicles associated with a facility rather than emissions from a facility itself.

For example, indirect source measures for warehouses could focus on reducing emissions from trucks servicing the facility. Measures for ports will concentrate on emissions from ships, trucks, locomotives and cargo handling equipment at the ports. Measures covering new development and redevelopment projects could aim to reduce emissions from construction equipment, particularly heavy-duty diesel earth-moving vehicles.

Specific projects are selected for cofunding from competitive solicitations, cooperative agency agreements and unsolicited proposals. Criteria considered in project selection include emissions reduction potential, technological innovation, potential to reduce costs and improve cost effectiveness, contractor experience and capabilities, overall environmental impacts or benefits, commercialization and business development potential, cost-sharing and cost-sharing partners, and consistency with

program goals and funding constraints. The core technologies for the South Coast AQMD programs that meet both the funding constraints and 2016 AQMP needs for achieving clean air are briefly described below.

## Hydrogen/Mobile Fuel Cell Technologies and Infrastructure

Toyota and Hyundai commercialized light-duty fuel cell vehicles in 2015. Honda started delivering their Fuel Cell Clarity in 2016, and others have plans to commercialize their own soon. As automakers continue to collaborate on development efforts (e.g., Honda and GM) and commercialize fuel cell vehicles, in the interim plug-in hybrid technology could help enable fuel cells by using larger capacity batteries until fuel cell components mature. For example, Mercedes-Benz announced limited production of a plug-in fuel cell model GLC for 2018 in Germany, with U.S. availability to follow. However, the greatest challenge for the viability of fuel cell vehicles remains the installation and operations of hydrogen fueling stations. AB 8 requires the CEC to allocate \$20 million annually from the Alternative and Renewable Fuel and Vehicle Technology Program until there are at least 100 publicly accessible hydrogen stations in operation in California. Of the 65 stations funded by CEC and CARB by the end of 2019, partially funded by South Coast AQMD for those in our region, there is one legacy and 39 retail operational in California, but most if not all 65 are expected to be operational by the end of 2020 with capacity for more than 10,000 fuel cell vehicles. AB 8 also requires CARB to annually assess current and future fuel cell vehicles (FCVs) and hydrogen stations in the marketplace. *The Joint Agency Staff Report on Assembly Bill 8: 2019 Annual Assessment of Time and Cost Needed to Attain 100 Hydrogen Refueling Stations in California*<sup>3</sup> released in December 2019 covering 2019 findings states that there were 6,826 fuel cell vehicles registered in California by October 2019. However, CARB's 2017 Annual Evaluation projects 13,400 fuel cell electric vehicles (FCEVs) in California by 2020 and 37,400 by the end of 2023. Additionally, the California Fuel Cell Partnership's (CaFCP) *The California Fuel Cell Revolution, A Vision For Advancing Economic, Social, and Environmental Priorities (Vision 2030)* includes the need for up to 1,000 refueling stations statewide as well as the need to expand the market with heavy-duty technologies and their infrastructure.

Clearly, the South Coast AQMD must continue to support infrastructure required to refuel retail fuel cell vehicles and the nexus to medium- and heavy-duty trucks including reducing the cost to deploy heavy-duty hydrogen infrastructure. To that end, South Coast AQMD has cofunded a liquid hydrogen station capable of fueling up to 50 fuel cell transit buses and 10 fuel cell transit buses at OCTA. South Coast AQMD Clean Fuels funding of \$500,000 has been committed towards the CARB Zero and Near Zero-Emission Freight Facilities (ZANZEFF) Shore-to-Shore project to deploy 10 heavy-duty fuel cell trucks and install three heavy-duty hydrogen stations in Wilmington and Ontario; this contract will be executed in 2020. South Coast AQMD is also actively engaged in finding alternatives to reduce the cost of hydrogen (e.g., large-scale hydrogen refueling stations or production facilities) and potential longer-term fuel cell power plant technology. South Coast AQMD is also administering the DOE-funded Zero Emission Cargo Transport (ZECT) project (phase 2 or ZECT 2), to develop and deploy six heavy-duty fuel cell drayage trucks. Two of the fuel cell drayage trucks are manufactured by Transportation Power Inc. (TransPower), two fuel cell trucks by US Hybrid, one fuel cell truck by Kenworth, and one fuel cell truck by Hydrogenics (a Cummins Inc. company). Six of the seven vehicle designs, and integration, are completed, and four of the fuel cell drayage trucks are in demonstration. The battery and fuel cell dominant fuel cell trucks have a range of 150-200 miles.

## Engine Systems/Technologies

Medium- and heavy-duty on-road vehicles contributed approximately 33 percent of the Basin's NOx based on 2016 AQMP data. More importantly, on-road heavy-duty diesel trucks account for 33 percent

<sup>3</sup> <https://ww2.energy.ca.gov/2019publications/...2019.../CEC-600-2019-039.pdf>

of the on-road mobile source PM<sub>2.5</sub>, a known toxic air contaminant (TAC). Furthermore, according to CARB, trucks and buses are responsible for 37 percent of California's greenhouse gases (GHGs) and criteria emissions. While MATES IV found a dramatic decrease in ambient levels of diesel PM and other air toxics, diesel PM is still the major driver of air toxics health risks. Clearly, significant emission reductions will be required from mobile sources, especially from the heavy-duty sector, to attain the federal clean air standards. Even with the announced rollout of zero emission trucks beginning in 2021 by Volvo and Daimler, it is anticipated that it would take ten years for a large enough deployment of those trucks to have an impact on air quality.

The use of alternative fuels in heavy-duty vehicles can provide significant reductions in NO<sub>x</sub> and particulate emissions. The current NO<sub>x</sub> emissions standard for heavy-duty engines is 0.2 g/bhp-hr. The South Coast AQMD, along with various local, state and federal agencies, continues to support the development and demonstration of alternative-fueled low emission heavy-duty engine technologies, using natural gas, renewable natural gas or hydrogen, renewable diesel and potentially other renewable or waste stream fuels, for applications in heavy-duty trucks, transit and school buses, rail operations, and refuse collection and delivery vehicles to meet future federal emission standards. South Coast AQMD is supporting three contracts to convert the model year 2021 new Ford medium-duty gasoline engine to near-zero NO<sub>x</sub> level by using natural gas and propane.

In connection with the challenge to develop cleaner engine systems, on June 3, 2016, South Coast AQMD petitioned the U.S. EPA to initiate rulemaking for a lower NO<sub>x</sub> national standard for heavy-duty engines. The U.S. EPA has since acknowledged a need for additional NO<sub>x</sub> reductions through a harmonized and comprehensive national NO<sub>x</sub> reduction program for heavy-duty on-highway engines and vehicles. U.S. EPA announced the Cleaner Truck Initiative on November 13, 2018, and Advance Notice of Proposed Rule on January 6, 2020, to reduce NO<sub>x</sub> emissions from on-road heavy-duty trucks starting as early as model year 2026. CARB forged ahead, announcing its own Low NO<sub>x</sub> Omnibus rule, which may be before the CARB Board as early as Spring 2020, proposing a lower NO<sub>x</sub> standard starting model year 2024. Although both announcements are welcome news, the timing is too late to help the South Coast AQMD meet its 2023 federal attainment deadline. So, despite progress, commercialization and deployment of near-zero engines are still needed.

## **Electric/Hybrid Vehicle Technologies and Infrastructure**

There has been an increased level of activity and attention on electric and hybrid vehicles due to a confluence of factors, including the highly successful commercial introductions of hybrid light-duty passenger vehicles and more recently plug-in electric vehicles (PEVs) by almost all major automakers and increased public attention on global warming, as well as several Executive Orders issued by Former Governor Brown, such as his January 26, 2018 order, calling for 5 million ZEVs by 2030.

EV adoption continues to increase in 2017, selling more than 655,000 cumulative electric vehicles by September 2019 in California, according to Veloz (formerly the PEV Collaborative), with increasingly more announcements by international automakers (e.g., Mercedes-Benz, Volkswagen-Audi-Porsche, Hyundai/Kia, Ford, GM and several growing Chinese brands) on a variety of electrification plans, including some with extended zero emissions range. Joining the trend with longer-range battery electric light-duty passenger vehicles by Tesla, Chevy and several others, multiple manufacturers have announced light-duty electric truck development.

However, technology transfer to the medium- and heavy-duty applications is just beginning, especially in goods movement demonstrations in this region. As with hydrogen and fuel cell technologies, South Coast AQMD is actively pursuing research, development and demonstration projects for medium- and heavy-duty battery electric vehicles and their commercialization. South Coast AQMD is administering the DOE funded ZECT project to develop and demonstrate battery electric and plug-in hybrid drayage trucks: four battery electric trucks from TransPower, two battery electric trucks from US Hybrid, two

series plug-in hybrid electric trucks from TransPower, and three parallel plug-in hybrid electric trucks from US Hybrid. Battery electric trucks have an all-electric range of up to 100 miles and plug-in hybrid electric trucks have a range of up to 250 miles. This first ZECT project (ZECT 1), which is wrapping up, gave birth to many other EV and hybrid truck projects including the Greenhouse Gas Reduction Fund (GGRF) Zero Emission Drayage Truck (ZEDT) project demonstrating more than 40 electric and hybrid drayage trucks across California. In the ZEDT project, TransPower continued their development of their electric truck platform with their OEM partner Peterbilt. In addition, Clean Fuels has cofunded the Daimler and Volvo battery electric trucks. Daimler has deployed 14 Class 8 eCascadia and three Class 6 eM2 trucks in 2019 and installed seven DC fast charging stations at fleet locations. Volvo has deployed two Class 8 rigid trucks and three Class 8 60,000-pound tractors and installed two 50 kW DC fast charging stations at its TEC Fontana dealership in December 2019.

Lastly, the same electric and hybrid technology transfer is beginning to appear on off-road and marine applications. South Coast AQMD is currently in the process of demonstrating a battery electric excavator and wheel loader with Volvo Construction Equipment as part of a FY 18 U.S. EPA Targeted Airshed Grant award. At the same time, a new electric drive, diesel hybrid tugboat is in the process of construction and demonstration by fleet operator Harley Marine Services with cofunding from Port of Long Beach and CARB. These pilot demonstration projects are key to additional emission reductions from the off-road and marine sectors.

## **Fueling Infrastructure and Deployment (Natural Gas/Renewable Fuels)**

A key element for increased use of alternative fueled vehicles and resulting widespread acceptance is the availability of the supporting refueling infrastructure. The refueling infrastructure for gasoline and diesel fuel is well established and accepted by the driving public. Alternative, clean fuels, such as alcohol-based fuels, propane, hydrogen, and even electricity, are much less available or accessible, whereas natural gas and renewable fuels have recently become more readily available and cost-effective. Nonetheless, to realize emissions reduction benefits, alternative fuel infrastructure, especially fuels from renewable feedstocks, must be developed in tandem with the growth in alternative fueled vehicles. While California appears to be on track to meet its Renewable Portfolio Standard targets of 33 percent by 2020 and 50 percent by 2030 as required by SB 350 (chaptered October 2015), the objectives of the South Coast AQMD are to expand the infrastructure to support zero and near-zero emission vehicles through the development, demonstration and installation of alternative fuel vehicle refueling technologies. However, this category is predominantly targeted at natural gas (NG) and renewable natural gas (RNG) infrastructure and deployment (electric and hydrogen fueling are included in their respective technology categories). The Clean Fuels Program will continue to examine opportunities where current incentive funding is either absent or insufficient.

## **Stationary Clean Fuel Technologies**

Given the limited funding available to support low emission stationary source technology development, this area has historically been limited in scope. To gain the maximum air quality benefits in this category, higher polluting fossil fuel-fired electric power generation needs to be replaced with clean, renewable energy resources or other advanced zero and near zero-emission technologies, such as solar, energy storage, wind, geo-thermal energy, bio-mass conversion and stationary fuel cells. Although combustion sources are lumped together as stationary, the design and operating principles vary significantly and thus also the methods and technologies for control of their emissions. Included in the stationary category are boilers, heaters, gas turbines and reciprocating engines as well as microgrids and some renewables. The key technologies for this category focus on using advanced combustion processes, development of catalytic add-on controls, alternative fuels and technologies and stationary fuel cells in novel applications.

Although stationary source NO<sub>x</sub> emissions are small compared to mobile sources in the Basin, there are applications where cleaner fuel technologies or processes can be applied to reduce NO<sub>x</sub>, VOC and PM emissions. Recent demonstration projects funded in part by the South Coast AQMD include a local sanitation district retrofitting an existing biogas engine with a digester gas cleanup system and catalytic exhaust emission control. The retrofit system resulted in significant reductions in NO<sub>x</sub>, VOC and CO emissions. This project demonstrated that cleaner, more robust renewable distributed generation technologies exist that not only improve air quality but enhance power quality and reduce electricity distribution congestion. Another ongoing demonstration project consists of retrofitting a low NO<sub>x</sub> ceramic burner on an oil heater without the use of reagents, such as ammonia nor urea, which is anticipated to achieve selective catalytic reduction (SCR) NO<sub>x</sub> emissions or lower. SCR requires the injection of ammonia or urea that is reacted over a catalyst bed to reduce the NO<sub>x</sub> formed during the combustion process. Challenges arise if ammonia distribution within the flue gas or operating temperature is not optimal resulting in ammonia emissions leaving the SCR in a process referred to as “ammonia slip”. The ammonia slip may also lead to the formation of particulate matter in the form of ammonium sulfates. Based on the successful deployment of this project, further emission reductions may be achieved by other combustion sources (such as boilers) by the continued development of specialized low NO<sub>x</sub> burners without the use of reagents.

## **Health Impacts, Fuel and Emissions Studies**

The monitoring of pollutants in the Basin is extremely important, especially when focused on (1) a sector of the emissions inventory (to identify the responsible technology) or (2) exposure to pollution (to assess the potential health risks). Several studies indicate that areas with high levels of air pollution can produce irreversible damage to children’s lungs. This information highlights the need for further emissions and health studies to identify the emissions from high polluting sectors as well as the health effects resulting from these technologies. As we transition to new fuels and forms of transportation, it is important to understand the impacts that changing fuel composition will have on exhaust emissions and in turn on ambient air quality. This area focuses on exhaust emissions studies, with a focus on NO<sub>x</sub> and PM<sub>2.5</sub> emissions and a detailed review of other potential toxic tailpipe emissions, for alternative fuel and diesel engines. These types of in-use emissions studies have found significantly higher emissions than certification values for heavy-duty diesel engines, depending on the duty-cycle. South Coast AQMD is performing a three-year in-use emissions study of 200 next-generation technology heavy-duty vehicles in the South Coast Air Basin. This study, expected to be completed in 2020, is aimed at understanding the activity pattern of different vocations, understanding the real-world emissions emitted from different technologies. Another study launched in 2020 will evaluate the emissions produced using alternative diesel blends in off-road heavy-duty engines.

## **Emissions Control Technologies**

This broad category refers to technologies that could be deployed on existing mobile sources, aircraft, locomotives, marine vessels, farm and construction equipment, cargo handling equipment, industrial equipment, and utility and lawn-and-garden equipment. The in-use fleet comprises most emissions, especially the older vehicles and non-road sources, which are typically uncontrolled and unregulated, or controlled to a much lesser extent than on-road vehicles. The authority to develop and implement regulations for retrofit on-road and off-road mobile sources lies primarily with the U.S. EPA and CARB, both agencies are currently planning research efforts to aid the next round of rulemaking for off-road mobile sources.

Low emission and clean fuel technologies that appear promising for on-road mobile sources should be effective at reducing emissions for a number of off-road applications. For example, immediate benefits are possible from particulate traps and SCR technologies that have been developed for on-road diesel applications although retrofits are often hampered by physical size and visibility constraints. Clean

fuels such as natural gas, propane, hydrogen and hydrogen-natural gas mixtures may also provide an effective option to reduce emissions from some off-road applications, even though alternative fuel engine offerings are limited in this space, but retrofits such as dual-fuel conversions are possible and need to be demonstrated. Reformulated gasoline, ethanol and alternative diesel fuels, such as biodiesel and gas-to-liquid (GTL), also show promise when used in conjunction with advanced emissions controls and new engine technologies. Emissions assessments are important in such projects as one technology to reduce one contaminant can increase another.

## **Technology Assessment and Transfer/Outreach**

Since the value of the Clean Fuels Program depends on the deployment and adoption of the demonstrated technologies, technology assessment and transfer efforts are an essential part of the Clean Fuels Program. This core area encompasses assessment of advanced technologies, including retaining outside technical assistance as needed, efforts to expedite the implementation of low emission and clean fuels technologies, and coordination of these activities with other organizations, including networking opportunities seeking outside funding. Assembly Bill (AB) 617<sup>4</sup>, which requires reduced exposure to communities most impacted by air pollution, required TAO to carry out additional outreach in CY 2019 to AB 617 communities regarding available zero and near-zero emission technologies as well as the incentives to accelerate those cleaner technologies into their communities. TAO staff also provide input as part of working groups, such as the Port of Long Beach EV Blueprint, Los Angeles County EV Blueprint, City of Los Angeles Zero Emissions 2028 Roadmap, Electric Power Research Institute (EPRI) study on air quality and GHG impacts of residential electrification, and Los Angeles Cleantech Incubator projects. Technology transfer efforts also include support for various clean fuel vehicle incentive programs (i.e., Carl Moyer Program, Proposition 1B-Goods Movement, etc.). Furthermore, general and, when appropriate, targeted outreach is an effective part of any program. Thus, the other spectrum of this core technology is information dissemination to educate and promote awareness of the public and end users. TAO staffed information booths to answer questions from the general public and provided speakers to participate on panels on zero and near-zero emission technologies at events, such as CARB's Low Carbon Transportation Heavy-Duty Project Showcase in March, the SoCal Work Truck Show in October, and Riverside and Santa Monica AltCar events in October and November. While South Coast AQMD's Local Government, Public Affairs & Media Office oversees and carries out such education and awareness efforts on behalf of the entire agency, TAO cosponsors and occasionally hosts various technology-related events to complement their efforts (see page 13 for a description of the technology assessment and transfer contracts executed in CY 2019 as well as a listing of the 23 conferences, workshops and events funded in CY 2019. Throughout the year, staff also participates in various programmatic outreach for the various incentive programs implemented by TAO, including the Carl Moyer Program, Proposition 1B-Goods Movement, Volkswagen Mitigation Program, Replace Your Ride, a U.S. EPA Airshed-funded Commercial Electric Lawn and Garden Incentive and Exchange Program, and residential lawn mower and EV charger rebate programs, to name a few.

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<sup>4</sup> <https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/about>

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# CLEAN FUELS PROGRAM

## Barriers, Scope and Impact

### Overcoming Barriers

Commercialization and implementation of advanced technologies come with a variety of challenges and barriers. A combination of real-world demonstrations, education, outreach and regulatory impetus and incentives is necessary to bring new, clean technologies to market. To reap the maximum emissions benefits from any technology, widespread deployment and user acceptance must occur. The product manufacturers must overcome technical and market barriers to ensure a competitive and sustainable business. Barriers include project-specific issues as well as general technology concerns.

#### Technology Implementation Barriers

- Viable commercialization path
- Technology price/performance parity with convention technology
- Consumer acceptance
- Fuel availability/convenience issues
- Certification, safety and regulatory barriers
- Quantifying emissions benefits
- Sustainability of market and technology

#### Project-Specific Issues

- Identifying a committed demonstration site
- Overall project cost and cost-share using public monies
- Securing the fuel
- Identifying and resolving real and perceived safety issues
- Quantifying the actual emissions benefits
- Viability of the technology provider

Other barriers include reduced or shrinking research budgets, infrastructure and energy uncertainties and risks, sensitivity to multi-media environmental impacts and the need to find balance between environmental needs and economic constraints. The South Coast AQMD seeks to address these barriers by establishing relationships through unique public-private partnerships with key stakeholders; e.g., industry, end-users and other government agencies with a stake in developing clean technologies. Partnerships that involve all the key stakeholders have become essential to address these challenges in bringing advanced technologies from development to commercialization.

Each of these stakeholders and partners contributes more than just funding. Industry, for example, can contribute technology production expertise as well as the experience required for compatibility with process operations. Academic and research institutes bring state-of-the- technology knowledge and testing proficiency. Governmental and regulatory agencies can provide guidance in identifying sources with the greatest potential for emissions reduction, assistance in permitting and compliance issues, coordinating of infrastructure needs and facilitation of standards setting and educational outreach. Often, there is considerable synergy in developing technologies that address multiple goals of public and private bodies regarding the environment, energy and transportation.

### Scope and Benefits of the Clean Fuels Program

Since the time needed to overcome barriers can be long and the costs high, both manufacturers and end-users tend to be discouraged from considering advanced technologies. The Clean Fuels Program addresses these needs by cofunding research, development, demonstration and deployment projects to share the risk of emerging technologies with their developers and eventual users.

Figure 3 below provides a conceptual design of the wide scope of the Clean Fuels Program. As mentioned in the Core Technologies section, various stages of technology projects are funded not only to provide a portfolio of emissions technology choices but to achieve emission reduction benefits in the nearer as well as over the longer term. The South Coast AQMD Clean Fuels Program funds projects in the Technology Readiness Level ranging between 3-8.



**Figure 3: Stages of Clean Fuels Program Projects**

Due to the nature of these advanced technology research, development, demonstration and deployment (RD<sup>3</sup>) projects, the benefits are difficult to quantify since their full emissions reduction potential may not be realized until sometime in the future, or perhaps not at all if displaced by superior technologies. Nevertheless, a good indication of the impact and benefits of the Clean Fuels Program overall is provided by this selective list of sponsored projects that have resulted in commercialized products or helped to advance the state-of-the-technology.

- Near-zero NOx Engine Development for Heavy-Duty Vehicles
  - Cummins Westport: low-NOx natural gas ISL G 8.9L and 12L engines (0.2 & 0.02 g/bhp-hr);
  - SwRI project to develop a near-zero NOx Heavy-duty diesel engine; and
  - Kenworth CNG Hybrid Electric Drayage Truck project.
- Fuel Cell Development and Demonstrations
  - Kenworth Fuel Cell Range Extended Electric Drayage Truck project;
  - New Flyer Fuel Cell Transit Bus and Air Products Liquid Hydrogen Station at OCTA;
  - Retail light-duty passenger fuel cell vehicles (Toyota Mirai, Hyundai Nexa, Honda Clarity);
  - SunLine Transit Agency Advanced Fuel Cell Bus projects;
  - Commercial stationary fuel cell demonstration with UTC and SoCalGas (first of its kind);
  - UPS demonstration of fuel cell delivery trucks; and
  - Fuel cell Class 8 trucks under Zero Emission Cargo Transport (ZECT) II Program.
- Electric and Hybrid Electric Vehicle Development and Demonstrations
  - Daimler Class 6 and 8 battery electric trucks with Penske and NFI;
  - Volvo Class 8 battery electric trucks with TEC Fontana, DHE, and NFI;
  - Hybrid electric delivery trucks with NREL, FedEx and UPS;
  - Plug-in hybrid work truck with Odyne Systems;
  - BYD battery-electric transit bus and trucks (yard hostlers and drayage);
  - LA Metro battery electric buses;
  - Blue Bird Electric School Bus with Vehicle to Grid (V2G) capability;
  - TransPower Electric school buses, including V2G capability;
  - TransPower/US Hybrid battery electric heavy-duty truck and yard hostlers; and
  - Peterbilt battery-electric drayage trucks.

- Aftertreatment Technologies for Heavy-Duty Vehicles
  - Johnson Matthey and Engelhard trap demonstrations on buses and construction equipment;
  - Johnson Matthey SCRT and SCCRT NO<sub>x</sub> and PM reduction control devices on heavy-duty on-road trucks; and
  - Southwest Research Institute development of aftertreatment for heavy-duty diesel engines

South Coast AQMD played a leading or major role in the development of these technologies, but their benefits could not have been achieved without all stakeholders (i.e., manufacturer, end-users and government) working collectively to overcome the technology, market and project-specific barriers encountered at every stage of the RD<sup>3</sup> process.

## Strategy and Impact

In addition to the feedback and input detailed in Program Review (page 2), the South Coast AQMD actively seeks additional partners for its program through participation in various working groups, committees and task forces. This participation has resulted in coordination of the South Coast AQMD program with a number of state and federal government organizations, including CARB, CEC, U.S. EPA and DOE/DOT and several of the national laboratories. Coordination also includes the AB 2766 Discretionary Fund Program administered by the Mobile Source Air Pollution Reduction Review Committee (MSRC), various local air districts including but not limited to Bay Area AQMD, Sacramento Metropolitan AQMD, San Diego APCD and San Joaquin Valley APCD, as well as the National Association of Fleet Administrators (NAFA), major local transit districts, local gas and electric utilities, national laboratories, the San Pedro Bay Ports and several universities with research facilities, including but not limited to California State University Los Angeles, Purdue University, Universities of California Berkeley, Davis, Irvine, Los Angeles and Riverside, and University of West Virginia. The list of organizations with which the South Coast AQMD coordinates research and development activities also includes organizations specified in H&SC Section 40448.5.1(a)(2).

In addition, the South Coast AQMD holds periodic meetings with several organizations specifically to review and coordinate program and project plans. For example, the South Coast AQMD staff meets with CARB staff to review research and development plans, discuss project areas of mutual interest, avoid duplicative efforts and identify potential opportunities for cost-sharing. Periodic meetings are also held with industry-oriented research and development organizations, including but not limited to the CaFCP, the California Stationary Fuel Cell Collaborative, the California Natural Gas Vehicle Partnership (CNGVP), EPRI, Veloz (formerly the PEV Collaborative), the Los Angeles Cleantech Incubator's Regional Transportation Partnership, the California Hydrogen Business Council (CHBC), the SoCalEV Collaborative and the West Coast Collaborative. The coordination efforts with these various stakeholders have resulted in several cosponsored projects.

Descriptions of some of the key contracts executed in CY 2019 are provided in the next section of this report. It is noteworthy that most of the projects are cosponsored by various funding organizations and include the active involvement of original equipment manufacturers (OEMs). Such partnerships are essential to address commercialization barriers and to help expedite the implementation of advanced low emission technologies. Table 1 below lists the major funding agency partners and manufacturers actively involved in South Coast AQMD projects for this reporting period. It is important to note that, although not listed, there are many other technology developers, small manufacturers and project participants who make important contributions critical to the success of the South Coast AQMD program. These partners are identified in the more detailed 2019 Project Summaries by Core Technologies (beginning page 35) contained within this report, as well as Table 4 (page 34) which lists

federal, state and local funding awarded to the South Coast AQMD in CY 2019 for RD<sup>3</sup> projects (which will likely result in executed project contracts in 2020).

**Table 1: South Coast AQMD Major Funding Partners in CY 2019**

<b>Research Funding Organizations</b>	<b>Major Manufacturers/Technology Providers</b>
California Air Resources Board	Cummins Inc.
California Energy Commission	Daimler Trucks North America
Department of Energy	Long Beach Container Terminal
National Renewable Energy Laboratory	Mercedes-Benz USA
U.S. Environmental Protection Agency	Ports of Los Angeles & Long Beach
<b>Local Entities &amp; Utilities</b>	San Pedro Bay Ports
MSRC/AB 2766 Discretionary Program	SSA Marine Terminal
San Joaquin APCD	Volvo Technology of America LLC
Southern California Gas Company	

The following two subsections broadly address the South Coast AQMD's impact and benefits by describing specific examples of accomplishments including commercial or near-commercial products supported by the Clean Fuels Program in CY 2019. Such examples are provided in the following sections on the Technology Advancement Office's Research, Development and Demonstration projects and Technology Deployment and Commercialization efforts.

## **Research, Development and Demonstration**

Important examples of the impact of the South Coast AQMD research and development coordination efforts in 2019 include: (a) Demonstrate Zero Emission Trucks and EV Infrastructure (Volvo LIGHTS Project); (b) Demonstrate Zero Emission Cargo Handling Equipment; (c) Continued Development of Natural Gas Engine Emissions and Efficiency Improvements; and (d) Development of Fuel Cell-Gas Turbine Hybrid Technology.

### **Demonstrate Zero Emission Trucks and EV Infrastructure**

Volvo Trucks North America (Volvo), the second largest manufacturer of heavy-duty trucks, proposed a ground-breaking \$91 million project called Volvo Low Impact Green Heavy Transport Solutions (LIGHTS). South Coast AQMD applied for a CARB Low Carbon Transportation grant and was awarded \$44.8 million to administer the project, with an additional \$4 million cost-share from South Coast AQMD through the Clean Fuels Program. Volvo and its partners provided the remaining \$42 million. South Coast AQMD previously worked with Volvo on a DOE-funded project to develop a prototype Class 8 plug-in hybrid electric diesel truck with significantly reduced NOx emissions. Volvo continued to refine the plug-in hybrid electric diesel truck under an earlier CARB-funded GGRF Zero Emission Drayage Truck (ZEDT) project, with Coordinated Intelligent Transportation System (C-ITS) Eco-Drive software and geofencing capabilities to enable the truck to optimize NOx reductions and drive in zero emissions mode while operating in disadvantaged/environmental justice (EJ) communities. The Volvo LIGHTS project is Volvo's first endeavor into pilot and production Class 8 battery electric trucks in North America, with the first of these trucks being demonstrated at freight handling facilities in the Inland Empire.

While the environmental benefits of electric drive vehicles are widely accepted, the cost and durability of the technology as well as installation of charging infrastructure to support these vehicles, needs to be carefully analyzed and considered. There is also a need for regulatory agencies and OEMs to collect and analyze operational data on vehicles and infrastructure to evaluate the extent to which vehicle and infrastructure technologies are meeting the operational needs of fleets.

Under the Volvo LIGHTS project, Volvo will develop 8 pilot and 15 production level Class 8 battery-electric heavy-duty trucks and demonstrate them at Dependable Highway Express (DHE) in Ontario and NFI Industries in Chino. These trucks will be utilized in real-world commercial fleet operations in



**Figure 4: Overview of Volvo LIGHTS Project**

and around EJ communities and the Ports within the Basin. In addition, the Volvo LIGHTS project will deploy 29 battery electric forklifts, yard tractors and EVs, 59 Level 2 and DC fast chargers, and 1.8 MWh of solar. The Volvo LIGHTS project is expected to result in 3.57 tons/year of weighted emission reductions in NO<sub>x</sub>, ROG, and PM, and 3,020 tons/year of GHG reductions. Over the ten-year expected lifetime of the vehicles, this equates to 35.7 tons per year of NO<sub>x</sub>, ROG, and PM emission reductions, and 30,200 tons of GHG reductions. The project partners and main components of the Volvo LIGHTS project are in Figure 4 above.

The University of California Riverside (UCR/CE-CERT) and CALSTART Inc., contracts with which will be executed in 2020, will gather and analyze data from the trucks, forklifts, yard tractors, support electric vehicles, charging infrastructure and solar to evaluate performance under specific duty-cycles. Three configurations of the trucks will be produced including rigid trucks and 60,000 to 80,000-pound tractors. Volvo will utilize data from the pilot vehicles to inform development of the production vehicles. Volvo deployed two rigid trucks and three tractors to California in December 2019 and is extensively testing these vehicles prior to deployment at DHE and NFI in 2020.



The trucks have an all-electric range of 100-150 miles, with two electric drive motors with 370 kW maximum power and a two-speed transmission. The trucks have a 6x4 axle configuration, and the battery system provides 320 kWh of usable power. The Class 8 trucks are capable of utilizing 50 kW and 150 kW DC fast charging with CCS Type 2 connectors, with the production trucks having



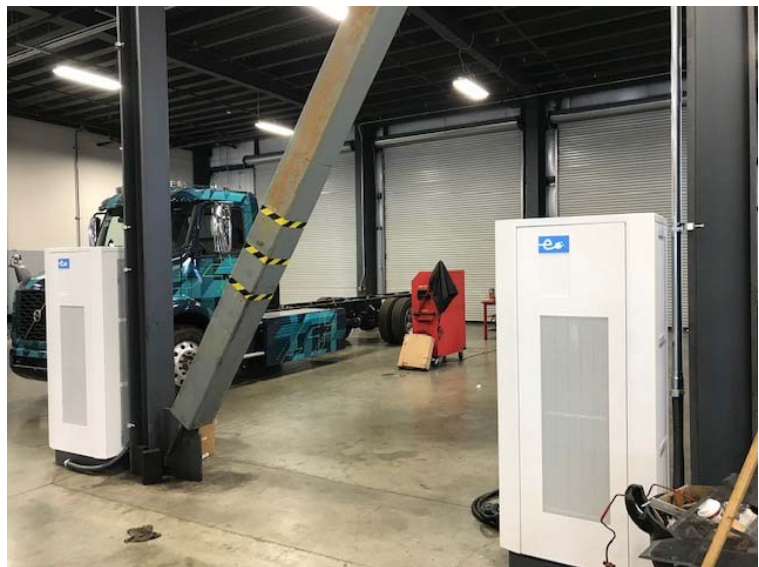
**Figure 5: Volvo LIGHTE Trucks in California**

additional AC on-board charging capability to provide flexible charging options such as overnight charging for fleets. Figure 5 shows the Volvo LIGHTE trucks undergoing testing in Southern California.

Facility upgrades will also take place at DHE and NFI fleet locations, as well as the TEC Fontana and La Mirada Volvo dealerships, to fully support the trucks. Two 50 kW DC fast chargers have already been installed at TEC

Fontana (see Figure 6 below) and installation for the 150 kW DC fast charger will be completed in February 2020. Volvo is also hosting a technology showcase in February 2020 at TEC Fontana and the Fontana Speedway with a commercial fleet ride-and-drive opportunity for funding agencies, fleets and the media to highlight the technologies on the trucks, charging infrastructure, and service and support of these trucks. Installation of charging infrastructure, solar, and facility upgrades at DHE and NFI will take place later in 2020. In anticipation of charging infrastructure, these fleets have already ordered or received battery electric forklifts, yard tractors and support EVs.

The Volvo LIGHTE project showcases an opportunity for two major fleets in the Inland Empire to utilize an entirely zero emissions freight handling drayage operation throughout the goods movement supply chain, with Class 8 battery electric trucks handling drayage operations to and from the Ports of Los Angeles and Long Beach, to staging by battery electric yard tractors and unpacking by battery electric forklifts. When cargo is repacked, it will be delivered locally or regionally using battery electric trucks. The entire life cycle of zero emissions freight handling operations will be further enhanced



**Figure 6: Two 50 kW DC Fast Chargers at TEC Fontana**

by facility upgrades, such as electrical infrastructure and energy efficiency to enable charging infrastructure, solar, energy storage, and smart charging and energy management software to minimize grid impacts and costs to fleets. DHE and NFI are full-service logistics providers handling drayage, third-party logistics, and warehousing and distribution operations. These fleets will serve as models for other fleets in how to effectively scale up electrification of their operations.

### Demonstrate Zero Emission Cargo Handling Equipment

In the last couple of years, the South Coast AQMD has provided cofunding on several zero emission cargo handling demonstration projects at the Ports of Los Angeles (POLA) and Long Beach (POLB) through its Clean Fuels Program. South Coast AQMD provided \$1 million in Clean Fuels funding for POLA's Zero Emission Freight Shore-to-Store Project (S2S), which also received \$41.1 million in funding from CARB's ZANZEFF Program for a total project cost of \$82.5 million. The S2S project includes Toyota, Kenworth and Shell which are developing and demonstrating ten Kenworth zero emission Class 8 fuel cell electric trucks and two heavy-duty hydrogen stations in Wilmington and Ontario. South Coast AQMD also provided \$500,000 in cost-share for POLB's Sustainable Terminals Accelerating Regional Transformation (START) Project, which also received \$50 million in funding from CARB's ZANZEFF Program for a total project cost of \$103 million. The START Project is developing and demonstrating 33 battery electric yard tractors, one battery electric top handler, six battery electric forklifts, 9 battery electric RTG cranes, five Class 8 battery electric yard trucks, and one electric drive tugboat at SSA Marine Terminal and Shippers Transport Express. These projects will be completed mid-2021 and should provide significant viability and performance information on battery electric and fuel cell electric technologies across multiple pieces of cargo handling equipment used by ports.

In 2019, the Clean Fuels Fund provided funding towards the "Commercialization of the Port of Long Beach Off-Road Technology" (C-PORT) Demonstration Project, which also received \$5.3 million in CARB GGRF funding for a total project cost of \$8.7 million. This is a follow-on to an earlier GGRF-



Figure 7: CPORT Project at LBCT & SSA Marine at POLB

funded project demonstrating battery electric and fuel cell electric cargo handling equipment at the Long Beach Container Terminal (LBCT) during which SSA Marine Terminal helped prove and resolve earlier issues in these technologies. The C-PORT Project will demonstrate three battery electric top handlers, one battery electric yard truck and one fuel cell yard truck to directly compare the performance of battery electric and fuel cell electric trucks in cargo handling operations. SSA Marine Terminals demonstrated two battery electric top handlers, while the LBCT demonstrated one battery electric top handler, one battery electric yard truck and one fuel cell electric yard truck in revenue service.



The C-PORT Project is POLB's first demonstration of the Taylor/BYD battery electric top handlers. Taylor and BYD collaborated on design and production of the three top handlers with duty-cycle testing and UL safety certification. The battery electric top handlers have a 931-kWh battery pack and fast



**Figure 8: Taylor/BYD Battery Electric Top Handler**

charge using 200 kW DC fast chargers, capable of operating for two 8-hour shifts. The top handlers will be demonstrated for a six-month period starting in February 2020. The project also features a Kalmar/TransPower battery electric yard truck with a 154-kWh battery pack, operating time of 6-21 hours, and a recharge time of less than 3 hours. The battery-electric yard truck also utilizes the 200 kW DC fast chargers installed for the battery electric top handlers. The Kalmar/TransPower battery electric yard truck started its demonstration in July 2019 and will continue to collect data for at least six months.

Lastly, the C-PORT project will demonstrate a China National Heavy-Duty Truck Group Company (CNHTC)/ Sinotruk fuel cell electric yard truck with a 56-kW fuel cell. The yard truck will be fueled by an Air Products HF-150 mobile hydrogen fueling platform with a capacity of 150 kg. Potential emission reductions for the five pieces of cargo handling equipment in the C-PORT Project are 0.69 tons/year of NOx, 0.159 tons/year of ROG, and 0.021 tons/year of PM10.



**Figure 9: Kalmar/TransPower Battery-Electric Yard Truck**

The C-PORT Project highlights some of the challenges underlying implementing zero emission technologies at the Ports for cargo handling operations. There is still a lack of standardization for heavy-duty charging infrastructure in terms of non-UL or Nationally Recognized Testing Laboratory (NRTL) approved chargers, connectors and cables. Although the CCS1 connector standard is the prevalent nationally recognized DC fast charging connector standard for North America,

there are chargers that are manufactured elsewhere which come with connectors that are standard in other parts of the world, such as the GB/T connector for China or the CCS2 connector used in Europe. The non-standard chargers, connectors and cables for the battery-electric top handlers and yard truck required inspection and field certification by TUV North America to confirm compliance with relevant



**Figure 10: CNHTC/LOOP Energy Fuel Cell Yard Truck**





**Figure 11: Battery-Electric Top Handler in Service**

codes and standards and local municipal permitting requirements.

There were also some initial issues with the telematics system and failure of the power steering on the Kalmar/TransPower battery electric yard truck that were later resolved. Additional coordination is required between Air Products and Sinotruk for the fuel cell yard truck to work with the hydrogen fueling infrastructure. Sinotruk is also arranging

for a certified engineering assessment on collision testing for the hydrogen tank with a U.S. company to ensure compatibility of the tank with the fueling infrastructure. Also, there were design modifications required on the fuel cell electric yard truck to ensure the fifth wheel can operate without coming in to contact with the hydrogen fuel tank behind the cab.

Demonstration of the battery-electric yard tractors and the fuel cell yard truck will start in 2020, and the project is scheduled for completion in August 2020. Results from the cargo handling equipment and infrastructure will inform development of these technologies in the S2S and START projects.

### **Continued Development of Natural Gas Engine Emissions and Efficiency Improvements**

The South Coast AQMD has been supporting rapid deployment of near-zero natural gas engines for both medium-duty and heavy-duty vehicles that have been commercialized since 2015 and supporting alternative fuel light-duty passenger vehicles since early 2000s. With nearly two decades of operational experience in the Basin, natural gas technology is well on its way towards full commercialization (achieving a Technology Readiness Level 9; see page Figure 3). However, there are ongoing concerns, such as those highlighted in the 2019 Feasibility Assessment for Drayage Trucks by Gladstein Neandross & Associates<sup>5</sup>, including the need for higher efficiency, more powerful natural gas engines.

To help advance natural gas vehicle technologies, the South Coast AQMD partnered with DOE, NREL and CEC to launch a research effort to identify ways to increase efficiencies from natural gas medium- and heavy-duty engines and vehicles. In September 2018, as part of this ongoing effort, NREL issued an RFP offering funding of approximately \$37 million for projects focusing on: (1) reducing the cost of natural gas vehicles; (2) increasing vehicle efficiency; and (3) advancing new innovative medium- and heavy-duty natural gas engine designs. Nine projects were selected for funding through this solicitation, four of which the South Coast AQMD helped cost-share with \$1.7 million from the Clean Fuels Fund because they aligned well with AQMP priorities to reduce NOx and PM emissions from transportation sources.

<sup>5</sup> [https://www.gladstein.org/gna\\_whitepapers/2018-feasibility-assessment-for-drayage-trucks/](https://www.gladstein.org/gna_whitepapers/2018-feasibility-assessment-for-drayage-trucks/)

One of those awards was to Cummins Inc., the largest U.S. manufacturer of medium- and heavy-duty natural gas engines. Cummins will address natural gas engine emissions and efficiency improvements by developing a natural gas specific Tumble Charge Motion based combustion design utilizing high tumble charge motion and cooled exhaust gas recirculation. Most heavy-duty natural gas engines, such as the Cummins ISX12N referenced as the baseline in Figure 12 below, were retrofitted from heavy-duty diesel engines rather than natural gas specific designs. The engine will be integrated on a global heavy-duty base engine platform, enabling up to 20 percent reduction in system costs. The technical targets of the project include demonstrating a ten percent improvement in cycle average and peak brake thermal efficiency over the commercially available product and maintaining 0.02 g/bhp-hr NOx capability, as shown in Figure 12 below. This project kicked off in fourth quarter 2019 and is expected to continue over a 40-month period.

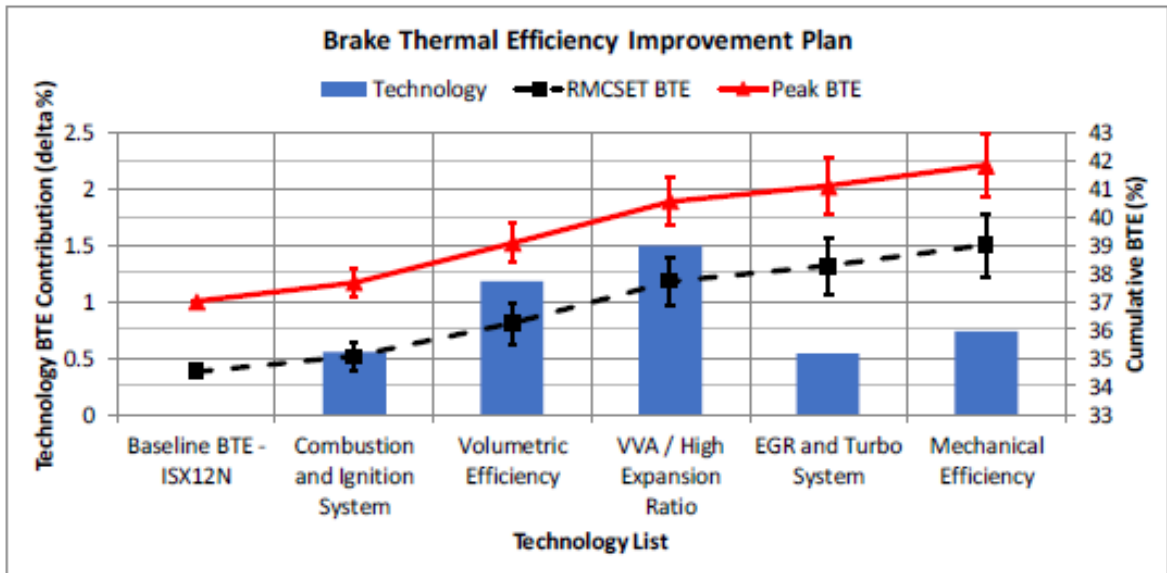
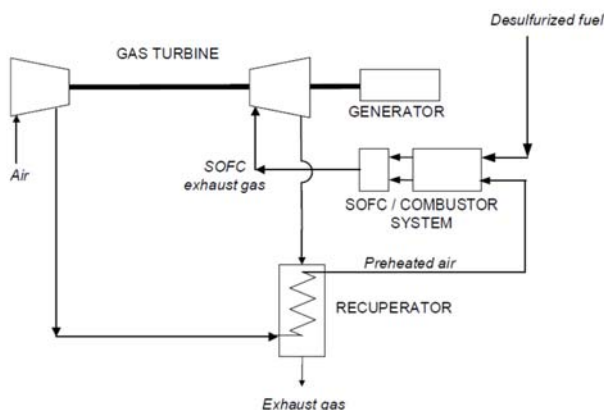


Figure 12: Projected Heavy-Duty Natural Gas Engine Efficiency Improvement Pathways

Two additional projects funded under the same solicitation will kick off in 2020, including development of CNG-electric hybrid systems for both medium- and heavy-duty applications. The future development will seek to increase the efficiency of the natural gas engines while maintaining 0.02 g/bhp-hr NOx capability. If successful, the projects will prove out that there are multiple technology pathways to reducing NOx while concurrently achieving reductions in fuel consumption and GHG emissions.

**Development of Fuel Cell-Gas Turbine Hybrid Technology**

The University of California Irvine’s Advanced Power and Energy Program (UCI’s APEP) is conducting a DOE-funded study to develop solid oxide fuel cell-gas turbine (SOFC-GT) hybrid technology. The goal of the project is to dramatically reduce the water requirement for operating on natural gas in two applications - distributed generation (~10 MW) and gasified coal and biomass central power generation (~100MW). A suitable fuel cell for these applications is the SOFC which may be fueled by natural gas, biogas or hydrogen. When the SOFC-GT system is integrated into a Brayton cycle, the hybrid technology achieves a high efficiency generation of electricity.



**Figure 13: SOFC integrated system with a gas turbine**

Operated on natural gas, the SOFC-GT hybrid has the potential for efficiencies approaching 75 percent. Due to the ultra-high efficiency of the SOFC-GT hybrid system, CO<sub>2</sub> emissions are reduced significantly. UCI is interested in leveraging the DOE-funded study to expand the scope to include natural gas, biogas, mixtures of natural gas and biogas, and eventually renewable hydrogen applications in the 1-10 MW range for potential uses in off-road vehicles.

This project will develop an integration model to fully realize the potential of hybrid SOFC-GT systems in the 1-10 MW range fueled by natural gas, biogas and renewable hydrogen.

The model will quantify thermal and environmental performances and economics of various alternate schemes. The 1-10 MW range is applicable for repowering locomotives with SOFC-GT power blocks, from switchers (~1MW) to long-haul locomotives (~5 MW). Similarly, ocean going vessels (OGVs) also fall into this power range. The potential for powering locomotives and OGVs powered by SOFC-GT technology will be addressed, along with the applications to the distributed generation market.

Smaller scale energy conversion devices, especially those at the distributed-scale, typically do not have the same level of emissions cleanup of equipment as larger sites, e.g., central-scale power plants. To avoid these emissions and their potential impact on air quality within the basin, it is important to understand how such devices need to be configured to take advantage of advanced technologies including fuel cells and renewable fuels. This research will directly



**Figure 14: SOFC-GT system application--Locomotives & OGVs**

contribute towards achieving South Coast AQMD goals, as well as achieving co-benefits to help meet GHG reduction targets in 2030 and 2050 by providing insight for the development/implementation of highly efficient and environmentally sensitive SOFC-GT energy conversion systems that complement intermittent renewable generation resources.

## Technology Deployment and Commercialization

One function of the Clean Fuels Program is to help expedite the deployment and commercialization of zero, near-zero and low emission technologies and fuels needed to meet the requirements of the AQMP control measures. In many cases, new technologies, although considered “commercially available,” require assistance to fully demonstrate the technical viability to end-users and decision-makers.

It is important to note here that South Coast AQMD’s Technology Advancement Office (TAO) administers not only the Clean Fuels Program but also the Carl Moyer Program (and other significant incentive programs, such as Proposition 1B-Goods Movement and the Community Air Protection Program). These two programs produce a unique synergy, with the Carl Moyer Program providing the necessary incentives to push market penetration and commercialization of zero and near-zero emission technologies developed and demonstrated by the Clean Fuels Program. This synergy enables the South

Coast AQMD to act as a leader in both technology development and commercialization efforts targeting reduction of criteria pollutants and GHG reduction co-benefits.

This report, however, is required to detail the accomplishments and achievements of the Clean Fuels Program. Two examples of such projects launched during CY 2019 include: (1) Battery-Electric Shuttle Bus Replacement Project; and (2) Expansion of Hydrogen Fueling Station for Cars and Buses. In January 2018, U.S. EPA notified the South Coast AQMD that two awards had been approved under a FY 17 Targeted Airshed Grant solicitation in the amount of \$3,184,875 to replace diesel and gasoline airport shuttle buses with zero emission battery-electric buses.

### **Battery-Electric Shuttle Bus Replacement Project**

Due to projected increases in airline passenger transportation and expansion of operations at various commercial airports, significant increases in emissions of ozone precursors, toxic air contaminants and GHGs were anticipated, particularly in EJ communities adjacent to the airports. In addition to aircraft emissions, indirect airport activities, such as passenger transportation to and from the airport, are one of the major emission sources with adverse impact on air quality and public health. Airport shuttle buses include buses that transport passengers to and from car parking lots and airport terminals as well as those that transport passengers to airport car rental facilities. The emissions in this source category are expected to increase significantly with the projected increase in passenger aviation activities.

The South Coast AQMD Board has directed staff to develop proposed voluntary and regulatory measures to reduce emissions from the ports, warehouses, airports, rail yards and new development. For the region's five major commercial airports, staff will develop voluntary agreements with each airport to develop its own Clean Air Action Plan (CAAP). The CAAPs will aim to reduce emissions from non-aircraft sources such as vehicles and ground service equipment.

The electrification of these airport shuttles will provide significant benefits in emission reductions and public health for the EJ communities around the airports. Also, successful demonstration of these shuttles will prove its performance and reliability and will lead to larger-scale deployment of the technology at the airports and beyond.



**Figure 15: Phoenix Motorcars ZEUS 400 Shuttle Bus**

significant cost-share and securing additional funds from CARB's Hybrid and Zero Emission Truck and Bus Voucher Incentive Project (HVIP) to cofund the shuttle bus replacement project.

This project is to replace 29 diesel and gasoline airport shuttle buses with new battery-electric shuttle buses manufactured by Phoenix Motorcars, an electric vehicle manufacturer. The new electric buses are equipped with state-of-the-art electric drivetrain technology that delivers up to 100 miles range on a single charge. Combined with dual charging capability, the buses are well suited to meet the requirements of most fleets operating on a fixed route within proximity of the airport. Phoenix Motorcars is committed to providing

The shuttle bus fleet operators, including offsite airport parking companies, airport employee shuttle service providers, hotels and rental car companies, are operating substantial numbers of buses continuously during their 24-hour operations. Electrifying these shuttle buses is an ideal starting point to the adoption of emerging technologies, as their operations are predictable over fixed routes, with

limited daily mileage eliminating range anxiety. Airport shuttle buses operate in highly congested environments and idle frequently, leading to very high fuel usage and emissions. On average, an equivalent conventional-fueled shuttle bus returns a fuel efficiency of six miles per gallon. Completely removing the emissions from the operations and by using no fuel, fleet operators can significantly improve the energy efficiency of their operations. Fleet operators will also benefit from significantly lower operational costs due to lower maintenance and fuel costs. Drivers and employees of fleet operators also directly benefit from zero emissions work environments.

The electrification of airport shuttle buses will serve as a catalyst to the adoption of zero emission electric drivetrain technologies amongst medium and heavy-duty fleets. Furthermore, the project will serve as a demonstration of the capabilities and readiness of electric shuttle buses as a commercially viable and economically beneficial alternative. In the medium to long term, the successful deployment of electric shuttle buses through this project will also serve as a model for other large airports in the U.S. to follow and significantly low exposure for disadvantaged communities typically located adjacent to airports.

### **Expansion of Hydrogen Fueling Station for Cars and Buses**

The University of California Irvine (UCI) station has been in operation since January 2003, supporting research and fuel cell vehicle development. In 2007, it became the first dual-pressure station operating in the U.S. with public access for fuel cell vehicle fueling. The station has been upgraded over the years, opening as a retail station for fueling passenger cars in November 2015 and refueling buses at night, including fleet buses for the Orange County Transit Authority (OCTA). Customer demand continues to increase beyond its design throughput capacity, resulting in an urgent need for expansion of capacity and fueling positions. Shifting to liquid hydrogen deliveries will strengthen supply chains, potentially reducing the price of dispensed hydrogen.

The UCI hydrogen station expansion project provides a unique public-private partnership opportunity to enable ongoing research on a larger capacity retail hydrogen station serving retail and transit customers. UCI will expand their hydrogen fueling station from the current capacity of 180 kilograms per day (kg/day) of delivered gaseous hydrogen to more than 800 kg/day of delivered liquid hydrogen and from one to four fueling positions, with both 350 bar and 700 bar hydrogen. On-site storage will also increase, further strengthening the hydrogen supply chain, and limiting impacts to the consumers. Delivered hydrogen is expected to be at least 33 percent renewable, in compliance with SB 1505 requirements.

In addition to serving more light-duty vehicles, buses will continue to be scheduled for fueling at night to minimize impact on light-duty customers. Expansion of the station will enable UCI to increase the number of fuel cell buses serving the campus, as well as provide support, if needed, for the increased number of fuel cell buses planned for deployment by OCTA, leading to a more robust hydrogen fueling network. This station will provide an excellent example for larger station designs needed to reduce costs while expanding throughput to reach California's goals of 200 stations by 2025, and the CaFCP Vision 2030 for 1,000 stations in California to support one million vehicles.

As stations grow, continued public research is needed to evaluate multiple aspects. Fueling protocols, dispenser design and station throughput and reliability are just some examples that can be evaluated by UCI. UCI intends to report at least three years of operating data through the National Renewable Energy Laboratory.



UCI has been and continues to be instrumental in hydrogen related research for more than two decades. The National Fuel Cell Research Center (NFCRC), located at UCI, was dedicated in 1998 by DOE and CEC to: 1) accelerate the development and deployment of fuel cell technology; 2) enable the stationary and mobile fuel cell market; 3) address market hurdles; 4) convene government agencies, businesses and academia to develop effective public-private alliances, and 5) provide leadership in the preparation of educational materials and programs to help develop the national work force in fuel cell technology. The NFCRC focuses on both mobile and stationary fuel cells, the development of a hydrogen fueling infrastructure, and the interface between stationary fuel cell technology, transportation and the emerging hydrogen economy. In fact, in November 2019, to assist the NFCRC at UCI in continuing these efforts, the South Coast AQMD established an \$625,000 endowment for the NFCRC to support graduate students studying emerging issues and the latest research related to air quality and climate change using funds in a special settlement fund.



**Figure 16: Existing Dispenser Installed November 2015**

UCI's station upgrade continues to push technology, design and cooperation to deploy increasing numbers of fuel cell cars and buses and further study issues related to co-locating hydrogen fueling for light-, medium- and heavy-duty vehicles and larger volume stations supported by increasing liquid hydrogen storage. This expansion also provides continued opportunity for students to experience the deployment of advanced technology.

## CLEAN FUELS PROGRAM

### 2019 Funding & Financial Summary

The South Coast AQMD Clean Fuels Program supports clean fuels and technologies that appear to offer the most promise in reducing emissions, promoting energy diversity, and in the long-term, providing cost-effective alternatives to current technologies. In order to address the wide variety of pollution sources in the Basin and the need for reductions now and in the future, using revenue from a \$1 motor vehicle registration fee (see Program Funding on page 5), the South Coast AQMD seeks to fund a wide variety of projects to establish a diversified technology portfolio to proliferate choices with the potential for different commercial maturity timing. Given the evolving nature of technology and changing market conditions, such a representation is only a “snapshot-in-time,” as reflected by the projects approved by the South Coast AQMD Board.

As projects are approved by the South Coast AQMD Governing Board and executed into contracts throughout the year, the finances may change to reflect updated information provided during the contract negotiation process. As such, the following represents the status of the Clean Fuels Fund as of December 31, 2019.

### Funding Commitments by Core Technologies

The South Coast AQMD continued its successful leveraging of public funds with outside investment to support the development of advanced clean air technologies. During the period from January 1 through December 31, 2019, a total of 72 contracts/agreements, projects or studies that support clean fuels were executed or amended (adding dollars), as shown in Table 2 (page 32). The major technology areas summarized are listed in order of funding priority. The distribution of funds based on technology area is shown graphically in Figure 17 (page 30). This wide array of technology support represents the South Coast AQMD’s commitment to researching, developing, demonstrating and deploying potential near-term and longer-term technology solutions.

The project commitments that were contracted or purchased for the 2019 reporting period are shown below with the total projected project costs:

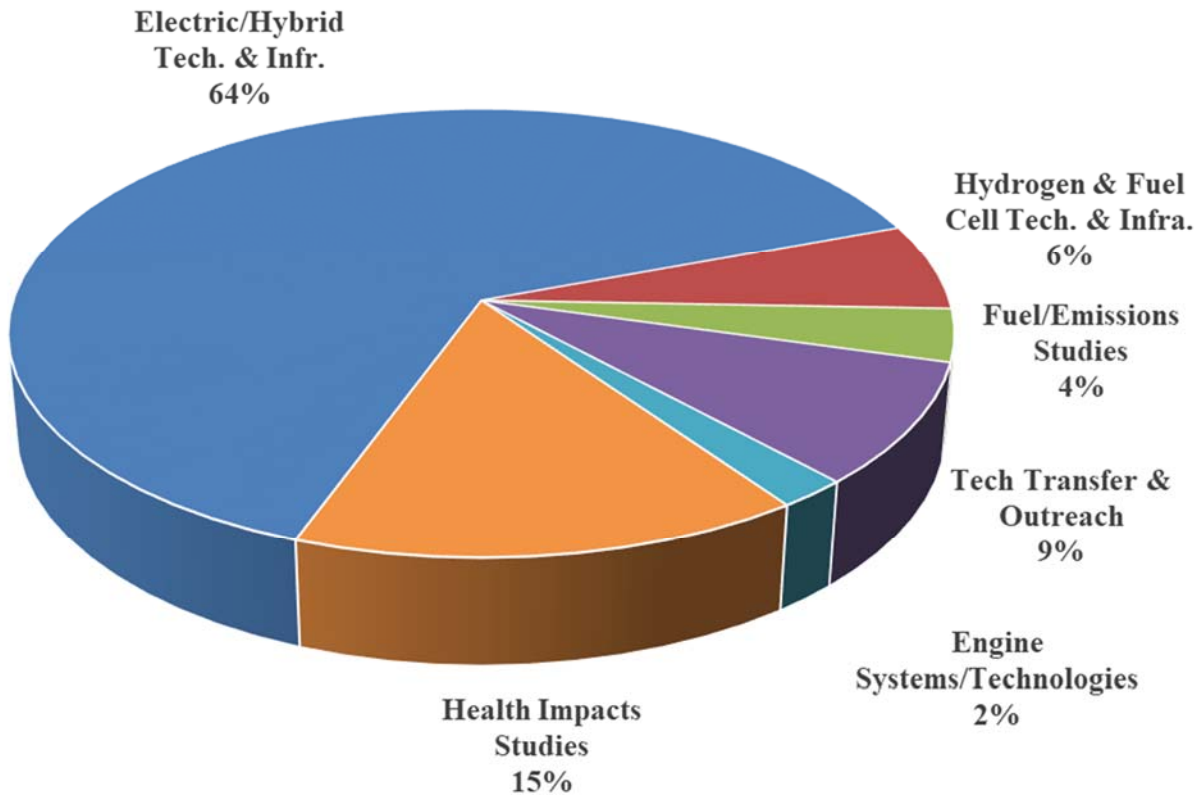
- |  |               |
|--|---------------|
| • South Coast AQMD Clean Fuels Fund Contribution | \$11,870,196  |
| • Total Cost of Clean Fuels Projects             | \$133,738,963 |

Traditionally, every year, the South Coast AQMD Governing Board approves funds to be transferred to the General Fund Budget for Clean Fuels administration. However, starting with FY 2017, the fund transfer from Clean Fuels to the General Fund was handled through the annual budget process. Thus, when the Board approved the South Coast AQMD’s FY 2019-20 Budget on May 3, 2019, it included \$1 million from Clean Fuels recognized in TAO’s budget for technical assistance, workshops, conferences, cosponsorships and outreach activities, as well as postage, supplies and miscellaneous costs; another \$285,000 is transferred from the Clean Fuels Fund to Capital Outlays for alternative fuel vehicle purchases for TAO’s Alternative Fuel Demonstration Program as well as supporting vehicle and energy infrastructure. Only the funds committed by December 31, 2019, are included within this report. Any portion of the Clean Fuels Funds not spent by the end of Fiscal Year 2019-20 ending June 30, 2020, will be returned to the Clean Fuels Fund.

Partially included within the South Coast AQMD contribution are supplemental sponsorship revenues from various organizations that support these technology advancement projects. This supplemental revenue for pass-through contracts executed in 2019 totaling \$3,122,426 is listed within Table 3 (page 34). This \$3.12 million was provided from a U.S. EPA Targeted Airshed Grant for battery-electric shuttle bus replacements.

For Clean Fuels executed and amended contracts, projects and studies in 2019, the average South Coast AQMD contribution is approximately 7 percent of the total cost of the projects, identifying that each dollar from the South Coast AQMD was leveraged with more than \$14 of outside investment. The typical historical leverage amount is \$4 for every \$1 of South Coast AQMD Clean Fuels funds, but from 2016 to 2019 there were several significant contracts, significant both in funding and in the impact that they hopefully will make in strides toward developing and commercializing clean transportation technologies.

During 2019, the distribution of funds for South Coast AQMD executed contracts, purchases and contract amendments with additional funding for the Clean Fuels Program totaling approximately \$11.9 million are shown in the figure below.



**Figure 17: Distribution of Funds for Executed Clean Fuels Projects CY 2019 (\$11.9M)**

Additionally, the South Coast AQMD continued to seek funding opportunities in the 2018-2019 timeframe and was awarded an additional \$19.9 million in CY 2019 for RD<sup>3</sup> projects. Table 4 (page 34).

As of January 1, 2020, there were 128 open Clean Fuels Fund contracts. Appendix B lists these contracts by core technology.

## Review of Audit Findings

State law requires an annual financial audit after the closing of each South Coast AQMD’s fiscal year. The financial audit is performed by an independent Certified Public Accountant selected through a competitive bid process. For the fiscal year ended June 30, 2019, the firm of BCA Watson Rice, LLP, conducted the financial audit. As a result of this financial audit, a Comprehensive Annual Financial



Report (CAFR) was issued. There were no adverse internal control weaknesses with regard to South Coast AQMD financial statements, which include the Clean Fuels Program revenue and expenditures. BCA Watson Rice, LLP, gave the South Coast AQMD an “unmodified opinion,” the highest obtainable. Notably, the South Coast AQMD has achieved this rating on all prior annual financial audits.

## **Project Funding Detail by Core Technologies**

The 72 new and continuing contracts/agreements, projects and studies that received South Coast AQMD funding in CY 2019 are summarized in Table 2 (beginning on the next page), together with the funding authorized by the South Coast AQMD and by the collaborating project partners.

**Table 2: Contracts Executed or Amended (w/\$) between Jan. 1 & Dec. 31, 2019**

<b>Contract</b>	<b>Contractor</b>	<b>Project Title</b>	<b>Start Term</b>	<b>End Term</b>	<b>SCAQMD \$</b>	<b>Project Total \$</b>
<b>Hydrogen/Mobile Fuel Cell Technologies and Infrastructure</b>						
19191	University of California Irvine	Develop Solid Oxide Fuel Cell and Gas Turbine Hybrid Technology	06/21/19	06/20/20	200,000	900,000
19248	Tustin Hyundai	Lease One 2019 Fuel Cell Hyundai Nexo for Three Years	03/07/19	03/06/22	25,193	25,193
20038	University of California Irvine	Expand Hydrogen Fueling Station for Cars and Buses	10/18/19	02/17/27	400,000	1,800,000
20088	Frontier Energy, Inc.	Participate in California Fuel Cell Partnership for Calendar Year 2019 and Provide Support for Regional Coordinator	01/01/19	12/31/19	120,000	1,300,000
<b>Engine Systems/Technologies</b>						
19439	Cummins Inc.	High Efficiency Natural Gas Medium- and Heavy-Duty Engine Development and Research	08/30/19	08/29/23	250,000	10,996,626
<b>Electric/Hybrid Technologies and Infrastructure</b>						
18397	Port of Long Beach	Demonstrate Zero Emission Cargo Handling Vehicles at Port of Long Beach	01/04/19	05/31/20	350,000	8,688,410
19166	Phoenix Cars LLC dba Phoenix Motorcars	Battery Electric Shuttle Bus Replacement Project	01/31/19	01/30/22	3,122,426	7,311,456
19278	Volvo Trucks North America	Demonstrate Zero Emission Trucks and EV Infrastructure through Volvo Low Impact Green Heavy Transport Solutions Project	04/24/19	04/23/22	4,000,000	91,246,900
19438	Puente Hills Hyundai	Lease Two 2019 Hyundai Kona Evs for Three Years	06/06/19	06/05/22	61,156	61,156
20054	Puente Hilly Hyundai	Lease One 2019 Hyundai Kona EV for Three Years	08/23/19	08/22/22	29,640	29,640
Various	Various	Disburse Donated Mercedes-Benz USA Electric Vehicle Chargers	01/10/19	04/19/22	0	0
Direct Pay	Clean Fuel Connection, Inc.	Installation of EV Charging Signage and One Station	02/01/19	08/31/19	4,440	4,440
<b>Fuel/Emissions Studies</b>						
19208	University of California Riverside/CE-CERT	Conduct Emissions Study on Use of Alternative Diesel Blends in Off-Road Heavy-Duty Engines	06/21/19	04/30/20	261,000	1,353,499

**Table 2: Contracts Executed or Amended (w/\$) between Jan. 1 & Dec. 31, 2019 (cont'd)**

<b>Contract</b>	<b>Contractor</b>	<b>Project Title</b>	<b>Start Term</b>	<b>End Term</b>	<b>SCAQMD \$</b>	<b>Project Total \$</b>
<b>Fuel/Emissions Studies (cont'd)</b>						
19208	University of California Riverside/CE-CERT	Conduct Emissions Study on Use of Alternative Diesel Blends in Off-Road Heavy-Duty Engines	06/21/19	04/30/20	261,000	1,353,499
20058	University of California Riverside	Evaluate Meteorological Factors and Trends Contributing to Recent Poor Air Quality in Basin	08/23/19	08/23/20	188,798	188,798
<b>Health Impacts Studies</b>						
Fund Transfer	Various	Conduct Fifth Multiple Air Toxics Exposure Study (MATES V)	01/01/18	06/30/20	1,815,800	5,486,810
<b>Technology Assessment and Transfer/Outreach</b>						
12376	University of California Riverside/CE-CERT	Technical Assistance with Alternative Fuels, Biofuels, Emissions Testing and Zero-Emissions Transportation Technology	06/13/14	05/31/22	150,000	150,000
12453	TechCompass	Technical Assistance with Alternative Fuels, Fuel Cells, Emissions Analysis and Aftertreatment Technologies	06/21/12	05/31/20	10,000	10,000
17358	AEE Solutions, LLC	Technical Assistance with Heavy-Duty Vehicle Emissions Testing, Analysis and Engine Development	06/09/17	05/31/21	100,000	100,000
19078	Clean Fuel Connection, Inc.	Technical Assistance with Alternative Fuels, EVs, Charging and Infrastructure, and Renewable Energy	09/07/18	09/30/21	50,000	50,000
19227	Gladstein, Neandross & Associates LLC	Technical Assistance with Alternative Fuels & Fueling Infrastructure, Emissions Analysis and On-Road Sources	02/01/19	01/31/21	200,000	200,000
19302	Hydrogen Ventures	Technical Assistance with Hydrogen Infrastructure and Related Projects	04/24/19	04/23/21	50,000	50,000
20085	CALSTART Inc.	Technical Assistance for Development and Demonstration of Infrastructure and Mobile Source Applications	11/08/19	11/07/21	150,000	150,000
Direct Pay	Prizm Imaging	Procure Outreach Equipment and Materials	08/01/18	09/24/19	1,554	1,554
Direct Pay	Various	Alternative Fuel Demonstration Vehicle Program Related Expenses	02/01/19	09/30/19	3,579	3,579
Direct Pay	Various	Cosponsor 23 Conferences, Workshops & Events plus 2 Memberships	01/01/19	12/31/19	326,610	3,650,902
						<b>\$11,870,196</b>

**Table 3: Supplemental Grants/Revenue Received into the Clean Fuels Fund (31) in CY 2019**

Revenue Agreement #	Revenue Source	Project Title	Contractor	SCAQMD Contract #	Award Total \$
#19165	U.S. EPA Airshed Grant	Battery Electric Shuttle Bus Replacement Project	Phoenix Motorcars	#19166	\$3,184,875
Table 3 lists revenue <u>awarded</u> to South Coast AQMD and received into the Clean Fuels Fund (31) <u>only</u> if the South Coast AQMD pass-through contract was executed during the reporting CY (2019).					<b>\$3,184,875</b>

**Table 4: Summary of Federal, State and Local Funding Awarded or Recognized in CY 2019**

Awarding Entity or Program	Award (*) or Board Date	Purpose	Contractors	Award Total/ Fund	
Veolia ES Technical Solutions, LLC	03/01/19	Install Air Filtration Systems at Schools (U.S. EPA Supplemental Environmental Project)	IQ Air North America	\$161,352 Fund 75	
Aliso Fund	05/03/19	Install Air Filtration Systems at Schools (Aliso Supplemental Environmental Project)	IQ Air North America	7,100,000 Fund 75	
U.S. EPA Airshed Grant	07/12/19	Develop and Demonstrate Battery-Electric Excavator and Wheel Loader	Volvo Technology of America, LLC	2,100,000 Fund 31	
U.S. EPA Airshed Grant	07/12/19	Deploy Zero Emission Electric Delivery Trucks	Daimler Trucks North America	4,177,083 Fund 31	
U.S. EPA Section 105 CATI Grant	07/12/19	Daimler Zero Emission Trucks and EV Infrastructure Project	Daimler Trucks North America	500,000 Fund 31	
World Oil Corporation	09/06/19	Install Air Filtration Systems at Schools (U.S. EPA Supplemental Environmental Project)	IQ Air North America	167,967 Fund 75	
U.S. EPA DERA Grant	09/23/19*	Market Acceleration Program: Near-Zero Natural Gas Heavy-Duty Trucks including Trade-Down	Various Fleets/Truck Owners	2,289,581 Fund 31	
SoCalGas	10/4/19	Development, Demonstration and Commercialization of Near-Zero Emissions Natural Gas Conversion Systems	A-1 Alternative Fuel Systems; Landi Renzo USD; and Agility Fuel Solutions	900,000 Fund 61	
San Pedro Bay Ports	11/1/19	Clean Shipping Technology Demonstration	MAN Energy Solutions USA	1,000,000 Fund 83	
Pacific Resource Recovery Services, Dean Foods Company and Tesoro Refining & Marketing Company	12/09/19	Install Air Filtration Systems at Schools (U.S. EPA & CARB Supplemental Environmental Projects)	IQ Air North America	316,000 Fund 75	
Navistar, CNS, J&P Cycles	12/19/19*	Install Air Filtration Systems at Schools (Navistar) and Residences (CNS, J&P) (CARB Supplemental Environmental Projects)	IQ Air North America	1,205,300 Fund 75	
Table 4 provides a comprehensive summary of revenue <u>awarded</u> to South Coast AQMD during the reporting CY (2019) for TAO's RDD&D efforts which falls under the umbrella of the Clean Fuels Program, regardless of whether the revenue will be received into the Clean Fuels Program Fund (31) or the South Coast AQMD pass-through contract has been executed.					<b>\$19,917,283</b>

## Project Summaries by Core Technologies

The following summaries describe the contracts, projects and studies executed, or amended with additional dollars, in CY 2019. They are listed in the order found in Table 2 by category and contract number. As required by H&SC Section 40448.5.1(d), the following project summaries provide the project title; contractors and, if known at the time of writing, key subcontractors or project partners; South Coast AQMD cost-share, cosponsors and their respective contributions; contract term; and a description of the project.

### *Hydrogen/Mobile Fuel Cell Technologies and Infrastructure*

#### **19191: Develop Solid Oxide Fuel Cell and Gas Turbine Hybrid Technology**

Contractor: University of California Irvine	South Coast AQMD Cost-Share	\$ 200,000
	Cosponsor	
	U.S. Dept. of Energy	700,000
Term: 06/21/19 – 06/20/20	Total Cost:	\$ 900,000

The University of California Irvine (UCI) through its Advanced Power and Energy Program is working on developing solid oxide fuel cell-gas turbine (SOFC-GT) hybrid technology. This project will develop an integration model to fully realize the potential of hybrid SOFC-GT systems in the 1-10 MW range fueled by natural gas, biogas and renewable hydrogen. The model will quantify thermal and environmental performances and economics of various alternate schemes. The 1-10 MW range is applicable for repowering locomotives with SOFC-GT power blocks, from switchers (~1MW) to long-haul locomotives (~5 MW). Similarly, ocean going vessel (OGV) power also falls into this power range. The potential for powering locomotives and OGVs with SOFC-GT technology will be addressed, along with the applications to the distributed generation market.

#### **19248: Lease One 2019 Fuel Cell Hyundai Nexa for Three Years**

Contractor: Tustin Hyundai	South Coast AQMD Cost-Share	\$ 25,193
Term: 03/07/2019 – 03/06/2022	Total Cost:	\$ 25,193

The South Coast AQMD operates several alternative fuel vehicles, including electric vehicles, fuel cell vehicles and plug-in hybrid-electric vehicles. The primary objective of having these vehicles as part of the South Coast AQMD demonstration fleet is to continue to support the use of zero emissions vehicles. The fuel cell Hyundai Nexa is the first dedicated hydrogen-powered SUV and provides the highest range of any fuel cell or electric vehicle with an EPA-estimated range of 380 miles.

#### **20038: Expand Hydrogen Fueling Station for Cars and Buses**

Contractor: University of California Irvine	South Coast AQMD Cost-Share	\$ 400,000
	Cosponsors	
	California Energy Commission	400,000
	MSRC/AB 2766 Discretionary Fund	1,000,000
Term: 10/18/19 – 02/17/27	Total Cost:	\$ 1,800,000

The University of California Irvine (UCI) will expand their hydrogen fueling station from the current capacity of 180 kilograms per day (kg/day) of delivered gaseous hydrogen to in excess of 800 kg/day of delivered liquid hydrogen and from one to four fueling positions, with both 350 bar and 700 bar hydrogen. Delivered hydrogen is expected to be at least 33 percent renewable, in compliance with SB 1505 requirements. In addition to serving more light-duty vehicles, buses will continue to be scheduled for fueling at night to minimize impact on light-duty customers. Expansion of the station will enable UCI to increase the number of fuel cell buses serving the campus, as well as provide support, if needed, for the increased number of fuel cell buses planned for deployment by the Orange County Transportation Authority, leading to a more robust hydrogen fueling network. Fueling protocols, dispenser design and station throughput and reliability are just some examples that can be evaluated by UCI. This expansion also provides continued opportunity for students to experience the deployment of advanced technology.

**20088: Participate in California Fuel Cell Partnership for Calendar Year 2019 and Provide Support for Regional Coordinator**

Contractor: Frontier Energy, Inc.	South Coast AQMD Cost-Share	\$ 120,000
	Cosponsors	
	7 automakers, 3 public agencies, 4 industry stakeholders, 32 Full & Associate Members	1,180,000
Term: 01/01/19 – 12/31/19	Total Cost:	1,300,000

In April 1999, the California Fuel Cell Partnership (CaFCP) was formed with eight members; South Coast AQMD joined and has participated since early 2000. The CaFCP and its members are demonstrating and deploying fuel cell passenger cars, transit buses, and heavy-duty trucks with associated hydrogen fueling infrastructure in California. Since the CaFCP is a voluntary collaboration, each participant contracts with Frontier Energy Inc. (previously Bevilacqua-Knight, Inc. or BKi) for their portion of the CaFCP’s administration. In 2019, South Coast AQMD contributed \$70,000 for Executive membership and \$50,000 to continue support for a Regional Coordinator.

***Engine Systems/Technologies***

**19439: High Efficiency Natural Gas Medium- and Heavy-Duty Engine Development and Research**

Contractor: Cummins Inc.	South Coast AQMD Cost-Share	\$ 250,000
	Cosponsors	
	U.S. Dept. of Energy	3,183,773
	California Energy Commission	566,227
	Cummins Inc.	6,996,626
Term: 08/30/19 – 08/29/23	Total Cost:	\$ 10,996,626

The DOE, National Renewable Energy Laboratory (NREL), CEC and South Coast AQMD partnered to launch a research effort to increase efficiency of natural gas engines for medium- and heavy-duty engines and vehicles as part of a \$37 million solicitation. This project is one of four projects that aligned well with South Coast AQMD priorities. Cummins Inc. will address natural gas engine emissions and efficiency improvements by developing a new natural gas specific combustion design utilizing high tumble charge motion and cooled exhaust gas recirculation (EGR). The engine will be integrated on a

global heavy-duty base engine platform in the 12- to 15-liter displacement range, enabling up to 20 percent reduction in system costs. The technical targets of the project include demonstrating a 10 percent improvement in cycle average and peak brake thermal efficiency over the commercially available product and maintaining 0.02 g/bhp-hr NOx capability with reduced aftertreatment cost. This project was kicked off in fourth quarter 2019 and expected to continue over a 40-month period.

### ***Electric/Hybrid Technologies and Infrastructure***

#### **18397: Demonstrate Zero Emission Cargo Handling Vehicles at Port of Long Beach**

Contractor: Port of Long Beach	South Coast AQMD Cost-Share	\$ 350,000
	Cosponsors	
	California Air Resources Board	6,066,000
	Port of Long Beach	1,184,530
	Long Beach Container Terminal	642,321
	SSA Marine Terminal	445,559
Term: 01/04/19 – 5/31/20	Total Cost:	\$ 8,688,410

The Commercialization of the Port of Long Beach Off-Road Technology (C-PORT) Demonstration Project is an early recipient of a CARB Greenhouse Gas Reduction Fund (GGRF) project that demonstrates battery-electric and fuel cell electric cargo handling equipment. This includes a six-month demonstration of two Taylor/BYD battery-electric yard tractors at SSA Marine Terminal, one Taylor/BYD battery-electric yard tractor, one Kalmar/TransPower battery-electric yard truck and one China National Heavy-Duty Truck Group Company (CNHTC)/Sinotruk fuel cell electric yard truck at Long Beach Container Terminal. Demonstration of the battery electric yard truck started in July 2019 and demonstration of the battery electric top handlers and fuel cell electric yard truck will start in February 2020, with the project scheduled for completion in August 2020. Results from the cargo handling equipment and infrastructure will inform future development of these technologies at the San Pedro Bay Ports.

#### **19166: Battery Electric Shuttle Bus Replacement Project**

Contractor: Phoenix Cars LLC dba Phoenix Motorcars	South Coast AQMD Cost-Share <i>(received as pass-through funds)</i>	\$ 3,122,426
	Cosponsors	
	Phoenix Motorcars/CARB HVIP	4,189,030
Term: 01/31/19 – 01/30/22	Total Cost:	\$ 7,311,456

In January 2018, U.S. EPA notified the South Coast AQMD that two awards had been approved under a FY 2017 Targeted Airshed Grant solicitation to replace diesel and gasoline airport shuttle buses with zero emissions battery electric buses. This project is to replace 29 diesel and gasoline airport shuttle buses with new battery electric buses manufactured by Phoenix Motorcars. The new electric buses are equipped with state-of-the-art electric drivetrain technology that delivers up to 100 miles range on a single charge. Combined with dual charging capability, the buses are well suited to meet the requirements of most fleets operating on a fixed route within proximity of the airport. Phoenix Motorcars, an electric vehicle manufacturer, is committing significant cost-share and securing additional funds from CARB's Hybrid and Zero Emission Truck and Bus Voucher Incentive Project (HVIP) to cofund the shuttle bus replacement project. This contract includes pass-through funds

totaling \$3,122,426 in FY 2017 U.S. EPA Airshed Grant revenues. Administrative funds totaling \$62,449 to implement the project were also included in the Airshed Grant for a total award of \$3,184,875 (see Table 3).

**19278: Demonstrate Zero Emission Trucks and EV Infrastructure through Volvo Low Impact Green Heavy Transport Solutions Project**

Contractor: Volvo Trucks North America	South Coast AQMD Cost-Share	\$ 4,000,000
	Cosponsors	
	California Air Resources Board	41,591,592
	Volvo Trucks North America	45,655,308
Term: 04/24/19 – 04/23/22	Total Cost:	\$ 91,246,900

Volvo Trucks North America and South Coast AQMD secured a CARB Zero and Near-Zero Emission Freight Facilities (ZANZEFF) grant for the Volvo Low Impact Green Heavy Transport Solutions (LIGHTS) project to demonstrate 8 pilot and 15 production Class 8 battery-electric trucks at Dependable Highway Express (DHE) in Ontario and NFI Industries in Chino, two freight handling facilities in San Bernardino County. The Volvo LIGHTS project also includes the demonstration of 29 battery electric forklifts, yard tractors and support EVs; 59 Level 2 and DC fast chargers; and production of 1.8 million MWh annually of solar. Five pilot vehicles were delivered to California in 2019 and will be driven 10,000 miles on local roads prior to being deployed at DHE and NFI in spring 2020. Volvo will be deploying their production vehicles later in 2020 and is applying for the Zero Emission Powertrain certification to allow these vehicles to become commercially available in California. For this project, pass-through funding from CARB totaling \$41,591,592 was received into a special revenue fund, the GHG Reduction Projects Special Revenue Fund (67), while the South Coast AQMD provided \$4,000,000 in cost-share from the Clean Fuels Fund (31).

**19438: Lease Two 2019 Hyundai Kona EVs for Three Years**

Contractor: Puente Hills Hyundai	South Coast AQMD Cost-Share	\$ 61,156
Term: 06/06/2019 – 06/05/2022	Total Cost:	\$ 61,156

The South Coast AQMD operates several alternative fuel vehicles, including electric vehicles, fuel cell vehicles and plug-in hybrid-electric vehicles. The primary objective of having these vehicles as part of the South Coast AQMD demonstration fleet is to continue to support the use of zero emissions vehicles. The Hyundai Kona EV is the first all-electric subcompact SUV with EPA-estimated range of 258 miles.

**20054: Lease One 2019 Hyundai Kona EV for Three Years**

Contractor: Puente Hills Hyundai	South Coast AQMD Cost-Share	\$ 29,640
Term: 08/23/2019 – 08/22/2022	Total Cost:	\$ 29,640

The South Coast AQMD operates several alternative fuel vehicles, including electric vehicles, fuel cell vehicles and plug-in hybrid-electric vehicles. The primary objective of having these vehicles as part of the South Coast AQMD demonstration fleet is to continue to support the use of zero emissions vehicles. The Hyundai Kona EV is the first all-electric subcompact SUV with U.S. EPA-estimated range of 258 miles.



**Various: Disburse Donated Mercedes-Benz USA Electric Vehicle Chargers**

Contractor: Various	South Coast AQMD Cost-Share	\$ 0
	Cosponsor	
	Mercedes-Benz USA, LLC	0
Term: 01/10/19 – 04/19/22	Total Cost:	\$ 0

In October 2018, the South Coast AQMD accepted a donation of 977 Level 2 EV chargers offered by Mercedes-Benz USA LLC. South Coast AQMD identified residents and sites in disadvantaged communities to receive the chargers. This included rebate recipients from South Coast AQMD's Replace Your Ride Program (a scrap and trade program for low-income residents) who opted to purchase battery electric or plug-in electric vehicles to replace their older vehicle. Staff also worked with multiple utilities and local governments, including Los Angeles County and the Southern California Public Power Authority (SCPPA), to identify recipients of the donated EV chargers. In CY 2019, the South Coast AQMD executed agreements with Mercedes-Benz USA to accept the donated EV chargers, with both Los Angeles County and SCPPA to facilitate the donations, and with 21 individual residents in the Basin who were awarded one of the donated EV chargers. All of these were no-cost agreements.

**Direct Pay: Installation of EV Charging Signage and One Station**

Contractor: Clean Fuel Connection, Inc.	South Coast AQMD Cost-Share	\$ 4,440
Term: 02/01/19 – 08/31/19	Total Cost:	\$ 4,440

Beginning in late 2015, the South Coast AQMD undertook an expansion and upgrade of the EV charging infrastructure at its headquarters in Diamond Bar. The Diamond Bar facility had 28 Level 2 chargers and 1 DC fast charger. After the expansion, the facility had 92 Level 2 charges and 1 DC fast charger for use by staff, visitors and the public as well as equipment for cost recovery and demand response capabilities. In CY 2019, staff secured Clean Fuel Connection, Inc., to install 47 directional and wayfinding EV charging signs and 10 towing signs for South Coast AQMD headquarters' EV charging network. These signs will assist EV drivers in locating the chargers, and towing signs will enable these chargers to be available to EV drivers in need of charging on a timely basis. In addition, one EV charging station was installed at Board Member Delgado's residence to support the EV assigned to her for demonstration of early commercial, long range battery electric vehicles.

***Fuel/Emissions Studies*****19208: Conduct Emissions Study on Use of Alternative Diesel Blends in Off-Road Heavy-Duty Engines**

Contractor: University of California Riverside/CE-CERT	South Coast AQMD Cost-Share	\$ 261,000
	Cosponsors	
	California Air Resources Board	932,499
	U.S. Environmental Protection Agency	150,000
	San Joaquin Valley APCD	10,000
Term: 06/21/19 – 04/30/20	Total Cost:	\$ 1,353,499

The South Coast AQMD regularly participates in emissions research projects with CARB. The emergence of renewable diesel and biofuels has raised the need to better understand emissions and performance effects relative to current ultra-low sulfur diesel. This study, a collaboration with CARB and the U.S. EPA, will conduct detailed emissions testing on various renewable diesel blends and biodiesel blends on heavy-duty off-road engines. The results of this study will help promote fuel standards for various blended fuels.

**20058: Evaluate Meteorological Factors and Trends Contributing to Recent Poor Air Quality in Basin**

Contractor: University of California Riverside	South Coast AQMD Cost-Share	\$ 188,798
Term: 08/23/19 – 08/23/2020	Total Cost:	\$ 188,798

The South Coast Air Basin (Basin) has achieved tremendous emission reductions in ozone and particulate matter (PM), particularly for fine PM or PM<sub>2.5</sub>, over the last five decades, but the region has recently experienced a leveling from the reductions and even an uptick in ozone in 2016 and 2017. The immediate question is why? Related to this is how much is related to meteorological trends versus a response to emission changes from mobile and stationary sources. The study will employ long-term records of air quality information, emissions information and detailed meteorological information (from observations and models) to separate the contribution of meteorology and climate from the effects of emission changes due to cleaner technologies and emission regulations. The study will also use satellite-derived data on trace species loadings (e.g., NO<sub>2</sub>, formaldehyde and ozone) in conjunction with modeling techniques, which include more traditional chemical transport modeling and meteorological detrending approaches, as well as “big-data” (e.g., machine learning) approaches. While there are uncertainties in the use of any one of these techniques to answering why ozone may have increased in the past couple of years, together, they should provide a much more robust understanding of the likely causes.

***Health Impacts Studies***

**Fund Transfer: Conduct Fifth Multiple Air Toxics Exposure Study (MATES V)**

Contractor: Various	South Coast AQMD Cost-Share	\$ 1,815,800
	Cosponsor	
	Rule 1118 Mitigation Fund (54)	3,671,010
Term: 01/01/18 – 06/30/20	Total Cost:	\$ 5,486,810

Since 1987, the South Coast AQMD has conducted four Multiple Air Toxics Exposure Studies (MATES) to evaluate air toxics health risks in the Basin. MATES V launched January 2018 to monitor air toxics for a one-year period, conduct air toxics modeling and quantify the health impacts. MATES V will include local-scale studies in areas near oil refineries to assess the air toxics exposures and associated health risks in these communities. The MATES V effort included a suite of advanced air monitoring techniques, including aerial and mobile measurements of air toxics. These efforts will generate detailed air toxics maps, near real-time data on emissions and better assessment of community air toxics exposure, especially in environmental justice communities. Mitigation fees collected for exceeding rule limitations of flaring operations at refineries are deposited into the 1118 Mitigation Fund (54), and those mitigation fees are used to develop air quality improvement projects. The Clean Fuels and Rule 1118 monies are being used for staffing, technical support and equipment purchases to carry out MATES V.

### ***Technology Assessment and Transfer/Outreach***

#### **12376: Technical Assistance with Alternative Fuels, Biofuels, Emissions Testing and Zero Emission Transportation Technologies**

Contractor: University of California Riverside/CE-CERT	South Coast AQMD Cost-Share	\$ 150,000
Term: 06/13/14 – 05/31/22	Total Cost:	\$ 150,000

South Coast AQMD seeks to implement aggressive programs to develop and demonstrate pre-commercial technologies for zero and near-zero emission vehicles and equipment, alternative fuels and renewable energy sources. Due to constant and rapid changes in technologies and the sheer breadth of potential projects, South Coast AQMD supplements in-house technical resources with outside expertise and assistance to evaluate and implement these demonstration projects. The University of California Riverside's (UCR) College of Engineering/Center for Environmental Research and Technology (CE-CERT) is a research center at UCR dedicated to research on air quality and energy efficiency with approximately 120 investigators including 30 Ph.D. level researchers. CE-CERT will provide technical expertise to evaluate a broad range of emerging technologies in alternative and/or renewable fuels and vehicles as well as to conduct air pollution formation and control studies.

#### **12453: Technical Assistance with Alternative Fuels, Fuel Cells, Emissions Analysis and Aftertreatment Technologies**

Contractor: TechCompass	South Coast AQMD Cost-Share	\$ 10,000
Term: 06/21/12 – 05/31/20	Total Cost:	\$ 10,000

The AQMP for the Basin identifies the application of clean burning alternative fuels (e.g., natural gas, ethanol, and hydrogen), advanced vehicle technologies (e.g., fuel cells, hybrid electric and plug-in hybrid electric vehicles) and advanced stationary source pollution control technologies to meet the national ambient air quality standards. These air quality gains, however, may only be realized if programs are in place to develop, commercialize, and implement these technologies. As a result, South Coast AQMD seeks to implement aggressive programs to develop and demonstrate pre-commercial technologies. This contract is being used to leverage staff resources with specialized outside expertise. TechCompass has over 30 years of professional experience in bringing environmental, energy and alternative propulsion technologies from the laboratory to the market. This contract was originally executed in 2012 in the amount of \$75,000 and was amended in 2019 to add \$10,000 to continue utilizing Tech Compass' services.

#### **17358: Technical Assistance with Heavy-Duty Vehicle Emissions Testing, Analysis and Engine Development**

Contractor: AEE Solutions, LLC	South Coast AQMD Cost-Share	\$ 100,000
Term: 06/09/17 – 05/31/21	Total Cost:	\$ 100,000

Under this contract, AEE Solutions, LLC, provides technical assistance for an in-use emissions study being conducted by West Virginia University and the University of California Riverside using Clean Fuels funds. Specifically, AEE Solutions assists in the: 1) development of test vehicle selection, activity and emissions protocols, 2) recruitment of 200 heavy-duty test vehicles, 3) preparation of a technology assessment plan to identify the impact of current and near-future technology on engine performance, emissions and fuel usage, 4) identification of engine and aftertreatment issues and how to mitigate them, and 5) matching of vehicle technologies to vocations for which technology benefits can be

maximized. This level-of-effort contract was initially executed in June 2017, then amended in late 2017 for a total contract value of \$100,000. Given the volume of work needed, an amendment was executed in CY 2019 adding an additional \$100,000.

**19078: Technical Assistance with Alternative Fuels, EVs, Charging and Infrastructure, and Renewable Energy**

Contractor: Clean Fuel Connection, Inc.	South Coast AQMD Cost-Share	\$ 50,000
Term: 09/07/18 – 09/30/21	Total Cost:	\$ 50,000

The South Coast AQMD relies on expert input, consultation and support to manage various efforts conducted under the Clean Fuels Program and TAO's many incentive programs. Clean Fuel Connection, Inc., (CFCI) is providing technical assistance with alternative fuels, renewable energy and electric vehicles as well as outreach activities to promote, assess, expedite and deploy the development and demonstration of advanced, low and zero emissions mobile and stationary technologies. This contract is for technical and administrative support to enable the range of activities involved in implementing the Clean Fuels Program and associated complementary programs, as needed. In CY 2019, additional funds for this contract were allocated to fund administrative support of various incentive and rebate programs including the Lawn Mower Rebate Program, the Commercial Electric Lawn and Garden Incentive and Rebate Program, and the Replace Your Ride Program to assist potential applicants in submitting applications.

**19227: Technical Assistance with Alternative Fuels & Fueling Infrastructure, Emissions Analysis and On-Road Sources**

Contractor: Gladstein, Neandross & Associates LLC	South Coast AQMD Cost-Share	\$ 200,000
Term: 02/01/19 – 01/31/21	Total Cost:	\$ 200,000

This contract leverages staff resources with specialized outside expertise. Gladstein, Neandross & Associates LLC (GNA) has previously assisted South Coast AQMD with implementing a wide-array of incentive programs to deploy lower-emitting heavy-duty vehicles and advanced transportation technologies. Under this contract, GNA will provide technical expertise across a broad spectrum of emission reduction technologies, including alternative and renewable fuels and fueling infrastructure, emissions analysis and heavy-duty on-road sources on an-as-needed basis.

**19302: Technical Assistance with Hydrogen Infrastructure and Related Projects**

Contractor: Hydrogen Ventures	South Coast AQMD Cost-Share	\$ 50,000
Term: 04/24/19 – 4/23/21	Total Cost:	\$ 50,000

To promote, assess, expedite and deploy the development and demonstration of advanced, zero and near-zero emissions mobile and stationary technologies, South Coast AQMD relies on expert input and consultation. Hydrogen Ventures provides nearly 35 years of experience in the fields of combustion generated pollutants and their control, advanced energy technologies (including hydrogen and fuel cells) and alternative fuels, combustion modifications, secondary combustion processes and backend control focused on boilers, thermal treatment units and stationary engines. Hydrogen Venture has established relationships with numerous equipment manufacturers in the fuel cell and fuel processing industries and has worked with South Coast AQMD, CARB, CEC, DOE and U.S. EPA. Under this

contract, Hydrogen Ventures provides technical assistance and expert consultation for alternative fuels, emissions analysis and combustion technologies.

**20085: Technical Assistance for Development and Demonstration of Infrastructure and Mobile Source Applications**

Contractor: CALSTART Inc.	South Coast AQMD Cost-Share	\$ 150,000
Term: 11/08/19 – 11/07/21	Total Cost:	\$ 150,000

The AQMP for the Basin identifies the application of clean burning alternative fuels (e.g., natural gas, ethanol and hydrogen), advanced vehicle technologies (e.g., fuel cells, hybrid electric and plug-in hybrid electric vehicles) and advanced stationary source pollution control technologies to meet the national ambient air quality standards. These air quality gains, however, may only be realized if programs are in place to develop, commercialize and implement these technologies. As a result, South Coast AQMD seeks to implement aggressive programs to develop and demonstrate pre-commercial technologies. This contract is being used to leverage staff resources with specialized outside expertise. CALSTART Inc. is the nation's leading clean transportation industry nonprofit that successfully spurs the commercialization of advanced transportation technologies, fuels, systems and the companies that make them. CALSTART Inc. manages a wide range of national clean transportation and grant programs in close partnership with several federal, state and regional agencies that address national and international issues related to creating the next generation of jobs and reducing emissions from transportation. The Federal Transit Administration, Caltrans and CEC were CALSTART's first partners funding consortia projects over 25 years ago, which were focused on developing and demonstrating advanced transit, infrastructure and electric drive technologies that today are entering the mainstream. CALSTART has been working as an effective catalyst for the global advanced transportation technology industry for over a decade and continues to gain momentum as a unique and increasingly important "meeting point" between key public and private sector stakeholders in the industry.

**Direct Pay: Procure Outreach Equipment and Materials**

Contractor: Prizm Imaging	South Coast AQMD Cost-Share	\$ 1,554
Term: 08/01/18 – 09/24/19	Total Cost:	\$ 1,554

South Coast AQMD's Technology Advancement Office offers funding for research, development, demonstration and deployment of transformative transportation technologies, incentive funding to accelerate fleet turnover of both on- and off-road transportation, and rebates for residential electric lawn mowers and home EV charging, among other programs. Technology assessment and outreach efforts are a small but essential part of any effective program. It is important to inform potential stakeholders and educate the public about South Coast AQMD's technology advancement efforts toward reducing pollutants and ensuring public health. Throughout the year, the South Coast AQMD participates in dozens of conferences, symposiums, workshops and events ranging in topic from technology-focused subjects to general clean air or environmental issues. Large backdrops and smaller retractable pullups are helpful in conveying information in quick bites and drawing the attention of attendees. In 2018 and 2019, the Technology Advancement Office designed images promoting various technology programs and procured one ten-foot fabric popup display and three 6-foot pullups to display these images at various events.

**Direct Pay: Alternative Fuel Demonstration Vehicle Program Related Expenses**

Contractor: Various	South Coast AQMD Cost-Share	\$ 3,579
Term: 02/01/19 – 09/30/19	Total Cost:	\$ 3,579

The South Coast AQMD alternative fuel vehicle demonstration program showcases new clean-fuel vehicles to public and private organizations so that potential purchasers may familiarize themselves with available low-emission technologies and to push the development of even cleaner vehicle technologies. This direct pay covers cost of service for two PHEV Via Vans and the disposition cost of one Toyota Mirai FCV vehicle.

**Various: Cosponsor 23 Conferences, Workshops and Events plus 2 Memberships**

Contractor: Various	South Coast AQMD Cost-Share	\$ 326,610
	Cosponsors	
	Various	3,324,292
Term: 01/01/19 – 12/31/19	Total Cost:	\$ 3,650,902

The South Coast AQMD regularly participates in and hosts or cosponsors conferences, workshops and miscellaneous events. In CY 2019, South Coast AQMD provided funding for 23 conferences, workshops and events and 2 memberships in key stakeholder organizations, as follows: Clean Fuels Advisory Group Retreat in January 2019; Rethink Methane in February 2019; PEMS Conference and Workshop in March 2019; ICEPAG-Microgrid Global Summit in March 2019; ACT Expo in April 2019; Asilomar Conference on Transportation & Energy in July 2019; the 29th Real World Emissions Workshop in March 2019; Clean Transportation Summit, California: 2030 in March 2019; Hydrogen and Fuel Cells for Freight Workshop in April 2019; Women in Green Forum in August 2019; Advanced Transportation Symposium & Expo-Driving Mobility 6 in June 2019; California Fuel Cell Partnership 20th Anniversary Event in October 2019; RadLaunch Program for 2019-2020; SoCal Work Truck Show in October 2019; Los Angeles National Drive Electric Week 2019 “Charge Up LA” Event in September 2019; AltCar Expo & Conference in October 2019 in Riverside and November 2019 in Santa Monica; the 30th Real World Emissions Workshop in March 2020; CalETC Los Angeles Auto Show Events in November 2019; Renewable Gas 360 Symposium in January 2020; Special Awards at the California Science Fair in April 2019; Ports Workshop @ POLA in October 2018; Hydrogen and Fuel Cell Summit in December 2018; and California Dairy Sustainability Summit in November 2018. Additionally, for 2019, two memberships were renewed for participation in the California Hydrogen Business Council, a member-based association representing a wide array of organizations that acts as a leading advocate for the hydrogen and fuel cell industry, and Veloz, a nonprofit organization comprised of high-powered, diverse board members uniquely qualified to accelerate the shift to electric vehicles through public-private collaboration, public engagement and policy education innovation.

# CLEAN FUELS PROGRAM

## Progress and Results in 2019

### Key Projects Completed

Given the large number and diversity of emission sources contributing to the air quality problems in the Basin, there is no single technology or “silver bullet” that can solve all the region’s problems. Only a portfolio of different technologies can successfully achieve the required emission reductions needed to meet the upcoming 2023 and 2032 air quality standards as well as the state’s 2050 climate goals. Therefore, the South Coast AQMD continues to support a wide range of advanced technologies, addressing not only the diversity of emission sources, but also the time frame to commercialization of these technologies. Projects cofunded by the South Coast AQMD’s Clean Fuels Program include emission reduction demonstrations for both mobile and stationary sources, although legislative requirements limit the use of available Clean Fuels funds primarily to on-road mobile sources. The projects funded not only expedite the development, demonstration and commercialization of zero and near-zero emission technologies and fuels, but also demonstrate the technical viability to technology providers, end-users and policymakers.

In the early years, the mobile source projects funded by the Clean Fuels Program targeted low emissions technology developments in automobiles, transit buses, medium- and heavy-duty trucks and off-road applications. Over the last several years, the focus has shifted to near-zero and zero emission technologies for medium- and heavy-duty trucks, especially those in the goods movement and freight handling industry.

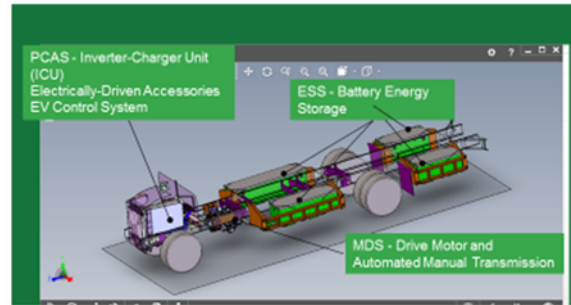
Table 6 (page 52) provides a list of 32 projects and contracts completed in 2019. Summaries of the completed technical projects are included in Appendix C. Selected projects completed in 2019 which represent a range of key technologies from near-term to long-term are highlighted below: (a) Develop and Demonstrate Vehicle-to-Grid Technology on School Buses; (b) Develop and Evaluate Low NOx Diesel Engine Aftertreatment Technologies for Heavy-Duty Diesel Engines; (c) Developing and Demonstrating Renewable Fuels; and (d) Study of Real-World Electrification Options for Environmental Justice Communities.

#### **Develop and Demonstrate Vehicle-to-Grid Technology on School Buses**

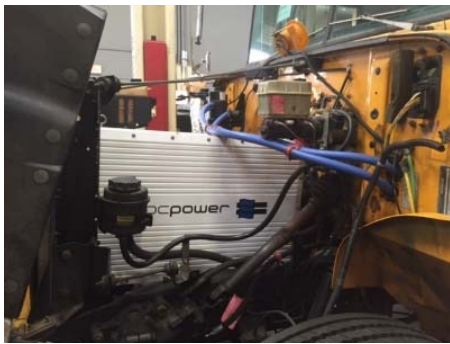
This project was the first to demonstrate vehicle-to-grid (V2G) functionality in electric school buses. It was a follow-on to a project the South Coast AQMD had previously funded to convert diesel school buses to electric. In 2014, the South Coast AQMD and CEC awarded funding to National Strategies, LLC, a technology developer. National Strategies also provided significant matching funds toward this \$3.4 million project. The V2G school bus project also included vehicle-to-building (V2B) components. The project was to retrofit and demonstrate six diesel-powered Type C school buses with electric drive and power export systems.

The V2G school bus technology is a battery-electric drive system that uses low-cost yet powerful electric motors and lithium iron phosphate batteries, along with advanced controls. The V2G school bus platform is a variant of drive system originally developed by Transportation Power Inc. (TransPower) for yard tractors that haul heavy containers at low speeds, with a gross combined vehicle weight rating exceeding 80,000 pounds. The TransPower “ElecTruck™” drive system was adapted for medium-duty Type C school buses in a retrofit conversion. Two buses were deployed at the Torrance Unified School District (TUSD) and four at the Napa Valley Unified School District (NVUSD). The South Coast AQMD’s funding was specifically directed to the deployment and demonstration of the two school buses at TUSD.

The V2G school bus technology is based substantially on (1) low-cost components; (2) advanced battery management technology to maximize battery safety and operating life; (3) onboard chargers that minimize external infrastructure requirements and expenses; (4) automated-manual transmission technology which improves operating efficiency, thereby increasing range and reducing operating cost per mile; and (5) models-based controls that can be easily adapted to new components as they emerge or to other vehicles.



**Figure 18: Chassis Layout of EV Components**



**Figure 19: Power Control & Accessory Subsystem after Installation into Bus**

The project was very successful. First, the technology met the national average range requirements of the student transportation industry, which is approximately 80 miles per day. Second, the project was able to pass all CHP requirements for school bus safety. Third, a charging infrastructure was installed which allows V2G operations and a successful interconnection agreement with the local utility was completed. Finally, and most importantly, the project delineated a clear path for EV school buses to achieve zero emission student transportation.

The V2G element of the project demonstrated that the school buses could serve as energy storage and supply peak time energy “behind the meter” of school districts and generate revenues during the long stretches of bus downtime. The energy revenue stream brings the economics of EV bus ownership within reach of school districts at a time when EV bus production costs are relatively high. The V2G electric school bus also provides frequency regulation to the grid and maintains the correct frequency throughout the grid to ensure there are no power surges and restrains the grid frequency from getting too high or too low and helps maintain it at 60HZ.

There were a few difficulties in the project, including the decision to retrofit existing 20-year-old school buses and the reluctance of the original equipment manufacturer (OEM) to provide robust support to the effort. While the age of the buses and the process of retrofitting the buses were not the only challenges, they did create significant delays and intensify reliability issues. In addition, there were significant delays on the interconnection agreement with SCE simply because this was the first project of its kind. This further delayed the project due to California Public Utility Commission rule interpretations. Ultimately, the team and SCE worked together to eventually achieve an interconnection agreement that did result in energy savings for TUSD. In conclusion, however, while the retrofit model cannot be recommended based on this project, it still resulted in value lessons learned toward technical feasibility.

From a commercialization and application perspective, this project was very successful. Prior to this project, there was not a single EV school bus in operation within California. Further, there were no school bus OEMs providing EV school buses in the market. As this project moved forward and early results were positive, the EV school bus market changed. In 2017, Blue Bird Corporation was awarded \$1.9 million from the South Coast AQMD and \$4.9 million from U.S. DOE to further develop components and systems for the commercialization and deployment of electric school buses. In fact, all three major school bus OEMs and a few smaller ones as well announced plans to produce EV school buses, most with some form of V2G technology. By the project conclusion, there were approximately 75 EV school buses operating in the state with a significant number on order with OEMs.



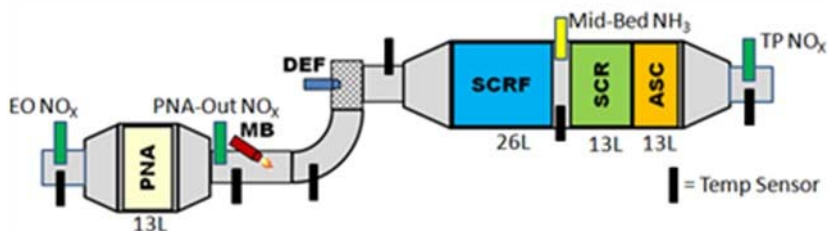
Finally, this project led to the realization that V2G technology is not a theory but a reality and resulted in the first commercially available U.S.-manufactured V2G electric school bus in all 50 states.

### Develop and Evaluate Low NO<sub>x</sub> Diesel Engine Aftertreatment Technologies for Heavy-Duty Diesel Engines

A key measure in CARB's Mobile Source Strategy is the establishment of low NO<sub>x</sub> engine emission standards that result in a 90 percent reduction in NO<sub>x</sub> emissions compared to the emissions of today's diesel engines. This measure is critical for attaining federal health-based air quality standards for ozone in 2031 in the South Coast and San Joaquin Valley air basins, and fine PM<sub>2.5</sub> standards in the next decade.<sup>6</sup>

CARB, in conjunction with Southwest Research Institute (SwRI), developed a three-stage project exploring the feasibility of technologies to achieve target tailpipe NO<sub>x</sub> levels of 0.02 g/bhp-hr from larger displacement diesel engines suitable for long-haul operations. Stage one was development and evaluation of the aftertreatment systems. The first step involved modeling and selecting the aftertreatment system. The down selected system was subsequently aged in an accelerated fashion to simulate full useful life degradation. This process simulated performance of the system at the end of useful life. However, during the aging process, an unexpected failure occurred which disturbed the experiment, resulting in the exposure of the aftertreatment system to unrepresentative conditions. CARB requested the South Coast AQMD's assistance in a joint effort to restart stage 1.

SwRI, with cofunding from the South Coast AQMD and U.S. EPA's Section 105 Clean Air Technology Initiative Program, restarted Stage 1. The objective of this follow-on project was to duplicate the original CARB-funded Stage 1 effort with the goal of developing a robust aftertreatment system for the next phases of the project. SwRI developed, aged and tested a second set of catalysts to represent real-world low load and low temperature test cycles. The parts were aged for 1,000 hours and emissions testing was performed at set intervals along the Federal Test Procedure (FTP) transient cycle. The diesel demonstration platform was a 2014 Volvo MD13TC EU6 engine. The final configuration of the low NO<sub>x</sub> aftertreatment system is shown below in Figure 20 below.



**Figure 20: Final Stage 1 Low NO<sub>x</sub> Aftertreatment System Configuration Results**

The Test Plan involved a 1,000-hour accelerated aging experiment. To gain better insight into system degradation over time, the parts were tested at two intermediate points during aging, in addition to before and after the completion of the full aging duration. Tests were conducted at the 0-hour point (following de-greening), and at 33%, 67% and 100% of the FUL aging duration of 1,000 hours. The aging was conducted using the SwRI-developed DAAAC (Diesel Accelerated Aftertreatment Aging Cycles) methodology, which accounts for both thermal and chemical aging components. However, at the end of aging, the selective catalytic reduction on filter (SCRF) contained a near maximum life duration of ash loading, prior to ash cleaning. To assess the impact of ash cleaning on the SCRF, an

<sup>6</sup> <https://ww2.arb.ca.gov/our-work/programs/heavy-duty-low-nox/about>

additional ash cleaning experiment and test were added to the Test Plan, supported with cofunding from the Manufacturers of Emission Controls Association.

The objectives of this project were proven successful. Hot-start STP performance was considerably better than what was shown in the previous Stage 1. The system maintained 99.6% NO<sub>x</sub> conversion, as compared to only 99.3% previously. This was primarily driven by the behavior of the SCRF, and it indicates that the SCRF was significantly disturbed by the upstream canning failure in the previous Stage 1. Another result from this project showed composite FTP NO<sub>x</sub> levels were 0.023 g/hp-hr after ash cleaning, as opposed to 0.034 g/hp-hr in the original Stage 1.

### **Developing and Demonstrating Renewable Fuels**

Renewable natural gas (RNG) is not a fossil fuel. RNG (biogas or biomethane) is an ultra-clean and ultra-low carbon natural gas alternative. It is produced by harnessing the methane emitted when organic waste breaks down (e.g., livestock manure, forestry, food waste), allowing California to sustainably manage its vast volumes of waste products and mitigate short-lived climate pollutants.<sup>7</sup> Nearly 16 tons of waste decomposing in California landfills could be utilized to produce energy. Methane emissions entering the atmosphere from waste is 30 times more potent than CO<sub>2</sub> as a heat trapping gas. The conversion of waste to gas which is fully interchangeable with fossil natural gas also helps to reduce dependency on fossil fuels. Additionally, because of RNG's low carbon intensity, it qualifies for incentive funds and Low Carbon Fuel Standard credits. South Coast AQMD sees a co-benefit of lowering GHG's by converting waste to RNG and reducing air pollution when RNG is used as a fuel in low emitting engines reducing NO<sub>x</sub> emissions.

In 2017, the University of California Riverside (UCR) established a Center for Renewable Natural Gas at their College of Engineering-Center for Environmental Research (CE-CERT). This RNG Center is dedicated to researching key RNG production technologies in demonstration-scale testbeds to better address technical and other challenges, as well as systems optimization and integration needs, to lead toward commercial RNG production in California and elsewhere. The South Coast AQMD, the Southern California Gas Company and the Department of Transportation's National Center for Sustainable Transportation joined together to cost-share Phase 1 of the RNG Center effort, focusing on evaluating the RNG production potential in California and conducting a survey of thermochemical conversion technologies available for RNG production.

Anaerobic digestion (AD) is typically used to convert high moisture content biomass to RNG and thermochemical processes such as gasification and pyrolysis are typically the conversion technologies for low moisture content biomass. RNG is a low to ultra-low carbon intensity transportation fuel that can power near-zero emission heavy-duty natural gas vehicles certified to CARB's optional low-NO<sub>x</sub> emissions standard, which is 90% cleaner than current standards, and current heavy-duty diesel engines equipped with SCR systems. RNG is also a viable feedstock for renewable hydrogen (RH<sub>2</sub>) for fuel cell electric vehicles that generate zero tailpipe emissions. Its low carbon intensity comes from capturing methane, a potent short-lived climate pollutant, that would otherwise be released into the atmosphere from biomass decomposition and from displacing methane emissions and new CO<sub>2</sub> contributions associated with fossil-based methane production and use. The following illustrates the process from RNG sources to methane conversion.

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<sup>7</sup> <https://cngvp.org/why-natural-gas/low-carbon-renewable-fuel/>



Figure 21: RNG Sources

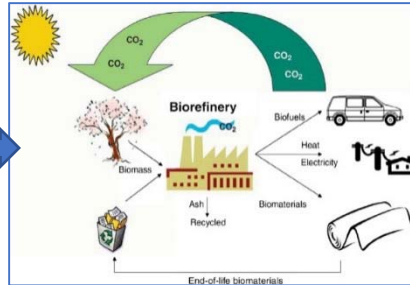


Figure 22: RNG

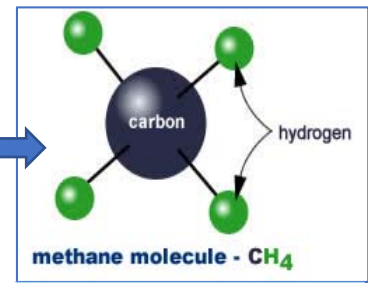


Figure 23: RH2

The South Coast AQMD has a long history of advancing clean fuels that are integral to the deployment of to zero, near-zero and low emission vehicles. Current funding examples include: 1) CR&R’s state-of-the-art AD facility in Perris that uses the RNG it produces from the municipal solid waste it collects to power its near-zero emission heavy-duty vehicles and to inject the RNG into the SoCalGas pipeline; 2) demonstrating less commercially developed pyrolysis technology with Kore to show the viability of producing RNG and renewable hydrogen; and 3) Rialto Bioenergy Facility’s commercial AD and pyrolysis project in Rialto that expects to produce significant quantities of RNG for pipeline injection and use by anchored fleets in the South Coast Air Basin.



Figure 24: CR&R Anaerobic Digestion of MSW to RNG

UCR’s RNG Center project supported developing and demonstrating the potential for RNG production in California and particularly focused on the less commercially developed thermochemical conversion technologies to address the significant amount of available and potential low moisture-content biomass. The project also reviewed the state’s clean power generation and curtailment data and the potential of power-to-gas technology to convert zero emission energy from wind and solar into a more storable form such as RNG or RH2 gas. UCR intends to continue their RNG viability efforts through the design, construction and operation of two demonstration scale plants that will form the design basis for a commercial plant along with a business plan. The final phase of the project will include a detailed engineering design of the commercial scale facility along with the permitting steps, financing details, facility construction, shakedown and operation with further technology refinement.

UCR’s RNG Center project supported developing and demonstrating the potential for RNG production in California and particularly focused



Figure 25: Rialto Bioenergy Anaerobic Digestion & Pyrolysis of MWS and Biosolids to RNG



Figure 26: CR&R Fleet of HDVs Operating on RNG



Figure 27: Kore Infrastructure Pyrolysis of Biomass to RNG and RH2

### Study of Real-World Electrification Options for Environmental Justice Communities

Incentivizing solar technologies, electric appliances and vehicles can be an effective means to augment South Coast AQMD’s existing regulations and programs to achieve further NOx and GHG reductions. Charging electric vehicles and equipment using solar panels can reduce the need for traditional fossil-based power generation for the transportation sector. But is there feasibility in promoting the greater use of solar technologies, electric appliances and vehicles for residents in environmental justice (EJ) communities, who are the most impacted by poor air quality? To answer this question, the South Coast AQMD and CEC funded a study to be conducted by the Electric Power Research Institute (EPRI) on real-world electrification options for energy services in EJ communities. EPRI also provided significant cost-share. The study considered air quality and health benefits from using solar, electric appliances and electric vehicles.

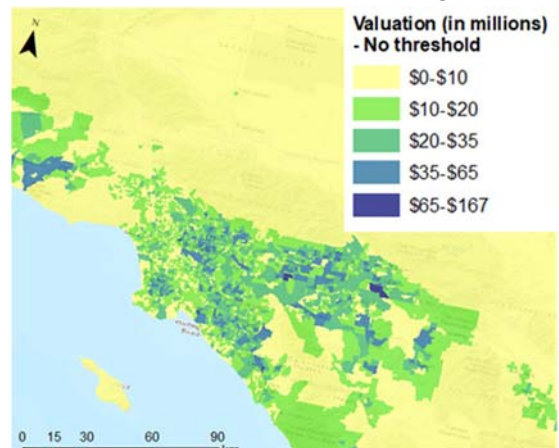
EPRI performed a statewide analysis of the economic and environmental impacts of electrification. The analysis focused on the costs and benefits of electrification technologies on residents in EJ communities. Air quality models analyzed the effects of existing electrification technologies deployed at a larger scale. Assumptions for the potential for electrification are primarily from a CEC study, “Long Term Energy Scenarios in California” (EPC 14-069, Mahone et al, 2018<sup>8</sup>). The Mahone study investigated potential pathways to achieve California’s GHG goals. The “in-state biomass” scenario was used since it emphasized various electrification strategies. Additional assumptions were necessary since many emission sources affecting air quality are not included in GHG models. Electrification is a broad array of technologies for transitioning direct fossil fuel use to electricity. Examples of electrification technologies include batteries and motors for electrification of transportation, heat pumps for electrification of space and water heating, and technologies for industrial electrification. Air quality modeling and a health effects analysis was performed based on levels of electrification from different sources. Air quality modeling extended the current emissions inventories to the year 2050 and looked specifically at the effects of electrification on pollutant levels in future years, and health effects stemming from pollutant levels in future model years.

Precise costs for electrification are difficult to estimate due to the variety of factors that affect lifetime costs but estimates show that the costs are recovered in a few short years through air quality benefits. Monetized health benefits from reduced ozone and PM2.5 were estimated at \$108 billion for the state of California in 2050, including \$56 billion in benefits for this Basin. Improvements in air quality were fed into a health impacts model to calculate the monetized benefits shown in Table 5 below. Figure 28 below further illustrates this by census tract.

**Table 5: Health Benefits of Electrification in South Coast Air Basin**

Pollutant	Avoided  Deaths	Valuation (in billions)
PM2.5	6,242	\$54.3
Ozone	179	\$1.6
<b>Total</b>	<b>6,421</b>	<b>\$55.9</b>

For 2050, the study projects summer average maximum daily 8-hour ozone below 65 ppb in the Basin, with ozone reductions exceeding 5 ppb in most of the Basin and as much as 10 ppb. By 2050, PM2.5 is projected to be

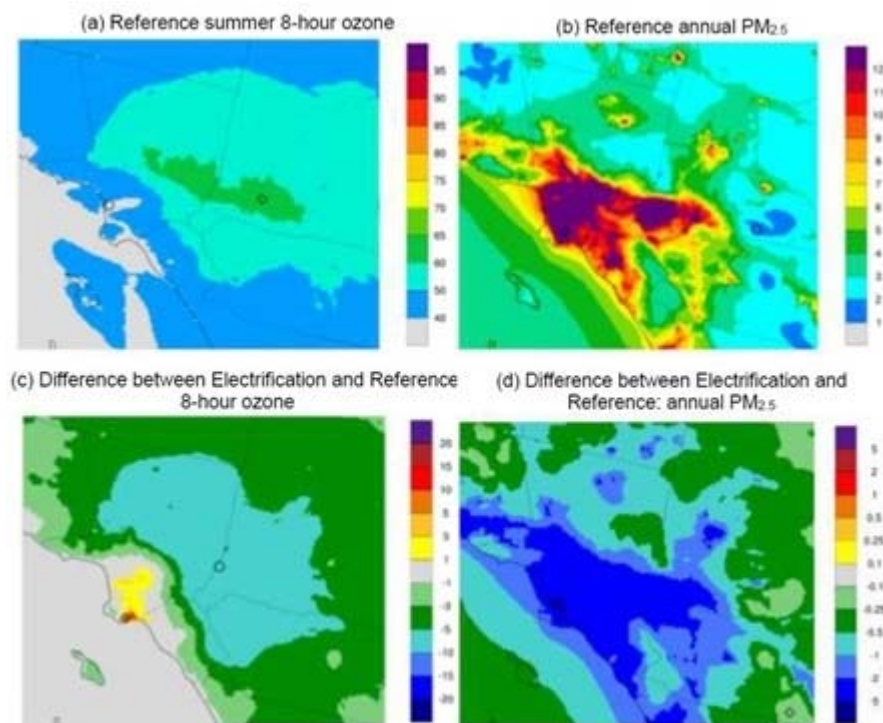


**Figure 28: Monetized Health Benefits of Electrification within the Basin by Census Tract**

<sup>8</sup> Mahone, A., Subin, Z., Kahn-Lang, J., Allen, D., Li, V. De Moor, G., Ryan, N., Price, S. Deep Decarbonization in a High Renewables Future: Updated Results from the California Pathways Model. CEC Publication Number CEC-500-2018-012.



reduced by  $2 \mu\text{g}/\text{m}^3$  and up to  $14 \mu\text{g}/\text{m}^3$  due to electrification. In addition, the study's modeling projects that electrification would significantly reduce mortality rates in EJ communities.



**Figure 29: Electrification Effects for Summer Max Daily Average 8-Hour Ozone and Max Annual PM<sub>2.5</sub>**

In conclusion, the study recommended that strategies be identified to provide funding for electrical infrastructure upgrades in low-income residences within EJ communities, given the high cost of retrofitting existing homes. Electrification technologies such as electric vehicles, appliances, heat pumps, and solar are commercially available but are generally more expensive than conventional options. Incentivizing these technologies for low-income residences will be necessary to cover the differential cost and enable residents in EJ communities to experience the benefits of electrification technologies.

Studies looking at the benefits of electrification such as the EPRI study support other research showing air quality and health benefits from electrification. These support policies in California, such as SB 100, requiring 60 percent renewable energy by 2030 and 100 percent renewable energy by 2045, and CEC's new Building Energy Efficiency Standards requiring solar PV systems for new home construction starting in January 1, 2020, and Net Energy Metering allowing consumers with solar to receive credit for electricity produced and fed into the grid.

In response to these developments, in 2019 the South Coast AQMD prepared a white paper on solar technologies, which recommends a shift towards electrification of residential appliances to achieve additional NO<sub>x</sub> and GHG reductions. The solar white paper proposed several measures and technologies to be undertaken as part of a new Solar Initiative being proposed for deployment of solar technologies in EJ communities. The South Coast AQMD has also developed a Net Emissions Analysis Tool (NEAT), which evaluates what the costs and NO<sub>x</sub> and GHG emission benefits will be to switch to all electric residential appliances (i.e., water and space heaters, clothes dryers, and cooktops and ovens). The new Solar Initiative will be considered by the Board in 2020.

**Table 6: Projects Completed between January 1 & December 31, 2019**

<b>Contract</b>	<b>Contractor</b>	<b>Project Title</b>	<b>Date</b>
<b>Hydrogen/Mobile Fuel Cell Technologies and Infrastructure</b>			
19213	Frontier Energy Inc.	Participate in California Fuel Cell Partnership for CY 2018 & Provide Support for Regional Coordinator	Jul-2019
20088	Frontier Energy Inc.	Participate in California Fuel Cell Partnership for CY 2019 & Provide Support for Regional Coordinator	Dec-2019
<b>Electric/Hybrid Technologies and Infrastructure</b>			
08063	Quantum Fuel Systems LLC	Develop & Demonstrate 20 Plug-In Hybrid Electric Vehicles	Jan-2019
13058	Capstone Turbine Corporation	Develop Microturbine Series Hybrid System for Class 7 Heavy-Duty Vehicle Applications	Dec-2019
14222	Odyne Systems, LLC	Develop & Demonstrate Plug-In Hybrid Electric Retrofit System for Class 6 to 8 Trucks	Aug-2019
14256	National Strategies LLC	Develop & Demonstrate Vehicle-to-Grid Technology	Jan-2019
16227†	Selman Chevrolet Company	Lease One 2016 Chevrolet Volt Extended-Range Electric Vehicle for Three Years	Jan-2019
18072	Electric Power Research Institute	Study Electrification Options of Energy Services for EJ Communities and Non-Attainment Areas	Jun-2019
<b>Fueling Infrastructure and Deployment (NG/RNG)</b>			
14219	City of West Covina	Upgrade CNG Station at City Yard	Aug-2019
16076	Coachella Valley Association of Governments	Purchase & Deploy One Heavy-Duty CNG Paratransit Vehicle	Nov-2019
16333	Ontario CNG Station, Inc	Implement Alternative Fuel Station Expansion	Nov-2019
17349	University of California Riverside/CE-CERT	Establish Renewable Natural Gas Center	Feb-2019
<b>Fuel/Emissions Studies</b>			
15607	University of California Riverside/CE-CERT	Innovative Transportation System Solutions for NOx Reductions in Heavy-Duty Fleets	Jan-2019
15636	University of California Riverside/CE-CERT	Evaluate PEV Utilization through Advanced Charging Strategies in a Smart Grid System	Dec-2019
17331	University of California Riverside/CE-CERT	Conduct In-Use PM Emissions Study for Gasoline Direct Injection Vehicles	Jul-2019
<b>Emissions Control Technologies</b>			
17367	Southwest Research Institute	Develop & Evaluate Aftertreatment Systems for Large Displacement Diesel Engines	Jun-2019

**Table 6: Projects Completed between January 1 & December 31, 2019 (cont'd)**

<b>Contract</b>	<b>Contractor</b>	<b>Project Title</b>	<b>Date</b>
<b>Technology Assessment and Transfer/Outreach</b>			
18019†	Ricardo Inc.	Technical Assistance with Heavy-Duty Vehicle Emissions Testing, Analysis and Engine Development and Applications	Aug-2019
19160†	Coordinating Research Council, Inc.	Cosponsor 2019 Mobile Source Air Toxics Workshop on 2/4-6/19	Feb-2019
19232†	Gladstein, Neandross & Associates	Cosponsor Rethink Methane 2019 on 2/26-27/2019	Feb-2019
19233†	University of California Riverside	Cosponsor the 2019 Portable Emissions Measurements Systems Conference & Workshop	Apr-2019
19234†	University of California Irvine	Cosponsor ICEPAG 2019	Sep-2019
19249†	Gladstein, Neandross & Associates	Cosponsor ACT Expo 2019	May-2019
19264†	University of California Davis-Institute of Transportation Studies	Cosponsor the Asilomar 2019 Conference on Transportation & Energy	Aug-2019
19271†	Coordinating Research Council, Inc.	Cosponsor the 29th Real World Emissions Workshop	Apr-2019
19293†	CALSTART Inc.	Cosponsor 2019 Clean Transportation Summit, California: 2030	Apr-2019
19348†	California Hydrogen Business Council	Cosponsor Hydrogen and Fuel Cells for Freight Workshop on 4/23/19	May-2019
19377†	Three Squares Inc.	Cosponsor the 2019 Women in Green Forum	Nov-2019
19431†	Sustain SoCal	Cosponsor the 2019 Advanced Transportation Symposium & Expo – Driving Mobility 6	Jul-2019
20036†	Frontier Energy, Inc.	Cosponsor the California Fuel Cell Partnership 20th Anniversary Event	Nov-2019
20053†	Motor Trend Group, LLC	Cosponsor the 2019 SoCal Work Truck Show	Nov-2019
20055†	Plug In America	Cosponsor the Los Angeles National Drive Electric Week 2019 Event “ChargeUp LA”	Sep-2019
20069†	Platia Productions	Cosponsor AltCar 10/16/19 in Riverside & 11/2/19 in Santa Monica	Nov-2019
20099†	California Electric Transportation Coalition	Cosponsor the CalETC 2019 Los Angeles Auto Show Events	Dec-2019

†Two-page summary reports (as provided in Appendix C) are not required for level-of-effort technical assistance contracts, leases or cosponsorships; or it was unavailable at time of printing this report.

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## **CLEAN FUELS PROGRAM 2020 Plan Update**

In 1988, SB 2297 (Rosenthal) was signed into law (Chapter 1546) establishing the South Coast AQMD's Clean Fuels Program and reaffirming the existence of the Technology Advancement Program (TAO) to administer the Clean Fuels Program. The funding source for the Clean Fuels Program is a \$1 motor vehicle registration surcharge that was originally approved for a limited five-year period, but legislation eventually extended both the Program and surcharge indefinitely. The Clean Fuels Program has evolved over the years but continues to fund a broad array of technology applications spanning near- and long-term implementation. Similarly, planning will remain an ongoing activity for the Clean Fuels Program, which must remain flexible to address evolving technologies as well capitalize on the latest progress in state-of-the-art technologies, new research areas and data.

Every year, the South Coast AQMD re-evaluates the Clean Fuels Program to develop a Plan Update based on a reassessment of the technology progress and direction of the South Coast AQMD's Board. This Plan Update for CY 2020 targets several projects to help achieve near-term emission reductions needed for the South Coast to meet health-based federal air quality standards.

### **Overall Strategy**

The overall strategy of the TAO's Clean Fuels Program is based, in large part, on emissions reduction technology needs identified through the AQMP process and the South Coast AQMD Board's directives to protect the health of the approximately 18 million residents (nearly half the population of California) in the South Coast Air Basin (Basin). The AQMP, which is updated approximately every four years, is the long-term regional "blueprint" that relies on fair-share emission reductions from all jurisdictional levels (e.g., federal, state and local). The 2016 AQMP is composed of stationary and mobile source emission reductions from traditional regulatory control measures, incentive-based programs, projected co-benefits from climate change programs, mobile source strategies and reductions from federally regulated sources (e.g., aircraft, locomotives and ocean-going vessels).

The emission reductions and control measures in the 2016 AQMP rely on commercial adoption of a mix of currently available technologies as well as the expedited development and commercialization of lower-emitting mobile and stationary advanced technologies in the Basin to achieve air quality standards. The 2016 AQMP identifies a 45 percent reduction in NO<sub>x</sub> required by 2023 and an additional 55 percent reduction by 203 to achieve ozone standards of 80 ppb and 75 ppb, respectively. The majority of these NO<sub>x</sub> reductions must come from mobile sources, both on- and off-road. Notably, the South Coast AQMD is currently only one of two regions in the nation designated as an extreme nonattainment area (the other region is San Joaquin Valley). Furthermore, in April 2019, the South Coast AQMD requested a voluntary re-classification from U.S. EPA of the 1997 8-hour federal standard ozone for Coachella Valley to "extreme" status. Hotter summer months and the threat of climate change in the region have presented challenges that require additional time to reach attainment.

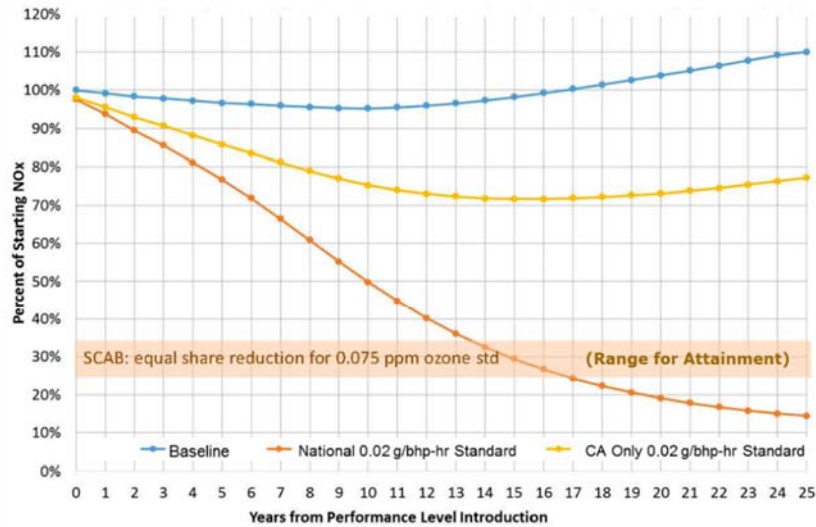
While current state efforts in developing regulations for on- and off-road vehicles and equipment are expected to reduce NO<sub>x</sub> emissions significantly, they will not be sufficient to meet the South Coast AQMD needs, especially in terms of timing. Nonetheless, for the first time, the 2016 AQMP identified a means to achieving the federal ambient standards through regulations and incentives for near-zero and zero emission technologies that are commercial or nearing commercialization. This strategy, however, requires a significantly lower state and national heavy-duty truck engine emissions standard with the earliest feasible implementation date, significant additional financial resources, and accelerated fleet turnover on a massive scale.

On June 3, 2016, in light of the need for a more stringent national heavy-duty truck engine emissions standard to achieve mobile source emission reductions, the South Coast AQMD petitioned the U.S. EPA to initiate rulemaking for a lower NOx national standard for heavy-duty engines. A national 50 state standard (as opposed to a California standard) for on-road heavy-duty vehicles is estimated to result in NOx emission reductions from this source category from 70 to 90 percent in 14 to 25 years, respectively. While CARB has adopted more stringent in-use fleet rules which require older trucks and buses to upgrade to newer, cleaner engines meeting the 2010 standard of 0.2 g/bhp-hr by 2023, CARB estimates that 60 percent of total heavy-duty vehicle miles traveled in the South Coast Air Basin are from vehicles purchased outside of California. This points to the need for a more stringent federal as well as state standard for on-road heavy-duty vehicles.

Given that the Basin must attain the 75-ppb ozone NAAQS by 2031, a new on-road heavy-duty engine NOx emission standard is critical given the time needed for OEMs to develop and produce compliant vehicles, and for national fleet turnover to occur.

Figure 30 shows the difference in NOx reductions from on-road heavy-duty trucks under three scenarios: baseline (no change in the low NOx standard) in blue, a low NOx standard adopted only in California in yellow, and lastly, a federal low NOx standard in orange.

The U.S. EPA has since acknowledged a need for additional NOx reductions through a harmonized and comprehensive national NOx reduction program for heavy-duty on-highway engines and vehicles. On November 13, 2018, U.S. EPA announced the Cleaner Truck Initiative, and on January 6, 2020, they issued an Advance Notice of Proposed Rule to reduce NOx emissions from on-road heavy-duty trucks starting as early as model year 2026. However, CARB forged ahead, announcing its own Low NOx Omnibus rule, which may be before the CARB Board as early as Spring 2020, proposing a lower NOx standard starting model year 2024. Although both announcements are welcome news, the timing is too late to help the South Coast AQMD meet its 2023 federal attainment deadline. So, despite progress, commercialization and deployment of near-zero engines are still needed.



Source: Presentation by Mr. Cory Palmer, ARB at the Symposium on California's Development of its Phase 2 Greenhouse Gas Emission Standards for On-Road Heavy-Duty Vehicles (April 22, 2015)

**Figure 30: NOx Reduction Comparison: No New Regulations vs Low NOx Standard in California only vs National Standard**

The findings from the MATES IV<sup>9</sup> study (May 2015), which included local scale studies near large sources such as ports and freeways, reinforced the importance of the need for transformative transportation technologies, especially near the goods movement corridor to reduce NOx emissions. In

<sup>9</sup> <http://www.aqmd.gov/docs/default-source/air-quality/air-toxic-studies/mates-iv/mates-iv-final-draft-report-4-1-15.pdf?sfvrsn=7>

mid-2017, South Coast AQMD initiated MATES V to update the emissions inventory of toxic air contaminants, as well as modeling to characterize risks, including measurements and analysis of ultrafine particle concentrations typically emitted or subsequently formed from vehicle exhaust. The MATES V report is expected to be finalized by the end of 2020. In the meantime, U.S. EPA approved the use of the CARB EMFAC 2017 model for on-road vehicles for use in the State Implementation Plan and transportation conformity analyses, which assesses emissions from on-road vehicles including cars, trucks and buses. The off-road model, which assesses emissions from off-road vehicles such as yard tractors, top handlers, and rubber tire gantry cranes, is being replaced by category specific methods and inventory models being developed for specific regulatory support projects.

A key strategy of the Clean Fuels Program, which allows significant leveraging of the Clean Fuels funding (historically \$4 to every \$1 of Clean Fuels funds), is its public-private partnerships with private industry, technology developers, academic institutions, research institutions and government agencies. Since 1988, the Clean Fuels Program provided more than \$340 million toward projects exceeding \$1.5 billion. In 1998, the South Coast AQMD's Carl Moyer Program was launched. The two programs produce a unique synergy, with the Carl Moyer Program (and other subsequent incentive programs) providing the necessary funding to push market penetration of the technologies developed and demonstrated by the Clean Fuels Program. This synergy enables the South Coast AQMD to act as a leader in both technology development and commercialization efforts targeting reduction of criteria pollutants. Since the Carl Moyer Program began more than 20 years, the South Coast AQMD has implemented other incentive programs (i.e., Proposition 1B-Goods Movement, Community Air Protection Program and Voucher Incentive Program, to name a few), currently with cumulative funding of \$250 million annually. With the success of this process, the 2016 AQMP also included control measures to develop indirect source regulations and strengthen the fleet rules that can take advantage of incentives provided, as a method of compliance to further accelerate emission reductions.

Despite several current California incentive programs to help implement cleaner technologies, however, even with some additional financial resources recently identified to offset the higher procurement costs of emerging clean technologies (i.e., Volkswagen Environmental Mitigation Trust which allocated \$423 million to California), significant additional resources are still needed for the scale necessary to achieve the national ambient air quality standards for this region.

As technologies move towards commercialization, such as battery electric trucks, the Clean Fuels Program has been able to partner with large original equipment manufacturers (OEMs), such as Daimler and Volvo, in order to eventually deploy these vehicles in large numbers. These partnerships with the OEMs allow the Program to leverage the research, product creation and financial resources that are needed to move advanced technologies from the laboratories, to the field and eventually into customers' hands. The OEMs have the resources and abilities to design, engineer, test, manufacture, market, distribute and service quality products under brand names that are trusted. To obtain the emission reductions needed to meet federal and state ambient air quality standards, large numbers of advanced technology clean-fueled vehicles must be deployed across our region and state.

Figure 31 outlines a developmental progression for technology demonstration and deployment projects funded by the Clean Fuels Program and the relationship incentive programs administered by TAO play in that progression. The South Coast AQMD's Clean Fuels Program funds various stages of technology projects, typically ranging from Technology Readiness Levels 3-8, to provide a portfolio of technology choices and to achieve emission reduction benefits in the near term as well as over long term.



Figure 31: Technology Readiness Level Stages

While the state continues to focus their attention on climate change (GHG reductions), the South Coast AQMD remains committed to achieving NO<sub>x</sub> reductions. Fortunately, many of the technologies that address the Basin's needed NO<sub>x</sub> reductions align with the state's GHG reduction efforts. In fact, the U.S. EPA noted that in 2016 the transportation sector contributed 28 percent of overall GHG emissions. Given this, and other recent state and federal announcements, the South Coast AQMD is confident it can successfully partner on state and federally funded projects that promise NO<sub>x</sub> and GHG co-benefits.

## Program and Funding Scope

This 2020 Plan Update includes projects to research, develop, demonstrate and advance deployment (RD<sup>3</sup>) a variety of technologies, from near-term to long-term, that are intended to address the following challenges:

- 1) implementation of new and changing federal requirements, such as the more stringent federal 8-hour ozone standard of 70 ppb promulgated by U.S. EPA in late 2015;
- 2) implementation of new technology measures by including accelerated development of technologies getting ready for commercialization and deploying commercially ready technologies; and
- 3) continued development of near-term cost-effective approaches and long-term technology development.

The overall scope of projects in the 2020 Plan Update needs to remain sufficiently flexible to address new challenges and measures that are identified in the 2016 AQMP, consider dynamically evolving technologies, and consider new research and data. The latter might include findings from MATES V and revised emission inventories in EMFAC 2017.

Within the core technology areas defined later in this section, project objectives range from near term to long term. The South Coast AQMD Clean Fuels Program concentrates on supporting development, demonstration and technology commercialization and deployment efforts rather than fundamental research. The nature and typical time-to-product for the Clean Fuels Program's projects is described below, from near term to long term.

- *Deployment* or technology *commercialization* efforts focus on increasing the utilization of clean technologies in conventional applications, promising immediate and growing emission reduction benefits. These are expected to result in commercially available products as early as 2021, including obtaining required certifications from CARB and U.S. EPA. It is often difficult to transition users to non-traditional technologies or fuels due to higher incremental costs or required changes to user behaviors, even if such the technologies or fuels offer significant benefits. As a result, in addition to government's role to reduce risk by funding technology development and testing, it is also necessary to support and offset incremental costs through incentives to accelerate the transition and use of cleaner technologies. The increased use and

proliferation of these cleaner technologies often depends on initial support and funding as well as efforts to increase stakeholder confidence that these technologies are real, cost-effective in the long term and viable.

- Technologies ready to begin field *demonstration* in 2020 are expected to result in commercially available products in the 2023-2025 timeframe, and technologies being demonstrated generally are in the process of being certified by CARB and U.S. EPA. Field demonstrations provide a controlled environment for manufacturers to gain real-world experience and address end-user issues that arise prior to the commercial introduction of the technologies. Field demonstrations provide real-world evidence of performance to allay any concerns by early adopters.
- Finally, successful technology *development* projects are expected to begin during 2020 with duration of two or more years. Additionally, field demonstrations to gain long term verification of performance may also be needed prior to commercialization. Certification and commercialization would be expected to follow. Thus, development projects identified in this plan may result in technologies ready for commercial introduction as soon as 2021-2025. Projects may involve the development of emerging technologies that are considered longer term and higher risk, but with significant emission reductions potential. Commercial introduction of such long-term technologies would not be expected until 2026 or later.

## Core Technologies

The following technologies have been identified as having the greatest potential to enable the emission reductions needed to achieve NAAQS and thus form the core of the Clean Fuels Program.

The goal is to fund viable projects in all categories. However, not all project categories will be funded in 2020 due to funding limitations, and the focus will remain on control measures identified in the 2016 AQMP, with consideration for availability of suitable projects. The project categories identified below are appropriate within the context of the current air quality challenges and opportunities for technology advancement.

Within these areas, there is significant opportunity for South Coast AQMD to leverage its funds with other funding agencies to expedite the demonstration and eventual implementation of cleaner alternative technologies in the Basin. A concerted effort is continually made to form public private partnerships to leverage Clean Fuels funds.

Several of the core technologies discussed below are synergistic. For example, a heavy-duty vehicle such as a transit bus or drayage truck, may utilize a hybrid electric drive train with a fuel cell operating on hydrogen fuel or an internal combustion engine operating on an alternative fuel as a range extender. Elements of the core hybrid electric system may overlap.

Priorities may shift during the year in keeping with the diverse and flexible “technology portfolio” approach or to leverage opportunities such as cost-sharing by the state or federal government or other entities. Priorities may also shift to address specific technology issues which affect residents within the South Coast AQMD’s jurisdiction. For example, AB 617, signed by the Governor in mid-2017, will implement actions designated in Community Emission Reduction Plans (CERPs) by five AB 617 communities within the South Coast region, and additional flexibility will be needed to develop new strategies and technologies for those disproportionately affected communities.

The following nine core technology areas are listed by current South Coast AQMD priorities based on the goals for 2020.

### ***Hydrogen/Mobile Fuel Cell Technologies and Infrastructure***

The South Coast AQMD supports hydrogen infrastructure and fuel cell technologies as one option in the technology portfolio. It is dedicated to assisting federal and state government programs to deploy light-, medium-, and heavy-duty fuel cell vehicles by supporting the required hydrogen fueling infrastructure.

Calendar Years 2015-2019 were a critical timeframe for the introduction of hydrogen fueling infrastructure. In 2014, Hyundai introduced the Tucson FCV for lease. In 2015, Toyota commercialized the Mirai, the first FCV available to consumers for purchase. In December 2016, Honda started delivering its 2017 Honda Clarity FCV. Other commercially available FCVs include the Audi H-Tron Quattro, Chevrolet Colorado ZH2, Hyundai Nexo, Mercedes-Benz GLC F-Cell and Nissan X-Trail. With lead times on retail level hydrogen fueling stations requiring 18-36 months for permitting, construction and commissioning, plans for future stations need to be implemented. While coordination with the California Division of Measurement Standards (DMS) to establish standardized measurements for hydrogen fueling started in 2014, additional efforts to offer hydrogen for sale in higher volumes for light-duty vehicles are still needed. Changes to CARB's Low Carbon Fuel Standard (LCFS) regulation to provide credit for low carbon fuel capacity in addition to throughput should enable station operators to remain solvent during the early years until vehicle numbers ramp up. Lastly, a deliberate and coordinated effort is necessary to ensure that light-duty retail hydrogen stations are developed with design flexibility to address specific location limitations, robust hydrogen supply, and refueling reliability matching those of existing gasoline and diesel fueling stations. The current network of hydrogen fueling stations to support the current number of light-duty FCVs on the road is insufficient, and supply of hydrogen and additional hydrogen production continue to be challenges that need to be addressed.

In 2018, Former Governor Brown issued Executive Order (EO) B-48-18. Among other provisions, the order sets an additional hydrogen station network development target of 200 stations by 2025. Meeting this new ambitious target clearly requires accelerated effort on the part of the State to ensure its achievement. The EO additionally sets a target for 5 million ZEVs by 2030; FCVs are expected to comprise a significant portion of this future ZEV fleet. In September 2019, Governor Newsom issued EO N-19-19 on Climate Change, which directs CARB to push OEMs to produce even more clean vehicles, and to find ways for more Californians, including residents in disadvantaged communities, to purchase these vehicles on the new and used markets. CARB is tasked with developing new grant criteria for clean vehicle programs to encourage OEMs to produce clean, affordable cars and propose new strategies to increase demand in the primary and secondary markets for ZEVs. Finally, CARB is taking steps to strengthen existing or adopt new regulations to achieve GHG reductions within the transportation sector.

Fuel cells can play a role in medium- and heavy-duty applications where battery recharge time is insufficient to meet fleet operational requirements. The CaFCP's 2030 Vision<sup>10</sup> released in July 2018 provides a broader framework for the earlier Medium- and Heavy-Duty Fuel Cell Electric Truck Action Plan completed in October 2016, which focused on Class 4 parcel delivery trucks and Class 8 drayage trucks with infrastructure development and established metrics for measuring progress.

As part of the \$83 million Shore-to-Store project, for which the Clean Fuels Program committed \$1 million, Toyota and Kenworth will deploy 10 Class 8 fuel cell trucks and Equilon (Shell) will build two large capacity hydrogen fueling stations in Wilmington and Ontario. Kenworth will leverage the development on the fuel cell truck demonstrated in South Coast AQMD's ZECT 2 project and integrate Toyota's fuel cells into the Kenworth trucks. These fuel cell trucks will be deployed at fleets including

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<sup>10</sup>CaFCP's *The California Fuel Cell Revolution, A Vision For Advancing Economic, Social, and Environmental Priorities (Vision 2030)*, September 4, 2018.

UPS, Total Transportation Services, Southern Counties Express, and Toyota Logistics Services at the Ports of Los Angeles and Port Hueneme, as well as other fleets in Riverside County. In 2019, Toyota displayed a second prototype Class 8 fuel cell truck at the Port of Long Beach, including plans for a new 1,000 kg/day heavy-duty hydrogen fueling station using hydrogen produced by a new tri-generation fuel cell.

The CaFCP *Fuel Cell Electric Bus Road Map* released in September 2019 supports implementation of CARB’s Innovative Clean Transit and Zero Emission Airport Shuttle regulations. As part of the \$46 million Fuel Cell Electric Bus Commercialization Consortium project, for which the Clean Fuels fund contributed \$1 million, the Center for Transportation and Environment (CTE) partnered with New Flyer, Trillium, and Orange County Transportation Authority (OCTA) to deploy 10 40-foot New Flyer XHE40 fuel cell transit buses and install a liquid storage hydrogen station capable of fueling up to 50 fuel cell transit buses at OCTA. This project also deployed 10 fuel cell transit buses and a hydrogen station upgrade at Alameda-Contra Costa Transit District (AC Transit). The transit buses were delivered in December 2019 and liquid hydrogen station was completed in January 2020.

The 2020 Plan Update identifies key opportunities while clearly leading the way for pre-commercial demonstrations of OEM vehicles. Future projects may include the following:

- continued development and demonstration of distributed hydrogen production and fueling stations, including energy stations with electricity and hydrogen co-production and higher pressure (10,000 psi) hydrogen dispensing and scalable/higher throughput;
- development of additional sources of hydrogen production and local generation of hydrogen for fueling stations far from local production sources to better meet demand of FCVs;
- development and demonstration of cross-cutting fuel cell applications (e.g. plug-in hybrid fuel cell vehicles);
- development and demonstration of fuel cells in off-road, locomotive and commercial harbor craft applications such as port cargo handling equipment, switcher locomotives and tugs;
- demonstration of fuel cell vehicles in controlled fleet applications in the Basin;
- development and implementation of strategies with government and industry to build increasing scale and renewable content in the hydrogen market including certification and testing of hydrogen as a commercial fuel to create a business case for investing as well as critical assessments of market risks to guide and protect this investment;
- coordination with fuel cell vehicle OEMs to develop an understanding of their progress in overcoming barriers to economically competitive fuel cell vehicles and develop realistic scenarios for large scale introduction; and
- repurpose of fuel cells and hydrogen tanks for other, secondary energy production and storage uses, as well as reusing fuel cells and hydrogen tanks, and approaches to recycle catalysts and other metals.

### ***Engine Systems/Technologies***

To achieve the emissions reductions required for the Basin, internal combustion engines (ICEs) used in the heavy-duty sector will require emissions that are 90 percent lower than the 2010 standards as outlined in CARB’s proposed Heavy-Duty On-Road “Omnibus” Low NOx regulation and EPA’s Advance Notice of Proposed Rule. In 2016, commercialization of the Cummins 8.9 liter (8.9L) natural gas engine achieving 90 percent below the existing federal standard was a game changer. The 8.9L engine works well in refuse and other vocational trucks as well as transit and school buses. In 2017, Cummins Westport Inc., with South Coast AQMD and other project partners, also achieved certification of the 12L natural gas engine. The 12L engine in Class 8 drayage trucks and 60-foot articulated transit buses is a further game changer. CARB and U.S. EPA certified both engines at 0.02 g/bhp-hr for NOx. For smaller and long-haul trucks that cannot utilize the 8.9L and 12L near-zero emission engines, the 2020 Plan Update includes potential projects to develop, demonstrate and certify



natural gas engines in the 6-8L and larger 13-15L displacement range. Although no near-zero emission diesel technology is commercially available today, South Coast AQMD has been working closely with CARB and others on defining technology pathways via several projects, including the Ultra-Low Emissions Diesel Engine Program at Southwest Research Institute (SwRI), opposed piston engine development with Achates Power Inc., and Thermal Management using Cycle Deactivation Project with West Virginia University. These demonstration projects, although not yet complete, show that near-zero emission diesel technologies are feasible via advanced engine and aftertreatment or optimized engine design and calibration. The Plan Update continues to incorporate pursuit of cleaner engines for the heavy-duty sector. Future projects will support the development, demonstration and certification of engines that can achieve these massive emission reductions using an optimized systems approach. In December 2018, South Coast AQMD participated in the Natural Gas Engine & Vehicle R&D Source Review Panel meeting in Sacramento to review, discuss and prioritize several natural gas engine and vehicle technology projects that increase efficiencies using advanced engines or hybrid drive trains.

Heavy-duty hybrid vehicles have historically been optimized for fuel economy, new generation hybrid powertrains could be co-optimized for both criteria emissions and fuel economy that could better meet the air quality goals of the Basin. CARB announced their new proposal to allow medium-duty and heavy-duty hybrid powertrain certification procedures in CARB's proposed Heavy-Duty On-Road "Omnibus" Low NOx regulation. The new hybrid powertrain test procedures will properly credit for the fuel and emission benefits of hybrid vehicles and allow the entire hybrid system to certify to potentially lower engine standard on traditional engine dynamometers. South Coast AQMD have made initial contact with several OEMs to develop next generation heavy-duty hybrid powertrains to a lower NOx standard. These next generation hybrid powertrains provide another potential pathway for reducing NOx emissions in the near term.

The 2020 Plan includes potential projects that the South Coast AQMD might participate in with federal and state agencies towards these efforts. Specifically, these projects are expected to target the following:

- development of ultra-low emissions and improved higher efficiency natural gas engines for heavy-duty vehicles and high horsepower applications projects that move these technologies to a higher technology readiness level and eventual commercialization;
- continued development and demonstration of gaseous- and liquid-fueled, advanced fuels or alternative fuel medium-duty and heavy-duty engines and vehicles;
- development and demonstration of CNG hybrid vehicle technology;
- development and demonstration of diesel hybrid vehicle technology;
- development and demonstration of alternative fuel engines for off-road applications;
- evaluation of alternative engine systems such as hydraulic plug-in hybrid vehicles;
- development and demonstration of engine systems that employ advanced engine design features, cylinder deactivation, improved exhaust or recirculation systems, and aftertreatment devices; and
- development of low load and cold start technologies for hybrids and diesels where high-level emissions occur.

CARB and U.S. EPA's recent initiation to create national low NOx standard for on-highway heavy-duty engines will further motivate manufacturers to develop lower-NOx emitting technologies expected to result in greater NOx emission reductions than a California only low NOx standard for on-road heavy-duty engines.

### ***Electric/Hybrid Technologies and Infrastructure***

In an effort to meet federal standards for PM2.5 and ozone, a primary focus must be on zero and near-zero emission technologies. A key strategy to achieve these goals is the wide-scale electrification of transportation technologies. With that in mind, the South Coast AQMD supports projects to address the concerns regarding cost, battery lifetime, travel range, charging infrastructure and OEM commitment.



Integrated transportation systems can encourage further emission reduction by matching EVs (zero emission, zero start-up emission, all electric range) to typical consumer demands for mobility and by linking them to transit. Additionally, the impact of fast charging on battery life and infrastructure costs needs to be better understood. This is especially important when every month roughly 36,000<sup>11</sup> new plug-in vehicles are sold or leased in the U.S. This number will increase significantly with the introduction of vehicles with 200-plus mile range, such as the Chevy Bolt, launched in December 2016, the Tesla Model 3 which came out in mid-2017, and Hyundai Kona, Nissan Leaf and more to come in 2020.

The development and deployment of zero emission goods movement technologies remains one of the top priorities for the South Coast AQMD to support a balanced and sustainable growth in the port complex. The South Coast AQMD continues to work with our regional partners, in particular the Ports of Los Angeles and Long Beach, the Southern California Association of Governments (SCAG) and Los Angeles County Metropolitan Transportation Authority (Metro) to identify technologies that could be beneficial to all stakeholders. Specific technologies include zero emission trucks (battery and/or fuel cell), or plug-in hybrid powertrains, near-zero emission locomotives (e.g., 90% below Tier 4), electric locomotives using battery electric tender cars and catenary systems, and linear synchronous motors for locomotives and trucks. Additionally, the California Sustainable Freight Action Plan outlines a blueprint to transition the state's freight system to an environmentally cleaner, more efficient and economical system, including a call for a zero and near-zero emission vehicle pilot project in Southern California. The Port of Los Angeles's Sustainable City Plan corroborates this effort, setting a goal of 15 percent of zero emission goods movement trips by 2025 and 35 percent by 2035. More recently, the Clean Air Action Plan 2017 Update adopted by Ports of Los Angeles and Long Beach calls for zero emissions cargo handling equipment by 2030 and zero emissions drayage trucks by 2035, respectively.

An example of a project in this core technology is one the South Coast AQMD is providing \$500,000 from the Clean Fuels Fund to cost-share with the Port of Long Beach. The Sustainable Terminals Accelerating Regional Transformation (START) Project will develop and demonstrate 102 near-zero and zero emission vehicles, vessels, cargo handling equipment, and charging infrastructure, across an intermodal freight network at the Ports of Long Beach, Oakland and Stockton, in partnership with three California air districts. A total of 33 battery electric yard tractors, one battery electric top handler, 9 battery electric RTG cranes, five Class 8 battery electric trucks, and one electric drive tugboat will be demonstrated at the Port of Long Beach.

Continued technology advancements in light-duty infrastructure have facilitated the development of corresponding codes and standards for medium- and heavy-duty infrastructure. Additional traction may be gained in this area with the City of Los Angeles' Zero Emissions 2028 Roadmap in preparation for the 2028 summer Olympics in Los Angeles, which sets a goal of an additional 25 percent reduction in GHGs and air pollution beyond current commitments through accelerating transportation electrification. Additionally, SCE's Charge Ready Transport Program includes funding for medium- and heavy-duty vehicles and infrastructure.

Opportunities to develop and demonstrate technologies that could enable expedited widespread use of battery electric and hybrid-electric vehicles in the Basin include the following:

- demonstration of battery electric and fuel cell electric technologies for cargo handling and container transport operations, e.g., heavy-duty battery electric or plug-in electric drayage trucks with all electric range;

<sup>11</sup>[https://insideevs.com/december-2018-u-s-ev-sales-recap/?utm\\_source=feedburner&utm\\_medium=email&utm\\_campaign=Feed%3A+InsideEvs+%28InsideEVs%29](https://insideevs.com/december-2018-u-s-ev-sales-recap/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+InsideEvs+%28InsideEVs%29)

- demonstration of medium-duty battery electric and fuel cell electric vehicles in package delivery operations, e.g., battery electric walk-in vans with fuel cell or CNG range extender;
- development and demonstration of electric off-road vehicles; e.g. battery electric off-road construction equipment;
- development and demonstration of CNG hybrid vehicle technology;
- development and demonstration of diesel hybrid vehicle technology;
- development of hybrid vehicles and technologies for off-road vehicles;
- demonstration of niche application battery and fuel cell electric medium- and heavy-duty vehicles, including school and transit buses and refuse trucks with short-distance fixed service routes;
- demonstration of integrated programs that make best use of electric drive vehicles through interconnectivity between fleets of shared electric vehicles and mass transit, and rideshare services that cater to multiple users and residents in disadvantaged communities;
- development of eco-friendly intelligent transportation system (ITS), geofencing, and Eco-Drive strategies to maximize emission reductions and energy consumption by operating in zero emission mode when driving in disadvantaged communities, demonstrations that encourage electric drive vehicle deployment in autonomous applications, optimized load-balancing strategies and improved characterization of in-duty drayage cycles and modeling/simulations for cargo freight and market analysis for zero emission heavy-duty trucks;
- demonstration and installation of infrastructure to support battery electric and fuel cell electric vehicle light-, medium- and heavy-duty fleets, and ways to reduce cost and incentivize incremental costs over conventionally fueled vehicles, meet fleet operational needs, improve reliability, and integrate with battery energy storage, renewable energy and energy management strategies (e.g., vehicle-to-grid or vehicle-to-building functionality, demand response, load management);
- development of higher density battery technologies for use in heavy-duty vehicles;
- repurpose EV batteries for other or second life energy storage uses, as well as reusing battery packs and approaches to recycle lithium, cobalt and other metals;
- development of a methodology to increase understanding of the capability to accept fast-charging and the resultant life cycle and demonstration of the effects of fast-charging on battery life and vehicle performance; and
- deployment of infrastructure corresponding to codes and standards specific to light-, medium- and heavy-duty vehicles, including standardized connectors, fuel quality, communication protocols, and open standards and demand response protocols for EV chargers to communicate across charging networks.

### ***Fueling Infrastructure and Deployment (Natural Gas/Renewable Fuels)***

Significant demonstration and commercialization efforts funded by the Clean Fuels Program as well as other local, state and federal agencies are underway to: 1) support the upgrade and buildup of public and private infrastructure projects, 2) expand the network of public-access and fleet fueling stations based on the population of existing and anticipated vehicles, and 3) put in place infrastructure that will ultimately be needed to accommodate transportation fuels with very low gaseous emissions.

Compressed and liquefied natural gas (CNG and LNG) refueling stations are being positioned to support both public and private fleet applications. Upgrades and expansions are also needed to refurbish or increase capacity for some of the stations installed five or more years ago as well as standardize fueling station design, especially to ensure growth of alternative fuels throughout the Basin and beyond. There is also growing interest for partial or complete transition to renewable natural gas delivered through existing natural gas pipelines. Funding has been provided at key refueling points for light-, medium- and heavy-duty natural gas vehicle users traveling from the local ports, along I-15 and The

Greater Interstate Clean Transportation Corridor (ICTC) Network. SB 350 (De León) further established a target to double the energy efficiency in electricity and natural gas end uses by 2030.

Some of the projects expected to be developed and cofunded for infrastructure development are:

- development and demonstration of renewable natural gas as a vehicle fuel from renewable feedstocks and biowaste;
- development and demonstration of advanced, cost effective methods for manufacturing synthesis gas for conversion to renewable natural gas;
- enhancement of safety and emissions reductions from natural gas refueling equipment;
- expansion of fuel infrastructure, fueling stations, and equipment; and
- expansion of infrastructure connected with existing fleets, public transit, and transportation corridors, including demonstration and deployment of closed loop systems for dispensing and storage.

### ***Stationary Clean Fuel Technologies***

Although stationary source NO<sub>x</sub> emissions are small compared to mobile sources in the Basin, there are applications where cleaner fuel technologies or processes can be applied to reduce NO<sub>x</sub>, VOC and PM emissions. For example, a recent demonstration project funded in part by the South Coast AQMD at a local sanitation district consisted of retrofitting an existing biogas engine with a digester gas cleanup system and catalytic exhaust emission control. The retrofit system resulted in significant reductions in NO<sub>x</sub>, VOC and CO emissions. This project demonstrated that cleaner, more robust renewable distributed generation technologies exist that not only improve air quality but enhance power quality and reduce electricity distribution congestion.

SCR has been used as aftertreatment for combustion equipment for NO<sub>x</sub> reduction. SCR requires the injection of ammonia or urea that is reacted over a catalyst bed to reduce the NO<sub>x</sub> formed during the combustion process. Challenges arise if ammonia distribution within the flue gas or operating temperature is not optimal resulting in ammonia emissions leaving the SCR in a process referred to as “ammonia slip”. The ammonia slip may also lead to the formation of particulate matter in the form of ammonium sulfates. An ongoing demonstration project funded in part by the South Coast AQMD consists of retrofitting a Low NO<sub>x</sub> ceramic burner on an oil heater without the use of reagents such as ammonia nor urea which is anticipated to achieve SCR NO<sub>x</sub> emissions or lower. Based on the successful deployment of this project, further emission reductions may be achieved by other combustion sources such as boilers by the continued development of specialized low NO<sub>x</sub> burners without the use of reagents.

Additionally, alternative energy storage could be achieved through vehicle-to-grid or vehicle-to-building technologies, as well as power-to-gas that could allow potentially stranded renewable electricity stored as hydrogen fuel. UCR’s Sustainable Integrated Grid Initiative and UCI’s Advanced Energy and Power Program, funded in part by the South Coast AQMD, for example, could assist in the evaluation of these technologies.

Projects conducted under this category may include:

- development and demonstration of reliable, low emission stationary technologies (e.g., new innovative low NO<sub>x</sub> burners and fuel cells);
- exploration of renewables, waste gas and produced gas sources for cleaner stationary technologies;
- evaluation, development and demonstration of advanced control technologies for stationary sources; and
- vehicle-to-grid or vehicle-to-building, or other stationary energy demonstration projects to develop sustainable, low emission energy storage alternatives.

The development, demonstration, deployment and commercialization of advanced stationary clean fuel technologies will support control measures in the 2016 AQMP in that they reduce emissions of NO<sub>x</sub> and VOCs from traditional combustion sources by replacement or retrofits with zero and near-zero emission technologies.

### ***Health Impacts, Fuel and Emissions Studies***

The monitoring of pollutants in the Basin is extremely important, especially when linked to (1) a particular sector of the emissions inventory (to identify the responsible source or technology) and/or (2) exposure to pollution (to assess potential health risks). In fact, studies indicate that ultrafine particulate matter (PM) can produce irreversible damage to children's lungs. This information highlights the need for further emission and health studies to identify emissions from high polluting sectors as well as the health effects resulting from these technologies.

Over the past few years, the South Coast AQMD has funded emission studies to evaluate the impact of tailpipe emissions of biodiesel and ethanol fueled vehicles mainly focusing on criteria pollutants and GHG emissions. These studies showed that biofuels, especially biodiesel in some applications and duty cycles, can contribute to higher NO<sub>x</sub> emissions while reducing other criteria pollutant emissions. Furthermore, despite recent advancements in toxicological research related to air pollution, the relationship between particle chemical composition and health effects is still not completely understood, especially for biofuels. In 2015, South Coast AQMD funded studies to further investigate the toxicological potential of emissions, such as ultrafine particles and vapor phase substances, and to determine whether substances such as volatile or semi-volatile organic compounds are being emitted in lower mass emissions that could pose harmful health effects. In addition, as the market share for gasoline direct injection (GDI) vehicles has rapidly increased from 4 percent of all vehicle sales in the U.S. to an estimated 60 percent between 2009 and 2016, it is important to understand the air quality impacts from these vehicles. South Coast AQMD has funded studies to investigate both physical and chemical composition of tailpipe emissions, focusing on PM from GDI vehicles as well as secondary organic aerosol formation formed by the reaction of gaseous and particulate emissions from natural gas and diesel heavy-duty vehicles. In 2017, South Coast AQMD initiated a basin wide in-use real-world emissions study, including fuel usage profile characterization and an assessment of the impacts of current technology and alternative fuels. Preliminary results suggest real-world emissions vary greatly between applications and fuel types. In 2019, CARB announced their latest proposal to the next lower level NO<sub>x</sub> standard, particularly highlighting the need to address the gap between certification values and in-use emissions. The new regulation included a new low-load cycle, new in-use emissions testing metric, and new concept to assess compliance across the entire vehicle population via onboard emission sensors. The real-world emissions study could help stakeholders better understand the impacts of emissions in real time to a specific geographic area.

In recent years, there has also been an increased interest at the state and federal level on the use of alternative fuels to reduce petroleum oil dependency, GHG emissions and air pollution. In order to sustain and increase biofuel utilization, it is essential to identify feedstocks that can be processed in a more efficient, cost-effective and sustainable manner. More recently, the power-to-gas concept has renewed interest in hydrogen-fossil fuel blends where the emissions impact on latest ICE technologies needs to be reassessed. Moreover, based on higher average summer temperatures noted over the past few years, there is interest on how the higher temperatures impact ozone formation. In line with this, a project launched in 2019 to evaluate meteorological factors and trends contributing to recent poor air quality in the Basin. These types of studies may be beneficial to support the CERPs being developed under AB 617, as well as other programs targeting benefits to residents in disadvantaged communities.

Some areas of focus include:

- demonstration of remote sensing technologies to target different high emission applications and sources;
- studies to identify the health risks associated with ultrafine and ambient particulate matter including their composition to characterize their toxicity and determine specific combustion sources;
- in-use emission studies using biofuels, including renewable diesel, to evaluate in-use emission composition;
- in-use emission studies to determine the impact of new technologies, in particular EVs on local air quality as well as the benefit of telematics on emission reduction strategies;
- lifecycle energy and emissions analyses to evaluate conventional and alternative fuels;
- analysis of fleet composition and its associated impacts on criteria pollutants;
- evaluation of emissions impact of hydrogen-fossil fuel blends on latest technology engines; and
- evaluation of the impact of higher ambient temperatures on emissions of primary and secondary air pollutants.

### ***Emissions Control Technologies***

Although engine technology and engine systems research are required to reduce the emissions at the combustion source, dual fuel technologies and post-combustion cleanup methods are also needed to address currently installed on-road and off-road technologies. Existing diesel emissions can be greatly reduced with introduction of natural gas into the engine or via aftertreatment controls such as PM traps and catalysts, as well as lowering the sulfur content or using additives with diesel fuel. Gas-to-Liquid (GTL) fuels, formed from natural gas or other hydrocarbons rather than petroleum feedstock and emulsified diesel, provide low emission fuels for use in diesel engines. As emissions from engines become lower and lower, the lubricant contributions to VOC and PM emissions become increasingly important. Recently, onboard emissions sensors have been identified by CARB and other agencies as a new method for assessing in-use emissions compliance. At the same time, researchers have proposed to use sensors, coupled with GPS, cellular connection, weather, traffic, and other online air quality models, to enable advanced concepts like Geofencing, Eco-routing, and more. The most promising of these technologies will be considered for funding, specifically:

- evaluation and demonstration of new emerging liquid fuels, including alternative and renewable diesel and GTL fuels;
- development and demonstration of renewable-diesel engines and advanced aftertreatment technologies for mobile applications (including heated dosing technologies, close coupled, catalysts, heated catalysts and other advanced selective catalytic reduction systems) as well as non-thermal regen technology;
- development and demonstration of low-VOC and PM lubricants for diesel and natural gas engines;
- develop, evaluate, and demonstrate onboard sensor-based emissions monitoring methodology; and
- develop, evaluate, and demonstrate cloud-based emissions and energy management system

### ***Technology Assessment and Transfer/Outreach***

Since the value of the Clean Fuels Program depends on the deployment and adoption of the demonstrated technologies, outreach and technology transfer efforts are essential to its success. This core area encompasses assessment of advanced technologies, including retaining outside technical assistance as needed, efforts to expedite the implementation of low emission and clean fuel technologies, coordination of these activities with other organizations and information dissemination to educate end users of these technologies. Technology transfer efforts include supporting various clean

fuel vehicle incentive programs, cosponsoring technology-related conferences, workshops and other events, and disseminating information on advanced technologies to various audiences (i.e., residents in disadvantaged communities, local governments, funding agencies, technical audiences).

## Target Allocations to Core Technology Areas

The figure below presents the potential allocation of available funding, based on South Coast AQMD projected program costs of \$16.1 million for all potential projects. The expected actual project expenditures for 2020 will be less than the total South Coast AQMD projected program cost since not all projects will materialize. The target allocations are based on balancing technology priorities, technical challenges and opportunities discussed previously and near term versus long term benefits with the constraints on available South Coast AQMD funding. Specific contract awards throughout 2020 will be based on this proposed allocation, the quality of proposals received and evaluation of projects against standardized criteria and ultimately South Coast AQMD Board approval.

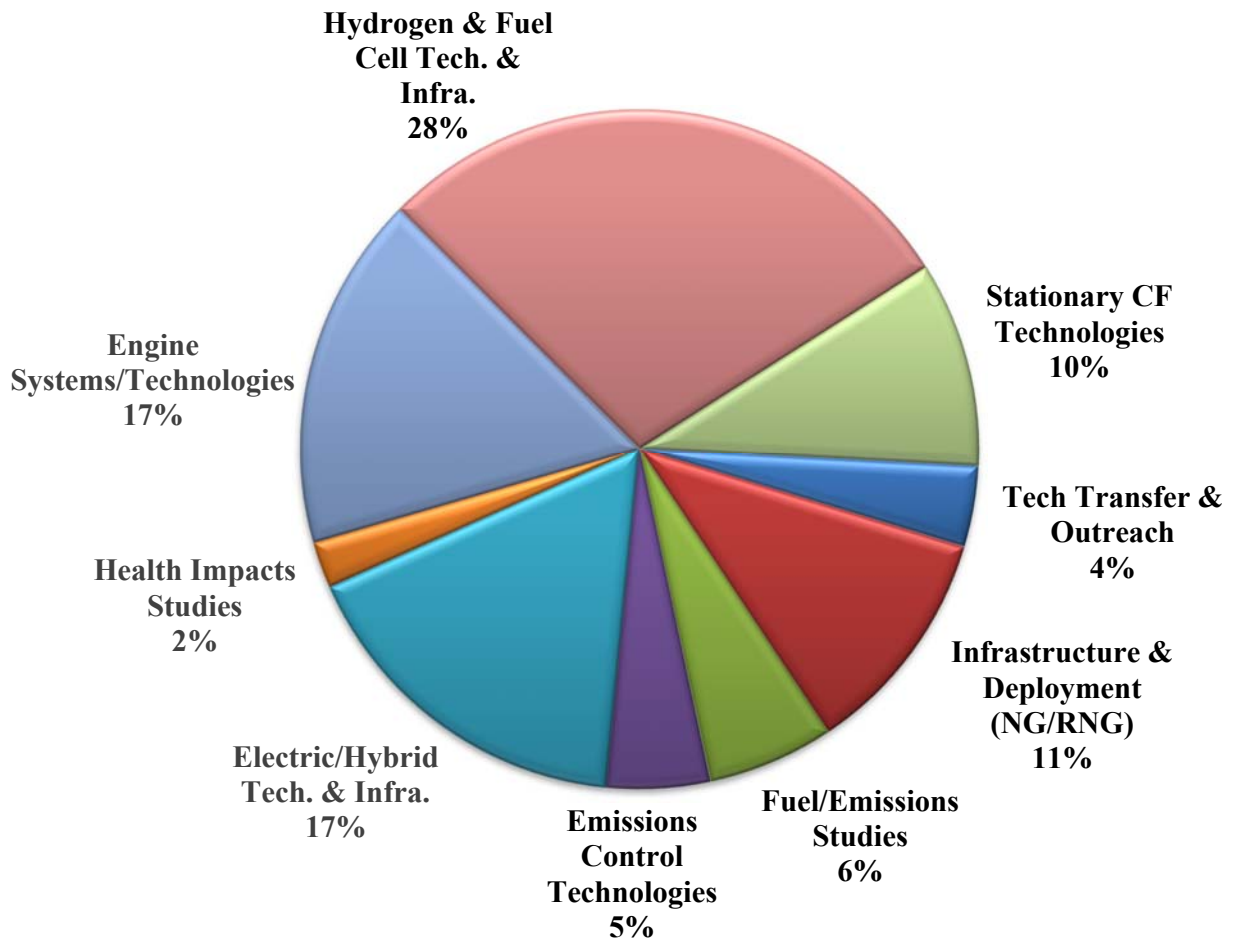


Figure 32: Projected Cost Distribution for Potential South Coast AQMD Projects in 2020 (\$16.1M)

# CLEAN FUELS PROGRAM

## Program Plan Update for 2020

This section presents the Clean Fuels Program Plan Update for 2020. The proposed projects are organized by program areas and described in further detail, consistent with the South Coast AQMD budget, priorities and the best available information on the state-of-the-technology. Although not required, this Plan also includes proposed projects that may be funded by revenue sources other than the Clean Fuels Program, specifically related to VOC and incentive projects.

Table 7 (page 71) summarizes potential projects for 2020 as well as the distribution of South Coast AQMD costs in some areas as compared to 2019. The funding allocation continues the focus on development and demonstration of zero and near-zero emission technologies including infrastructure to support these vehicles. For the 2020 Draft Plan, the same four funding categories remain at the top but with reduced funding for electric/hybrid technologies in light of large electric/hybrid projects recently funded and with additional funding to Stationary Clean Fuel Technologies and Emissions Control Technologies for planned projects in 2020, including:

- Heavy-duty zero emission fuel cell trucks and infrastructure;
- Onboard sensor development for emissions monitoring and improved efficiency;
- Microgrid demonstrations to support zero emission infrastructure;
- Electric school bus and fleet charging demonstrations;
- Heavy-duty diesel truck replacements with near-zero emissions natural gas trucks; and
- Fuel and emissions studies, such as conducting airborne measurements and analysis of NO<sub>x</sub> emissions and assessing emissions impacts of hydrogen-natural gas fuel blends on near-zero emissions heavy-duty natural gas engines.

As in prior years, the funding allocations again align well with the South Coast AQMD's FY 2019-20 Goals and Priority Objectives, which includes supporting development of cleaner advanced technologies. Overall, the Clean Fuels Program is designed to ensure a broad portfolio of technologies, complement state and federal efforts, and maximize opportunities to leverage technologies in a synergistic manner.

Each of the proposed projects described in this Plan, once fully developed, will be presented to the South Coast AQMD Governing Board for approval prior to contract initiation. This Plan Update reflects the maturity of the proposed technology and identifies contractors to perform the projects, participating host sites and fleets, and securing sufficient cost-sharing to complete the project, and other necessary factors. Recommendations to the South Coast AQMD Governing Board will include descriptions of the technologies to be demonstrated and their applications, proposed scope of work of the project and capabilities of the selected contractor(s) and project team, in addition to the expected costs and benefits of the projects as required by H&SC 40448.5.1.(a)(1). Based on communications with all of the organizations specified in H&SC 40448.5.1.(a)(2) and review of their programs, the projects proposed in this Plan do not appear to duplicate any past or present projects.

### Funding Summary of Potential Projects

The remainder of this section contains the following information for each of the potential projects summarized in Table 7 (page 71).

**Proposed Project:** A descriptive title and a designation for future reference.

**Expected South Coast AQMD Cost:** The estimated proposed South Coast AQMD cost-share as required by H&SC 40448.5.1.(a)(1).

**Expected Total Cost:** The estimated total project cost including the South Coast AQMD cost-share and the cost-share of outside organizations expected to be required to complete the proposed project. This is an indication of how much South Coast AQMD public funds are leveraged through its cooperative efforts.

**Description of Technology and Application:** A brief summary of the proposed technology to be developed and demonstrated, including the expected vehicles, equipment, fuels, or processes that could benefit.

**Potential Air Quality Benefits:** A brief discussion of the expected benefits of the proposed project, including the expected contribution towards meeting the goals of the AQMP, as required by H&SC 40448.5.1.(a)(1). In general, the most important benefits of any technology research, development and demonstration program are not necessarily realized in the near-term. Demonstration projects are generally intended to be proof-of-concept for an advanced technology in a real-world application. While emission benefits, for example, will be achieved from the demonstration, the true benefits will be seen over a longer term, as a successfully demonstrated technology is eventually commercialized and implemented on a wide scale.



**Table 7: Summary of Potential Projects for 2020**

<b>Proposed Project</b>	<b>Expected SCAQMD Cost \$</b>	<b>Expected Total Cost \$</b>
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**Hydrogen/Mobile Fuel Cell Technologies and Infrastructure**

Develop and Demonstrate Hydrogen Research to Support Innovative Technology Solutions for Fueling Fuel Cell Vehicles	88,150	760,000
Develop and Demonstrate Hydrogen Production and Fueling Stations	1,763,000	6,000,000
Develop and Demonstrate Medium- and Heavy-Duty Fuel Cell Vehicles	2,644,500	12,000,000
Demonstrate Light-Duty Fuel Cell Vehicles	88,150	100,000
Subtotal	\$4,583,800	\$18,860,000

**Engine Systems/Technologies**

Develop and Demonstrate Advanced Gaseous- and Liquid-Fueled Medium- and Heavy-Duty Engines & Vehicle Technologies to Achieve Ultra-Low Emissions	2,203,750	12,500,000
Develop and Demonstrate Alternative Fuel and Clean Conventional Fueled Light-Duty Vehicles	176,300	1,000,000
Develop and Demonstrate Low Load and Cold-Start Technologies	176,300	1,000,000
Develop and Demonstrate Low Emissions Locomotive Technologies	176,300	1,000,000
Subtotal	\$2,732,650	\$15,500,000

**Electric/Hybrid Technologies and Infrastructure**

Develop and Demonstrate Medium- and Heavy-Duty On-Road and Off-Road Battery Electric and Hybrid Technologies	2,203,750	12,500,000
Develop and Demonstrate Electric Charging Infrastructure	220,375	1,250,000
Demonstrate Alternative Energy Storage	176,300	1,500,000
Demonstrate Light-Duty Battery Electric and Plug-In Hybrid Vehicles	100,000	100,000
Subtotal	\$2,700,425	\$15,350,000

**Fueling Infrastructure and Deployment (Natural Gas/Renewable Fuels)**

Demonstrate Near-Zero Emission Natural Gas Vehicles in Various Applications	440,750	2,000,000
Develop, Maintain and Expand Natural Gas Infrastructure	440,750	2,000,000
Demonstrate Renewable Transportation Fuel Manufacturing and Distribution Technologies	881,500	10,000,000
Subtotal	\$1,763,000	\$14,000,000

**Stationary Clean Fuel Technologies**

Develop and Demonstrate Microgrids with Photovoltaic/Fuel Cell/Battery Storage/EV Chargers and Energy Management	1,322,250	6,000,000
Develop and Demonstrate Renewables-Based Energy Generation Alternatives	264,450	1,000,000
Subtotal	\$1,586,700	\$7,000,000

**Table 7: Summary of Potential Projects for 2020 (cont'd)**

<b>Proposed Project</b>	<b>Expected SCAQMD Cost \$</b>	<b>Expected Total Cost \$</b>
<b>Fuel/Emissions Studies</b>		
Conduct In-Use Emissions Studies for Advanced Technology Vehicle Demonstrations	308,525	850,000
Conduct Emissions Studies on Biofuels, Alternative Fuels and Other Related Environmental Impacts	440,750	1,500,000
Identify and Demonstrate In-Use Fleet Emissions Reduction Technologies and Opportunities	220,375	1,000,000
Subtotal	\$969,650	\$3,350,000
<b>Emissions Control Technologies</b>		
Develop and Demonstrate Advanced Aftertreatment Technologies	176,300	2,000,000
Develop and Demonstrate Advanced Aftertreatment Catalyst Heating Technologies	220,375	1,000,000
Develop Methodology and Evaluate and Demonstrate Onboard Sensors for On-Road Heavy-Duty Vehicles	220,375	1,100,000
Demonstrate On-Road Technologies in Off-Road and Retrofit Applications	176,300	800,000
Subtotal	\$793,350	\$4,900,000
<b>Health Impacts Studies</b>		
Evaluate Ultrafine Particle Health Effects	88,150	1,000,000
Conduct Monitoring to Assess Environmental Impacts	132,225	500,000
Assess Sources and Health Impacts of Particulate Matter	132,225	300,000
Subtotal	\$352,600	\$1,800,000
<b>Technology Assessment/Transfer and Outreach</b>		
Assess and Support Advanced Technologies and Disseminate Information	352,600	800,000
Support Implementation of Various Clean Fuels Vehicle Incentive Programs	264,450	400,000
Subtotal	\$617,050	\$1,200,000
<b>TOTALS FOR POTENTIAL PROJECTS</b>	<b>\$16,099,225</b>	<b>\$81,960,000</b>

## Technical Summaries of Potential Projects

### Hydrogen/Mobile Fuel Cell Technologies and Infrastructure

**Proposed Project:** Develop and Demonstrate Hydrogen Research to Support Innovative Technology Solutions for Fueling Fuel Cell Vehicles

**Expected South Coast AQMD Cost:** \$88,150

**Expected Total Cost:** \$760,000

**Description of Technology and Application:**

California regulations require automakers to place increasing numbers of ZEVs into service every year. By 2050, CARB projects that 87% of light-duty vehicles on the road will be zero emission battery and FCVs.

Many stakeholders are working on hydrogen and fuel cell products, markets, requirements, mandates and policies. California has been leading the way for hydrogen infrastructure and FCV deployment. This leadership has advanced a hydrogen network that is not duplicated anywhere in the U.S. and is unique in the world for its focus on providing a retail fueling experience. In addition, the advancements have identified many lessons learned for hydrogen infrastructure development, deployment and operation. Other interested states and countries are using California's experience as a model case, making success in California paramount to enabling market acceleration and uptake in the U.S. U.S. leadership for hydrogen technologies is rooted in California, a location for implementing many DOE H2@Scale pathways, such as reducing curtailment and stranded resources, reducing petroleum use and emissions, and developing and creating jobs. The technical research capability of the national laboratories can be used to assist California in decisions and evaluations, as well as to verify solutions to problems impacting the industry. Because these challenges cannot be addressed by one agency or one laboratory, in 2018, a hydrogen research consortium was organized to combine and collaborate.

The California Hydrogen Infrastructure Research Consortium focuses on top research needs and priorities to address near-term problems in order to support California's continued leadership in innovative hydrogen technology solutions needed for fueling FCVs. These tasks also provide significant contributions to the DOE H2@Scale Initiative. For instance, advances in fueling methods and components can support the development of supply chains and deployments. Currently, funded tasks include data collection from operational stations, component failure fix verification (i.e., nozzle freeze lock), analysis of data to optimize new fueling methods for medium- and heavy-duty applications and ensuring hydrogen quality is maintained. The tasks are supported by leading researchers at NREL and coordinating national labs and managed in detail (e.g., schedule, budget, roles, milestones, tasks, reporting requirements) in a hydrogen research consortium project management plan.

These efforts are complemented by projects undertaken and supported by the Ca FCP over the last few years including their Medium- and Heavy-Duty Fuel Cell Electric Truck Action Plan released in October 2016 focusing on Class 4 parcel delivery trucks and Class 8 drayage trucks with infrastructure development and establishing metrics for measuring progress, and their Vision 2030 document released in July 2018 establishing a roadmap for future FCV and hydrogen refueling stations, including barriers that need to be overcome.

This project area would enable cofunding support for additional or follow on mutually agreed technical tasks with the California Hydrogen Infrastructure Research Consortium, the CaFCP as well as other collaborative efforts that may be undertaken to advance hydrogen infrastructure technologies.

**Potential Air Quality Benefits:**

The 2016 AQMP identifies the use of alternative fuels and zero emission transportation technologies as necessary to lower NOx and VOC emissions, in an effort to meet federal air quality standards. One of the major advantages of FCVs is the fact that they use hydrogen, a fuel that can be domestically produced from a variety of resources such as natural gas (including biogas), electricity (stationary turbine technology, solar or wind) and biomass. The technology and means to produce hydrogen fuel to support FCVs are available but require optimization to achieve broad market scale. The deployment of large numbers of FCVs, which is one strategy to attain air quality goals, requires a well-planned and robust hydrogen fueling infrastructure network. This South Coast AQMD project, with significant additional funding from other governmental and private entities, will work towards providing the necessary hydrogen fueling infrastructure network.

**Proposed Project:** Develop and Demonstrate Hydrogen Production and Fueling Stations**Expected South Coast AQMD Cost:** \$1,763,000**Expected Total Cost:** \$6,000,000**Description of Technology and Application:**

Alternative fuels, such as hydrogen and the use of advanced technologies, such as FCVs, are necessary to meet future clean air standards. A key element in the widespread acceptance and resulting increased use of alternative fuel vehicles is the development of a reliable and robust infrastructure to support the refueling of vehicles, cost-effective production and distribution and clean utilization of these new fuels.

A challenge to the entry and acceptance of direct-hydrogen FCVs is the limited number and scale of hydrogen refueling and production sites. This project would support the development and demonstration of hydrogen refueling technologies. Proposed projects would address:

*Fleet and Commercial Refueling Stations:* Further expansion of the hydrogen fueling network based on retail models, providing renewable generation, adoption of standardized measurements for hydrogen refueling, other strategic refueling locations and dispensing pressure of up to 10,000 psi and compatibility with existing CNG stations may be considered.

*Energy Stations:* Multiple-use energy stations that can produce hydrogen for FCVs or for stationary power generation are considered an enabling technology with the potential for costs competitive with large-scale reforming. System efficiency, emissions, hydrogen throughput, hydrogen purity and system economics will be monitored to determine the viability of this strategy for hydrogen fueling infrastructure deployment and as a means to produce power and hydrogen from renewable feedstocks (e.g., biomass, digester gas).

*Innovative Refueling Appliances:* Home or small scale refueling/recharging is an attractive advancement for alternative clean fuels due to the limited conventional refueling infrastructure. This project would evaluate a hydrogen innovative refueler for cost, compactness, performance, durability, emission characteristics, ease of assembly and disassembly, maintenance and operations. Other issues such as setbacks, building permits, building code compliance and UL ratings for safety would also be evaluated.

Projections for on-the-road FCVs counts now exceed 23,000 in 2021 and 47,000 in 2024 in California and the majority of these do not include medium- and heavy-duty vehicles that may be deployed in the Basin. To provide fuel for these vehicles, the hydrogen fueling infrastructure needs to be significantly increased and become more reliable in terms of availability. South Coast AQMD will seek additional funding from CEC and CARB to construct and operate hydrogen fueling stations and take advantage of funding opportunities that may be realized by any momentum created by the Governor's 2018 Executive Order to establish 200 stations by 2025.

**Potential Air Quality Benefits:**

The 2016 AQMP identifies the use of alternative clean fuels in mobile sources as a key attainment strategy. Pursuant to AQMP goals, the South Coast AQMD has in effect several fleet rules that require public and certain private fleets to purchase clean-burning alternative-fueled vehicles when adding or replacing vehicles to their vehicle fleets. FCVs constitute some of the cleanest alternative-fuel vehicles today. Since hydrogen is a key fuel for FCVs, this project would address some of the barriers faced by hydrogen as a fuel and thus assist in accelerating its acceptance and ultimate commercialization. In addition to supporting the immediate deployment of the demonstration fleet, expanding the hydrogen fuel infrastructure should contribute to the market acceptance of fuel cell technologies in the long run, leading to substantial reductions in NO<sub>x</sub>, VOC, CO, PM and toxic compound emissions from vehicles.

**Proposed Project:** Develop and Demonstrate Medium- and Heavy-Duty Fuel Cell Vehicles

**Expected South Coast AQMD Cost:** \$2,644,500

**Expected Total Cost:** \$12,000,000

**Description of Technology and Application:**

This proposed project would support evaluation including demonstration of promising fuel cell technologies for applications using direct hydrogen with proton exchange membrane (PEM) fuel cell technology. Battery dominant fuel cell hybrids are another potential technology as a way of reducing costs and potentially enhancing performance of FCVs.

The California ZEV Action Plan specifies actions to help deploy an increasing number of ZEVs, including medium- and heavy-duty ZEVs. CARB recently adopted Innovative Clean Transit Bus Regulation as another driver. Fleets are useful demonstration sites because economies of scale exist in central refueling, in training skilled personnel to operate and maintain the vehicles, in the ability to monitor and collect data on vehicle performance and for manufacturer technical and customer support. In some cases, medium- and heavy-duty FCVs could leverage the growing network of hydrogen stations, providing an early base load of fuel consumption until the number of passenger vehicles grows. These vehicles could include hybrid-electric vehicles powered by fuel cells and equipped with batteries capable of being charged from the grid and even supplying power to the grid.

In 2012, the DOE awarded South Coast AQMD funds to demonstrate Zero Emission Container Transport (ZECT) technologies. In 2015, the DOE awarded South Coast AQMD additional funds to develop and demonstrate additional fuel cell truck platforms and vehicles under ZECT II. More recently, the Clean Fuels Program cost-shared the development of transit buses at OCTA and will cost-share the demonstration of trucks and hydrogen stations to support the Port of Los Angeles project. More projects like these are anticipated as the OEMs come on board.

This category may include projects in the following applications:

<p><b>On-Road:</b></p> <ul style="list-style-type: none"> <li>• Transit Buses</li> <li>• Shuttle Buses</li> <li>• Medium- &amp; Heavy-Duty Trucks</li> </ul>	<p><b>Off-Road:</b></p> <ul style="list-style-type: none"> <li>• Vehicle Auxiliary Power Units</li> <li>• Construction Equipment</li> <li>• Lawn and Garden Equipment</li> <li>• Cargo Handling Equipment</li> </ul>
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**Potential Air Quality Benefits:**

The 2016 AQMP identifies the need to implement ZEVs. South Coast AQMD adopted fleet regulations require public and some private fleets within the Basin to acquire alternatively fueled vehicles when making new purchases. In the future, such vehicles could be powered by zero emission fuel cells operating on hydrogen fuel. The proposed projects have the potential to accelerate the commercial viability of FCVs. Expected immediate benefits include the establishment of zero and near-zero emission proof-of-concept vehicles in numerous applications. Over the longer term, the proposed projects could help foster wide-scale implementation of FCVs in the Basin. The proposed projects could also lead to significant fuel economy improvements, manufacturing innovations and the creation of high-tech jobs in Southern California, besides realizing the air quality benefits projected in the AQMP as well as GHG emission reductions. Currently, the range of the trucks in the ZECT II project have a targeted range of 150 miles. Future projects would include extending the range of the FCVs up to 400 miles and to demonstrate improvements to the reliability and durability of the powertrain systems and hydrogen storage system. For fuel cell transit buses, projects are being proposed that reduce the cost of the fuel cell bus to less than \$1 million through advanced technologies for the fuel cell stack and higher density and lower cost batteries.

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**Proposed Project:**     Demonstrate Light-Duty Fuel Cell Vehicles

**Expected South Coast AQMD Cost:**             \$88,150

**Expected Total Cost:**                         \$100,000

**Description of Technology and Application:**

This proposed project would support the demonstration of limited production and early commercial light-duty FCVs using gaseous hydrogen with proton exchange membrane (PEM) fuel cell technology, mainly through showcasing this technology. Recent designs of light-duty FCVs include hybrid batteries to recapture regenerative braking and improve overall system efficiency.

With the implementation of the California ZEV Action Plan, supplemented by the existing and planned hydrogen refueling stations in the Southern California area, light-duty limited-production FCVs are planned for retail deployment in early commercial markets near hydrogen stations by several OEMs. Fleets are useful demonstration sites because economies of scale exist in central refueling, in training skilled personnel to operate and maintain the vehicles, in the ability to monitor and collect data on vehicle performance and for OEM technical and customer support. South Coast AQMD has included FCVs as part of its demonstration fleet since it started the Five Cities Program in 2005 with the Cities of Burbank, Ontario, Riverside, Santa Ana, and Santa Monica to deploy 30 hydrogen ICE vehicles and five hydrogen stations. As part of this effort, South Coast AQMD has provided support, education, and outreach regarding FCV technology on an ongoing basis. In addition, demonstration vehicles could include hybrid-electric vehicles powered by fuel cells and equipped with larger batteries capable of being charged from the grid and even supplying power to the grid.

Hyundai, Toyota and Honda have commercialized FCVs in California, but the first commercial FCV leases are ending, and solo carpool lane access extends only for MY 2017 and later, encouraging new replacements. Innovative strategies and demonstration of dual fuel, ZEVs could expand the acceptance of BEVs and accelerate the introduction of fuel cells in vehicle propulsion.

**Potential Air Quality Benefits:**

The 2016 AQMP identifies the need to implement ZEVs. South Coast AQMD adopted fleet regulations require public and some private fleets within the Basin to acquire alternatively fueled vehicles when making new purchases. In the future, such vehicles could be powered by zero emission fuel cells operating on hydrogen fuel. The proposed projects have the potential to accelerate the commercial viability of FCVs. Expected immediate benefits include the deployment of zero emission vehicles in South Coast AQMD's demonstration fleet. Over the longer term, the proposed projects could help foster wide-scale implementation of ZEVs in the Basin. The proposed projects could also lead to significant fuel economy improvements, manufacturing innovations and the creation of high-tech jobs in Southern California, besides realizing the air quality benefits projected in the AQMP.

## Engine Systems/Technologies

**Proposed Project:** Develop and Demonstrate Advanced Gaseous- and Liquid-Fueled Medium- and Heavy-Duty Engines and Vehicles Technologies to Achieve Ultra-Low Emissions

**Expected South Coast AQMD Cost:** \$2,203,750

**Expected Total Cost:** \$12,500,000

### Description of Technology and Application:

The objective of this proposed project would be to support development and certification of near-commercial prototype low emission medium- and heavy-duty gaseous- and liquid-fueled engine technologies, as well as integration and demonstration of these technologies in on-road vehicles. The NO<sub>x</sub> emissions target for this project area is 0.02 g/bhp-hr or lower and the PM emissions target is below 0.01 g/bhp-hr. To achieve these targets, an effective emissions control strategy must employ advanced fuel system and engine design features, cylinder deactivation, aggressive engine calibration and improved thermal management, improved exhaust gas recirculation systems, and aftertreatment devices that are optimized using a system approach. This effort is expected to result in several projects, including:

- development and demonstration of advanced engines in medium- and heavy-duty vehicles and high horsepower (HP) applications;
- development of durable and reliable retrofit technologies to partially or fully convert engines and vehicles from petroleum fuels to alternative fuels; and
- field demonstrations of advanced technologies in various fleets operating with different classes of vehicles.

Anticipated fuels for these projects include but are not limited to alternative fuels (fossil fuel-based and renewable natural gas, propane, hydrogen blends, electric and hybrid), conventional and alternative diesel fuels, ultra-low sulfur diesel, renewable diesel, dimethyl ether and gas-to-liquid fuels.

The use of alternative fuel in heavy-duty trucking applications has been demonstrated in certain local fleets within the Basin. These vehicles typically require 200-400 HP engines. Higher HP alternative fuel engines are beginning to be introduced. However, vehicle range, lack or limited accessible public infrastructure, lack of experience with alternative fuel engine technologies and limited selection of appropriate alternative fuel engine products have made it difficult for more firms to consider significant use of alternative fuel vehicles. For example, in recent years, several large trucking fleets have expressed interest in using alternative fuels. However, at this time the choice of engines over 400 HP or more is limited. Continued development of cleaner dedicated alternative gaseous- or diesel-fueled engines over 400 HP with lower NO<sub>x</sub> emissions, would increase availability to end-users and provide additional emission reductions.

### Potential Air Quality Benefits:

This project is intended to expedite the commercialization of near-zero emission gaseous- and liquid-fueled medium- and heavy-duty engine technology both in the Basin and in intrastate operation. The emissions reduction benefits of replacing one 4.0 g/bhp-hr heavy-duty engine with a 0.2 g/bhp-hr engine in a vehicle that consumes 10,000 gallons of fuel per year is about 1,400 lb/yr of NO<sub>x</sub>. A heavy-duty 8.9L and 11.9L engines using natural gas achieving NO<sub>x</sub> emissions of 0.02 g/bhp-hr have been certified and commercialized, with larger displacement and advanced technology (e.g., opposed piston) engines undergoing development. Further, neat or blended alternative fuels can also reduce heavy-duty engine particulate emissions by over 90 percent compared to current diesel technology. This project is expected to lead to increased availability of low emission alternative fuel heavy-duty engines. Fleets can use the engines and vehicles emerging from this project to comply with South Coast AQMD fleet regulations and towards compliance of the 2016 AQMP control measures.



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**Proposed Project:** Develop and Demonstrate Alternative Fuel and Clean Conventional Fueled Light-Duty Vehicles

**Expected South Coast AQMD Cost:** \$176,300

**Expected Total Cost:** \$1,000,000

**Description of Technology and Application:**

Although new conventionally fueled vehicles are much cleaner than their predecessors, not all match the lowest emissions standards often achieved by alternative fuel vehicles. This project would assist in the development, demonstration and certification of both alternative-fueled and conventional-fueled vehicles to meet the strictest emissions requirements by the state, e.g., SULEV for light-duty vehicles. The candidate fuels include CNG, LPG, ethanol, GTL, clean diesel, modified biodiesel and ultra-low sulfur diesel, and other novel technologies. The potential vehicle projects may include:

- certification of CNG light-duty sedans and pickup trucks used in fleet services;
- assessment of “clean diesel” vehicles, including hybrids and their ability to attain SULEV standards; and
- assessment of other clean technologies.

Other fuel and technology combinations may also be considered under this category.

**Potential Air Quality Benefits:**

The 2016 AQMP identifies the use of alternative clean fuels in mobile sources as a key attainment strategy. Pursuant to AQMP goals, the South Coast AQMD has in effect several fleet rules that require public and certain private fleets to purchase clean-burning alternative-fueled vehicles when adding or replacing vehicles to their vehicle fleets. This project is expected to lead to increased availability of low emission alternative-and conventional-fueled vehicles for fleets as well as consumer purchase.

**Proposed Project:**     Develop and Demonstrate Low Load and Cold-Start Technologies

**Expected South Coast AQMD Cost:**                     \$176,300

**Expected Total Cost:**                                     \$1,000,000

**Description of Technology and Application:**

Cold starts and low loads of internal combustion engines have a negative impact on the environment. The thermal efficiency of the internal combustion engine is significantly lower at cold-starts and lower loads. Exhaust aftertreatment systems require a temperature of 250 degrees Celsius or higher to operate at the highest level of emissions reduction efficiency. Diesel engines at cold start increase emissions as much as 10% compared to spark-ignited CNG engines. At low loads, an aftertreatment system often may operate at 150 degrees Celsius. It is also now known that the smaller hybrid engines are experiencing similar warm-up issues due to the on-off drive cycles. The need for thermal efficiency at start-up has led to a variety of suggestions and trials. The primary goal is to reduce energy losses so that systems and components such as the catalytic converter system reach and maintain their intended operating temperature range as soon as possible after engine start. In most cases, adaptation of algorithms associated with fuel injection timing, cylinder deactivation, EGR fraction, turbo control, heated dosing, SCR pre-heaters and close coupled catalysts can be used to keep the catalyst at the correct operating temperature. This project is to investigate technology to improve catalyst temperature at start-up and low loads with minimal economic impact and time. This technology could be applied to a range of vehicles from hybrid-electric light-duty vehicles to heavy-duty trucks. Emphasis should be on steady temperature control at optimal degrees already proven and established through significant research. The following items are the most recently developed best practices with respect to cost and functionality.

- design and prove cylinder activation technology; and
- develop control algorithms to ensure the catalyst maintains temperature throughout the duty cycle.

The project would be implemented, and fleet tested, and recorded over a minimum 12-month period. Further projects can develop from this technology and should be tested in regard to other liquid fuel burning engines.

**Potential Air Quality Benefits:**

The technology to reduce emissions at cold starts and low loads is beneficial to a broad spectrum of vehicles from hybrid electric, light-duty and heavy-duty engines in drayage long haul trucks. The advancement in this technology will directly contribute toward low NOx required as a result of U.S. EPA's heavy-duty engine standard and the current attainment policies in effect. Eliminating cold starting engine issues also directly creates a co-benefit of reducing fuel consumption.

**Proposed Project:** Develop and Demonstrate Low Emissions Locomotive Technologies

**Expected South Coast AQMD Cost:** \$176,300

**Expected Total Cost:** \$1,000,000

**Description of Technology and Application:**

The objective of this project is to support the development and demonstration of gaseous and liquid fueled locomotive engines. The requirements of locomotive engines as primary generators of electricity to power the locomotive poses serious challenges. Locomotives operate at a specific duty cycle different than conventional on-road engines. The engines often run at low speed and have extended periods of idle time. The durability requirements also surpass other forms of transportation.

Large displacement gaseous fueled engines do not currently exist to power locomotives. The early stages of development of engines and systems to fill this need is currently on-going. Engines are expected to be below the current 0.2g/bhp-hr low NOx standard. The adaptation of alternative fueled locomotives in coordination with required infrastructure improvement by leading manufacturers in the industry shows great potential for further research and cost savings with less maintenance costs and better reliability.

**Potential Air Quality Benefits:**

This project is expected to reduce emissions around 97 tons per year of NOx for each locomotive. The reduction of PM and CO2 also shows great potential mitigation in environmental justice communities.

## Electric/Hybrid Technologies and Infrastructure

**Proposed Project:** Develop and Demonstrate Medium- and Heavy-Duty On-Road and Off-Road Electric and Hybrid Vehicles

**Expected South Coast AQMD Cost:** \$2,203,750

**Expected Total Cost:** \$12,500,000

### **Description of Technology and Application:**

The significance of transportation in overall carbon emissions is increasing as energy utilities move toward cleaner and more sustainable ways to generate electricity. The U.S. EPA estimated that in 2016, transportation was responsible for about 28 percent of the nation's carbon emissions, while the electricity sector emissions declined from 31 to 28 percent.

The South Coast AQMD has long been a leader in promoting early demonstrations of next generation light-duty vehicle propulsion technologies (and fuels). However, given the current and planned market offerings in this category, priorities have shifted. Nevertheless, the South Coast AQMD will continue to evaluate market offerings and proposed technologies in light-duty vehicles to determine if any future support is required.

Meanwhile, medium- and heavy-duty vehicles make up 4.3 percent of vehicles in the U.S. and drive 9.3 percent of all vehicle miles traveled each year yet are responsible for more than 25 percent of all the fuel burned annually. Moreover, the AQMP identified medium- and heavy-duty vehicles as the largest source of NO<sub>x</sub> emissions in the South Coast Air Basin. Electric and hybrid technologies have gained momentum in the light-duty sector with commercial offerings by most of the automobile manufacturers. Unfortunately, the medium- and heavy-duty platforms require the greatest emission reductions, especially for the fleets due to low turnover.

The South Coast AQMD has investigated the use of electric and hybrid technologies to achieve similar performance as the conventional-fueled counterparts while achieving both reduced emissions and improved fuel economy. Development and validation of emissions test procedures is needed but is complicated due to the low volume and variety of medium- and heavy-duty vehicles. In 2019, CARB announced the next stages of lower NO<sub>x</sub> standards and introduced the new hybrid powertrain certification test procedures. The new test procedures will account for the fuel and emission benefits of hybrid vehicles and allow them to certify to a potentially lower engine standard. South Coast AQMD have made initial contact with several OEMs to develop next generation lower NO<sub>x</sub> heavy-duty diesel and natural gas hybrid powertrains. Hybrid technologies offers a potentially faster commercialization pathway for reducing both NO<sub>x</sub> and greenhouse gas emissions in the near term by strategically utilizing the existing internal combustion engines and electric components. These new hybrid powertrains could be used as a bridge to the zero emission technologies. Due to limited time to attainment, continued development and demonstration efforts are much needed in the medium- and heavy-duty sector in order to accelerate the commercialization of next generation hybrid technologies to market.

Platforms to be considered include utility trucks, delivery vans, shuttle buses, transit buses, waste haulers, construction equipment, cranes and other off-road vehicles. Innovations that may be considered for demonstration include advancements in the auxiliary power unit, either ICE or other heat engine; and battery-dominant hybrid systems utilizing off-peak re-charging, with advanced battery technologies. Alternative fuels are preferred in these projects, e.g., natural gas, especially from renewable sources, LPG, hydrogen, GTL and hydrogen-natural gas blends, but conventional fuels such as gasoline, renewable diesel, or even modified biodiesel may be considered if the emission benefits can be demonstrated as equivalent or superior to alternative fuels. Both new designs and retrofit technologies and related charging infrastructure will be considered.

As on-road mobile sources are increasingly getting cleaner, the off-road sector has been gaining attention. These sources include cargo handling equipment and off-road construction equipment. Several manufacturers have released electric and hybrid equipment, and more are underway. Since the applications are more diverse in this sector, continued development and incentives are needed to accelerate the progress in this sector.

This project category will develop and demonstrate:

- various EV architectures;
- anticipated costs for such architectures;
- customer interest and preferences for each alternative;
- integration of the technologies into prototype vehicles and fleets;
- electric and hybrid-electric medium- and heavy-duty vehicles (e.g., utility trucks, delivery vans, shuttle buses, transit buses, waste haulers, construction equipment, cranes and other off-road vehicles);
- development and demonstration of electric off-road vehicles, e.g., battery electric off-road construction equipment;
- development and demonstration of CNG hybrid vehicle technology; and
- development and demonstration of diesel hybrid vehicle technology.

**Potential Air Quality Benefits:**

The 2016 AQMP identifies zero or near-zero emission vehicles as a key attainment strategy. Plug-in hybrid electric technologies have the potential to achieve near-zero emission while retaining the range capabilities of a conventionally gasoline-fueled combustion engine vehicle, a key factor expected to enhance broad consumer acceptance. Given the variety of EV systems under development, it is critical to determine the true emissions and performance utility compared to conventional vehicles. Successful demonstration of optimized prototypes would promise to enhance the deployment of zero and near-zero emission technologies.

Expected benefits include the establishment of criteria for emission evaluations, performance requirements, and customer acceptability of the technology. This will help both regulatory agencies and OEMs to expedite introduction of zero and near-zero emission vehicles in the Basin, which is a high priority of the AQMP.

**Proposed Project:** Develop and Demonstrate Electric Charging Infrastructure

**Expected South Coast AQMD Cost:** \$220,375

**Expected Total Cost:** \$1,250,000

**Description of Technology and Application:**

There is a critical need to address gaps in EV charging infrastructure availability. Almost half (48 percent) of the 1,293,728 EVs sold in the U.S. since 2011 were in California, and of those sales in California, it is estimated that almost half (43 percent) of CVRP rebates issued to date were issued in South Coast AQMD. In addition, the California ZEV Action Plan, which was updated in 2018, calls for 5 million ZEVs and supporting infrastructure by 2030.

The revised recommended practice SAE J1772 enables passenger vehicles to charge from 240V AC (Level 2) and 480V DC charging using a common conductive connector in 30 minutes for 90 miles of range (50 kW fast charger) or 40 minutes for 200 miles of range (135 kW Tesla fast charger). Together with the growing adoption of long range EVs above 200-mile electric range, the technology and infrastructure of three fast charging systems (CCS1 in North America and CCS2 elsewhere in the world, CHAdeMO and Tesla) are developing as well, although China adopted a GB/T standard based on CHAdeMO. Technological developments improving the driving range of EVs, as well as increasing availability and speed of charging infrastructure, could change the need for charging infrastructure in the future. However, a study of fast charging impact on battery life and degradation is very limited. The research and demonstration to increase understanding of the degradation effects of fast charging will have implications on what types of charging EV owners will leverage and what EVSE stakeholders will bring to market. South Coast AQMD is committed to continuing to support the successful deployment of EV charging infrastructure as well as demonstration of fast charging effect on battery life, leveraging funds from the state, local utility funds like SCE's Charge Ready and the Volkswagen settlement.

The South Coast AQMD is actively pursuing development of intelligent transportation systems, such as Volvo's EcoDrive software platform being utilized for the ZEDT and Volvo LIGHTS projects, to improve traffic efficiency of battery electric and fuel cell electric cargo container trucks. This system provides truck drivers real-time vehicle operation feedback based on changing traffic and road conditions where trucks can dynamically change their speed to better flow through intersections. EcoDrive is also using geofencing capabilities to operate in zero emissions mode while traveling through disadvantaged communities. A truck eco-routing system can provide the eco-friendliest travel route based on truck engine/emission control characteristics, loaded weight, road grade and real-time traffic conditions. Integrated programs can interconnect fleets of electric drive vehicles with mass transit via web-based reservation systems that allow multiple users. These integrated programs can match the features of EVs (zero emissions, zero start-up emissions, short range) to typical consumer demands for mobility in a way that significantly reduces emissions of pollutants and greenhouse gases.

This project category is one of South Coast AQMD's continued efforts to:

- deploy a network of DC fast charging infrastructure (350kW or more) and rapidly expand the existing network of public EV charging stations including energy storage systems;
- charging infrastructure and innovative systems to support advanced vehicle development projects;
- support investigation of fast charging impact on battery life;
- develop intelligent transportation system strategies for cargo containers; and
- develop freight load-balancing strategies as well as to conduct market analysis for zero emission heavy-duty trucks in goods movement.

**Potential Air Quality Benefits:**

The 2016 AQMP identifies zero emission vehicles as a key attainment strategy. This proposed project category will reduce PM pollution along major roadways through the expansion of the public EV charging infrastructure network by allowing drivers to shift away from petroleum-fueled vehicles to battery and FCVs. In addition, this project will assist in achieving improved fuel economy and lower tailpipe emissions, further helping the region to achieve federal ambient air quality standards and protect public health. Expected benefits include the establishment of criteria for emission evaluations, performance requirements and customer acceptability of the technology. This will help both regulatory agencies and OEMs to expedite introduction of ZEVs in the South Coast Basin, which is a high priority of the AQMP.

**Proposed Project:** Demonstrate Alternative Energy Storage

**Expected South Coast AQMD Cost:** \$176,300

**Expected Total Cost:** \$1,500,000

**Description of Technology and Application:**

The South Coast AQMD has been involved in the development and demonstration of energy storage systems for electric and hybrid-electric vehicles, mainly lithium ion chemistry battery packs. Over the past few years, new technologies, especially lithium-ion batteries have shown robust performance. Other technology manufacturers have also developed energy storage devices including beyond lithium-ion batteries, flywheels, hydraulic systems and ultracapacitors. Energy storage systems optimized to combine the advantages of ultracapacitors and high-energy but low-power advanced batteries could yield benefits. Beyond lithium-ion batteries (e.g., lithium-sulfur, lithium-oxygen, sodium-ion, flow, and solid-state batteries) also have opportunities to achieve higher energy density, longer cycle life, and lower cost.

This project category is to apply these advanced storage technologies in vehicle platforms to identify best fit applications, demonstrate their viability (reliability, maintainability and durability), gauge market preparedness, evaluate costs relative to current lithium-ion batteries and provide a pathway to commercialization.

The long-term objective of this project is to decrease fuel consumption and resulting emissions without any changes in performance compared to conventional vehicles. This effort will support several projects for development and demonstration of different types of low emission hybrid vehicles using advanced energy storage strategies and conventional or alternative fuels. The overall net emissions and fuel consumption of these types of vehicles are expected to be much lower than traditional engine systems. Both new and retrofit technologies will be considered.

Additionally, this project will also assess potential for repurposing of electric vehicle batteries for storage as well as the longer term more cost-effective recycling approaches currently in a nascent “pilot” stage, especially for metals such as lithium and cobalt.

**Potential Air Quality Benefits:**

Certification of low emission vehicles and engines and their integration into the Basin’s transportation sector is a high priority under the 2016 AQMP. This project is expected to further efforts to develop alternative energy storage technologies that could be implemented in medium- and heavy-duty trucks, buses and other applications. Benefits will include proof of concept for the new technologies, diversification of transportation fuels and lower emissions of criteria, toxic pollutants and greenhouse gases.



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**Proposed Project:** Demonstrate Light-Duty Battery Electric and Plug-In Hybrid Vehicles

**Expected South Coast AQMD Cost:** \$100,000

**Expected Total Cost:** \$100,000

**Description of Technology and Application:**

This proposed project would support the demonstration of limited production and early commercial light-duty BEVs and PHEVs using advanced technology, mainly through showcasing this technology. Recent designs of light-duty BEVs and PHEVs provide increased range before recharging, improved efficiency and recharging times, and other advanced safety, energy, autonomous and performance features in new platforms and applications that can accelerate EV adoption.

South Coast AQMD has included BEVs and PHEVs as part of its demonstration fleet since the development of early conversion vehicles. South Coast AQMD also installed 92 Level 2 EV charging ports in 2017 and a DC fast charger with CHAdeMO and CCS1 connectors in 2018 to support public and workplace charging as a means of supporting education and outreach regarding BEV and PHEV technology on an ongoing basis.

Light-duty BEVs and PHEVs are available from most established OEMs and several new OEMs. Since solo carpool lane access extends only for three years through MY 2025 according to current legislation, demonstration vehicle replacement is encouraged.

**Potential Air Quality Benefits:**

The 2016 AQMP identifies the need to implement ZEVs. South Coast AQMD adopted fleet regulations require public and some private fleets within the Basin to acquire alternatively fueled vehicles when making new purchases. In the future, such vehicles could be powered by BEVs. The proposed projects have the potential to accelerate the commercial viability of BEVs and PHEVs. Expected immediate benefits include the deployment of ZEVs in South Coast AQMD's demonstration fleet. Over the longer term, the proposed projects could help foster wide-scale implementation of FCVs in the Basin. The proposed projects could also lead to significant fuel economy improvements, manufacturing innovations and the creation of high-tech jobs in Southern California, besides realizing the air quality benefits projected in the AQMP.

## Fueling Infrastructure and Deployment (Natural Gas/Renewable Fuels)

**Proposed Project:** Demonstrate Near-Zero emission Natural Gas Vehicles in Various Applications

**Expected South Coast AQMD Cost:** \$440,750

**Expected Total Cost:** \$2,000,000

### **Description of Technology and Application:**

Natural gas vehicles (NGVs) have been very successful in reducing emissions in the Basin due to the deployment by fleets and owners and operators of heavy-duty vehicles utilizing this clean fuel. Currently, on-road heavy-duty natural gas engines are increasingly being certified to CARB's optional low-NOx standards which are significantly lower in NOx than the current on-road heavy-duty standard. This technology category seeks to support the expansion of OEMs producing engines or systems certified to the lowest optional NOx standard or near-zero emissions and useable in a wide variety of medium- and heavy-duty applications, such as Class 6 vehicles used in school buses and in passenger and goods delivery vans, Class 7 vehicles such as transit buses, waste haulers, street sweepers, sewer-vector trucks, dump trucks, concrete mixers, commercial box trucks, and Class 8 tractors used in goods movement and drayage operations and off-road equipment such as construction vehicles and yard hostlers. This category can also include advancing engine technologies to improve engine efficiencies that will help attract heavy-duty vehicle consumers to NGVs.

### **Potential Air Quality Benefits:**

Natural gas-powered vehicles have inherently lower engine criteria pollutant emissions relative to conventionally fueled vehicles, especially older diesel-powered vehicles. Recently, on-road heavy-duty engines have been certified to near-zero emission levels that are 90% lower in NOx than the current on-road HDV standard. California's On-Road Truck and Bus Regulation requires all on-road HDVs to meet the current standard by January 1, 2023. The deployment of near-zero emission vehicles would significantly further emission reductions relative to the state's current regulatory requirements. Incentivizing the development and demonstration of near-zero emission NGVs in private and public fleets, goods movement applications, transit buses will help reduce local emissions and emissions exposure to nearby residents. Natural gas vehicles can also have lower greenhouse gas emissions and can increase energy diversity, help address national energy security objectives, and can reduce biomass waste when produced from such feedstocks. Deployment of additional NGVs is consistent with South Coast AQMD's AQMP to reduce criteria pollutants, and when fueled by RNG supports California's objectives of reducing GHGs and the carbon intensity of the state's transportation fuel supply, as well as the federal government's objective of increasing domestically produced alternative transportation fuels.

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**Proposed Project:** Develop, Maintain & Expand Natural Gas Infrastructure

**Expected South Coast AQMD Cost:** \$440,750

**Expected Total Cost:** \$2,000,000

**Description of Technology and Application:**

This project supports the development, maintenance and expansion of natural gas fueling stations in strategic locations throughout the Basin, including the Ports, and advancing technologies and station design to improve fueling and refueling efficiencies of heavy-duty NGVs. This category supports the broader deployment of near-zero emission heavy-duty vehicles and the implementation of South Coast AQMD's fleet rules. In addition, as natural gas fueling equipment begins to age or has been placed in demanding usage, components will deteriorate. This project offers facilities to replace worn-out equipment or to upgrade existing fueling and/or garage and maintenance equipment to offer increased fueling capacity to public agencies, private fleets and school districts.

**Potential Air Quality Benefits:**

The AQMP identifies the use of alternative clean fuels in mobile sources as a key attainment strategy. Heavy-duty NGVs have significantly lower emissions than their diesel counterparts and represent the cleanest internal combustion engine-powered vehicles available today. The project has the potential to significantly reduce the installation and operating costs of NGV refueling stations, and improving vehicle refueling times through improved refueling systems designs and high-flow nozzles. While new or improved NGV stations have an indirect emissions reduction benefit, they help facilitate the introduction of near-zero emission NGVs in private and public fleets in the area, which have a direct emissions reduction benefit. It is expected that natural gas' lower fuel cost relative to diesel and the added financial incentives of renewable natural gas (RNG) under the state's Low Carbon Fuel Standard program and the federal Renewable Fuel Standard program will significantly reduce operating costs of high fuel volume heavy-duty NGVs and attract consumers to this technology. The increased exposure and fleet and consumer acceptance of NGVs would lead to significant and direct reductions in NO<sub>x</sub>, VOC, CO, PM and toxic compound emissions from mobile sources. Such increased penetration of NGVs will provide direct emissions reductions of NO<sub>x</sub>, VOC, CO, PM and air toxic compounds throughout the Basin.

**Proposed Project:** Demonstrate Renewable Transportation Fuel Manufacturing and Distribution Technologies

**Expected South Coast AQMD Cost:** \$881,500

**Expected Total Cost:** \$10,000,000

**Description of Technology and Application:**

The transportation sector represents a significant source of criteria pollution in the Basin. Clean, alternative fuel-powered transportation is a necessary component for this region to meet federal clean air standards. Alternative fuels produced from renewable sources such as waste biomass help to further efforts associated with landfill and waste diversion, greenhouse gas reduction, energy diversity and petroleum dependency. Locally produced renewable fuels further reduces concerns associated with out-of-state production and transmission of fuel as well as helps support the local economy. Renewable fuels recognized as a transportation fuel under the state's Low Carbon Fuel Standard program and the federal government's Renewable Fuel Standard program can provide financial incentives that can significantly reduce the price of fuel and hence the cost of operation of clean, alternative fuel vehicles and providing additional incentive for consumers to purchase and deploy clean, alternative renewable fueled powered vehicles.

The project category will consider the development and demonstration of technologies for the production and use of renewable transportation fuels such as renewable natural gas (RNG), renewable diesel (RD), and renewable hydrogen (RH) from various waste biomass feed stocks including municipal solid wastes, green waste, and biosolids from waste water treatment facilities, from technologies such as anaerobic digestion, gasification, and pyrolysis.

The main objectives of this project are to investigate, develop and demonstrate:

- commercially viable methods for converting renewable feed stocks into CNG, LNG, Hydrogen or diesel (e.g., production from biomass);
- economic small-scale natural gas liquefaction technologies;
- utilization of various gaseous feed stocks locally available;
- commercialize incentives for fleets to site, install and use RNG refueling facilities; and
- pipeline interconnection in the local gas grid to provide supply to users.

**Potential Air Quality Benefits:**

The South Coast AQMD relies on a significant increase in the penetration of zero and near-zero emission vehicles in the South Coast Basin to attain federal clean air standards by 2023 and 2032. This project would help develop a number of renewable transportation fuel production and distribution facilities to improve local production and use of renewable fuels to help reduce transportation costs and losses that can reduce total operating costs of zero and near-zero emission vehicles to be competitive with comparable diesel fueled vehicles. Such advances in production and use are expected to lead to greater infrastructure development. Additionally, this project could support the state's goal of redirecting biomass waste for local fuel production and reduce greenhouse gases associated with these waste biomass feedstocks.

## Stationary Clean Fuel Technologies

**Proposed Project:** Develop and Demonstrate Microgrids with Photovoltaic/Fuel Cell/Battery Storage/EV Chargers and Energy Management

**Expected South Coast AQMD Cost:** \$1,322,250

**Expected Total Cost:** \$6,000,000

### Description of Technology and Application:

CARB has proposed the Advanced Clean Truck Regulation which is part of a holistic approach to accelerate a large-scale transition of zero emission medium-and heavy-duty vehicles from Class 2B to Class 8. Manufacturers who certify Class 2B-8 chassis or complete vehicles with combustion engines would be required to sell zero emission trucks as an increasing percentage of their annual California sales from 2024 to 2030. By 2030, zero emission truck/chassis sales would need to be 50% of Class 4–8 straight trucks sales and 15% of all other truck sales.

The commercialization of zero emission heavy-duty trucks is currently under way with two of the largest manufacturers announcing plans for commercial products in the 2021-2022 timeframe to be introduced in Southern California. Both Daimler and Volvo, which are currently developing battery electric drayage trucks with the South Coast AQMD, are planning commercial products soon. Several fleet operators are planning large deployments of 50 to 100 trucks, some at single site locations. Also, CARB is expected to announce in spring 2020 release of a solicitation that seeks projects to deploy 50 or more heavy-duty trucks at a single location. Ever larger deployments of zero emission trucks will be needed for the technology to have an impact on air quality.

Large deployments of zero emission Class 8 battery electric trucks (BET) each carrying 300+ kW hours of battery-stored energy or fuel cell trucks (FCT) carrying 30-50 kg of hydrogen will require costly infrastructure that creates a barrier for some fleets to adopt zero emission platforms. Many fleet operators do not own but lease their facilities making the capital expenditure of EV or hydrogen infrastructure impossible to recoup in a short period of time. Like the diesel vehicles they presently operate, fleets purchase fuel for their trucks, not the fueling station. Microgrids can be instrumental in meeting the challenge of providing large amounts of energy cost effectively for EV charging or hydrogen generation to support zero emission vehicle refueling. Additionally, if the microgrid equipment is owned by a third party and the energy sold to the fleet through a power purchase agreement, the financial challenge of a large capital investment can be avoided by the fleet operator.

A microgrid is a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid. A microgrid can connect and disconnect from the grid to enable it to operate in both grid-connected and island-mode. Microgrids can work synergistically with the utility grid to provide power for zero emission vehicle refueling by managing when energy from the grid is used—during off-peak hours when it is the least expensive. Then during peak demand periods, the microgrid would use energy from battery storage or onsite generation. Most all the technologies that make up microgrids already exist including photovoltaic, fuel cells, battery storage, along with hardware and software for the energy management system (EMS). When grid service is interrupted, the microgrid can disconnect from it and continue to operate as an energy island independent from the grid. Having assurance of an uninterrupted fueling source is an important consideration for a fleet operator. Also, if the microgrid is connected to the fleet operator’s logistics system, additional benefits in terms of infrastructure cost and battery life for BETs can be realized. If the EMS is fed information on the route a truck is going to travel, it can charge the vehicle with enough energy for the trip so the truck will operate within 20-80% state of charge (SOC) of the battery having the least amount of impact to battery life. Additionally, if the EMS is connected to the logistics system, it can plan the charging schedules with

150 kW or less powerful chargers which again will have less impact to battery life than the planned higher powered 300+ kW chargers and lower the costs for the charging infrastructure.

The energy demand of electric and fuel cell heavy-duty trucks is substantial; for a 100-vehicle fleet of BETs with 300 kW hours, batteries would require 30 MW hours/day of energy and for a 100-vehicle fleet of FCTs, 2000 kgs/day of hydrogen. Microgrids can provide energy for hydrogen and EV infrastructure and can serve to enable large zero emission vehicle deployments and make refueling economical and reliable. Staff has demonstrated several microgrid projects with the University of California Irvine and has toured the microgrid at University of California San Diego. Currently, several pilot projects are being discussed with microgrid developers and fleet operators that involve various configurations of microgrid technologies and different business models. Proposed projects would include development and demonstration of microgrids utilizing various types of renewable and zero emitting onsite generation (fuel cell tri-generation, power to gas, photovoltaic, wind), energy storage, connectivity to logistics systems, vehicle-to-grid and vehicle-to-building technologies. Also, projects that demonstrate different business models will be considered, such as projects involving a separate entity owning some or all the microgrid equipment and engaging in a power purchase agreement to provide energy to fleets that are transitioning to zero emission trucks. Proposed projects would partner with truck OEMs and their major customers, such as large- and medium-sized fleets looking at microgrid solutions for their operations here in the South Coast Air Basin.

**Potential Air Quality Benefits:**

Microgrids can support large deployments of zero emission medium- and heavy-duty trucks that are necessary to meet the AQMP target of a 45 percent reduction in NO<sub>x</sub> required by 2023 and an additional 55 percent reduction by 2031. Both renewable and zero emitting power generation technologies that make up a microgrid can provide a well-to-wheel zero emission pathway for transporting goods. Projects could potentially reduce a significant class of NO<sub>x</sub> and CO emissions that are in excess of the assumptions in the AQMP and further enhance South Coast AQMD's ability to enforce full-time compliance.

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**Proposed Project:** Develop and Demonstrate Renewables-Based Energy Generation Alternatives

**Expected South Coast AQMD Cost:** \$264,450

**Expected Total Cost:** \$1,000,000

**Description of Technology and Application:**

The objective of this proposed project is to support the development and demonstration of clean energy, renewable alternatives in stationary applications. The technologies to be considered include thermal, photovoltaic and other solar energy technologies; wind energy systems; energy storage potentially including vehicle to grid or vehicle to building functionalities for alternative energy storage; biomass conversion; and other renewable energy and recycling technologies. Innovative solar technologies, such as solar thermal air conditioning and photovoltaic-integrated roof shingles, are of particular interest. Also, in the agricultural sections of the Basin, wind technologies could potentially be applied to drive large electric motor-driven pumps to replace highly polluting diesel-fired pumps. Besides renewable technologies, electrolyzer technology could be used to generate hydrogen, a clean fuel. Hydrogen, when used in regular engines, can potentially reduce tail-pipe emissions, while in fuel cells the emissions are reduced to zero.

The project is expected to result in pilot-scale production demonstrations, scale-up process design and cost analysis, overall environmental impact analysis and projections for ultimate clean fuel costs and availability. This project is expected to result in several projects addressing technological advancements in these technologies that may improve performance and efficiency, potentially reduce capital and operating costs, enhance the quality of natural gas generated from renewable sources for injection into natural gas pipelines, improve reliability and user friendliness and identify markets that could expedite the implementation of successful technologies.

**Potential Air Quality Benefits:**

The 2016 AQMP identifies the development and ultimately the implementation of non-polluting power generation. To gain the maximum air quality benefit, polluting fossil fuel-fired electric power generation needs to be replaced with clean renewable energy resources or other advanced zero emission technologies, such as hydrogen fuel cells, particularly in a distributed generation context.

The proposed project is expected to accelerate the implementation of advanced zero emission energy sources. Expected benefits include directly reducing the emissions by the displacement of fossil generation; proof-of-concept and potential viability for such zero emission power generation systems; increased exposure and user acceptance of the new technology; reduced fossil fuel usage; and the potential for increased use, once successfully demonstrated, with resulting emission benefits, through expedited implementation. These technologies would also have a substantial influence in reducing global warming emissions.

## Fuel/Emissions Studies

**Proposed Project:** Conduct In-Use Emissions Studies for Advanced Technology Vehicle Demonstrations

**Expected South Coast AQMD Cost:** \$308,525

**Expected Total Cost:** \$850,000

### Description of Technology and Application:

Hybrid electric, hybrid hydraulic, plug-in electric hybrid and pure EVs will all play role in the future of transportation. Each of these transportation technologies has attributes that could provide unique benefits to different transportation sectors. Identifying the optimal placement of each transportation technology will provide the co-benefits of maximizing the environmental benefit and return on investment for the operator.

In addition, South Coast AQMD has been supporting rapid deployment of near-zero emission natural gas technologies ever since the first heavy-duty engine is commercially available in 2015. As more near-zero emission natural gas technology penetrate the different segments, in-use assessment of real-world benefit is needed.

The environmental benefit for each technology class is duty-cycle and application specific. Identifying the attributes of a specific application or drive cycle that would take best advantage of a specific transportation technology would speed the adoption and make optimal use of financial resources in the demonstration and deployment of a technology. The adoption rates would be accelerated since the intelligent deployment of a certain technology would ensure that a high percentage of the demonstration vehicles showed positive results, which would spur the adoption of this technology in similar applications, as opposed to negative results derailing the further development or deployment of a certain technology.

The proposed project would review and potentially coordinate application specific drive cycles to for specific applications. The potential emissions reductions and fossil fuel displacement for each technology in a specific application would be quantified on a full-cycle basis. This information could be used to develop a theoretical database of potential environmental benefits of different transportation technologies when deployed in specific applications.

Another proposed project would be the characterization of intermediate volatility organic compound (IVOC) emissions which is critical in assessing ozone and SOA precursor production rates. Diesel vehicle exhaust and unburned diesel fuel are major sources of and contribute to the formation of urban ozone and secondary organic aerosol (SOA), which is an important component of PM2.5.

Finally, while early developments in autonomous and vehicle-to-vehicle controls are focused on light-duty passenger vehicles, the early application of this technology to heavy-duty, drayage and container transport technologies is more likely. The impact on efficiency and emissions could be substantial. A project to examine this technology to assess its effect on goods movement and emissions associated with goods movement could be beneficial at this time.

### Potential Air Quality Benefits:

The development of an emissions reduction database, for various application specific transportation technologies, would assist in the targeted deployment of new transportation technologies. This database coupled with application specific vehicle miles traveled and population data would assist in intelligently deploying advanced technology vehicles to attain the maximum environmental benefit. These two data streams would allow vehicle technologies to be matched to an application that is best suited to the specific technology, as well as selecting applications that are substantial enough to provide a significant environmental benefit. The demonstration of a quantifiable reduction in operating cost through the



intelligent deployment of vehicles will also accelerate the commercial adoption of the various technologies. The accelerated adoption of lower emitting vehicles will further assist in attaining South Coast AQMD's air quality goals.

**Proposed Project:** Conduct Emissions Studies on Biofuels, Alternative Fuels and Other Environmental Impacts

**Expected South Coast AQMD Cost:** \$440,750

**Expected Total Cost:** \$1,500,000

**Description of Technology and Application:**

The use of biofuels can be an important strategy to reduce petroleum dependency, air pollution and greenhouse gas emissions. Biofuels are in fact receiving increased attention due to national support and state activities resulting from SB 32, AB 1007 and the Low-Carbon Fuel Standard. With an anticipated increase in biofuel use, it is the objective of this project to further analyze these fuels to better understand their benefits and impacts not only on greenhouse gases but also air pollution and associated health effects.

In various diesel engine studies, replacement of petroleum diesel fuel with biodiesel fuel has demonstrated reduced PM, CO and air toxics emissions. Biodiesel also has the potential to reduce greenhouse gas emissions because it can be made from renewable feedstocks, such as soy and canola. However, certain blends of biodiesel have a tendency to increase NOx emissions for certain engines and duty cycles, which exacerbates the ozone and PM2.5 challenges faced in the Basin. In addition, despite recent advancements in toxicological research in the air pollution field, the relationship between biodiesel particle composition and associated health effects is still not completely understood.

Ethanol is another biofuel that is gaining increased national media and state regulatory attention. CARB's reformulated gasoline regulation to further increase the ethanol content to 10% as a means to increase the amount of renewable fuels in the state. It is projected that the state's ethanol use will increase from 900 million gallons in 2007 to 1.5 billion gallons by 2012 as a result. As in the case of biodiesel, ethanol has demonstrated in various emission studies to reduce PM, CO and toxic emissions; however, the relationship between particle composition and associated health effects from the combustion of ethanol is not well understood either.

CARB recently proposed a regulation on the commercialization of alternative diesel fuels, including biodiesel and renewable diesel, while noting that biodiesel in older heavy-duty vehicles can increase NOx and the need for emerging alternative diesel fuels to have clear ground rules for commercialization. The impact of natural gas fuel composition on emissions from heavy-duty trucks and transit buses is also being studied. Researchers has proposed to evaluate the emissions impact of renewable natural gas and other natural gas blends such as renewable hydrogen.

In order to address these concerns on potential health effects associated with biofuels, namely biodiesel and ethanol blends, this project will investigate the physical and chemical composition and associated health effects of tailpipe PM emissions from light- to heavy-duty vehicles burning biofuels in order to ensure public health is not adversely impacted by broader use of these fuels. This project also supports future studies to identify mitigation measures to reduce NOx emissions for biofuels. Additionally, a study of emissions from well-to-wheel for the extraction and use of shale gas might be considered.

More recently, the Power-to-Gas concept has renewed interest in hydrogen-fossil fuel blends which the emissions impact on latest ICE technologies needs to be reassessed. Hydrogen fueled ICE was studied heavily in the early 2000's and results has shown significant criteria emissions reduction possible with optimized engine calibration. Since then, ICE technologies have been fitted with advanced aftertreatment to allow the engines to be certified to today's NOx and low NOx standards. Therefore, emissions impact assessment is much needed on the latest engines.

Lastly, in an effort to evaluate the contribution of meteorological factors to high ozone and PM2.5 episodes occurring in the Basin, mainly as a result of higher summer time temperatures and increased air stagnation following the drought years, a comprehensive study is necessary to evaluate the trends

of meteorological factors that may adversely impact air quality in the Basin. The study will assist staff to better understand the potential impact of recent weather trends on criteria pollutant emissions and potentially develop more effective strategies for improving air quality in the future.

**Potential Air Quality Benefits:**

If renewable diesel, biodiesel and biodiesel blends can be demonstrated to reduce air pollutant emissions with the ability to mitigate any NOx impact, this technology will become a viable strategy to assist in meeting air pollutant standards as well as the goals of SB 32 and the Low-Carbon Fuel Standard. The use of biodiesel is an important effort for a sustainable energy future. Emission studies are critical to understanding the emission benefits and any tradeoffs (NOx impact) that may result from using this alternative fuel. With reliable information on the emissions from using biodiesel and biodiesel blends, the South Coast AQMD can take actions to ensure the use of biodiesel will obtain air pollutant reductions without creating additional NOx emissions that may exacerbate the Basin's ozone problem. Additionally, understanding meteorological factors on criteria pollutant emissions may help identify ways to mitigate them, possibly through targeted advanced transportation deployment.

**Proposed Project:** Identify and Demonstrate In-Use Fleet Emissions Reduction Technologies and Opportunities

**Expected South Coast AQMD Cost:** \$220,375

**Expected Total Cost:** \$1,000,000

**Description of Technology and Application:**

New technologies, such as alternative fueled heavy-duty engines, are extremely effective at reducing emissions because they are designed to meet the most stringent emissions standards while maintaining vehicle performance. In addition, many new vehicles are now equipped with telematics enabling motorists to obtain transportation information such as road conditions to avoid excessive idling and track information about the vehicle maintenance needs, repair history, tire pressure and fuel economy. Telematics have been shown to reduce emissions from new vehicles. Unfortunately, the in-use fleet lacks telematic systems--particularly heavy-duty engines in trucks, buses, construction equipment, locomotives, commercial harbor craft and cargo handling equipment--have fairly long working lifetimes (up to 20 years due to remanufacturing in some cases). Even light-duty vehicles routinely have lifetimes exceeding 200,000 miles and 10 years. And it is the in-use fleet, especially the oldest vehicles, which are responsible for the majority of emissions.

This project category is to investigate near-term emissions control technologies that can be cost-effectively applied to reduce emissions from the in-use fleet. The first part of the project is to identify and conduct proof-of-concept demonstrations of feasible candidate technologies, such as:

- remote sensing for heavy-duty vehicles;
- annual testing for high mileage vehicles (>100,000 miles);
- replace or upgrade emissions control systems at 100,000-mile intervals;
- on-board emission diagnostics with remote notification;
- low-cost test equipment for monitoring and identifying high emitters;
- test cycle development for different class vehicles (e.g. four-wheel drive SUVs);
- electrical auxiliary power unit replacements;
- development, deployment and demonstration of smart vehicle telematic systems; and
- low NOx sensor development

**Potential Air Quality Benefits:**

Many of the technologies identified can be applied to light- and heavy-duty vehicles to identify and subsequently remedy high-emitting vehicles in the current fleet inventory. Estimates suggest that 5 percent of existing fleets account for up to 80 percent of the emissions. Identification of higher emitting vehicles would assist with demand-side strategies, where higher emitting vehicles have correspondingly higher registration charges. The identification and replacement of high-emitting vehicles has been identified in CERPs from the Year 1 AB 617 communities as a high priority for residents living in these communities, particularly as heavy-duty trucks frequently travel on residential streets to bypass traffic on freeways surrounding these disadvantaged communities.

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## Emissions Control Technologies

**Proposed Project:** Develop and Demonstrate Advanced Aftertreatment Technologies

**Expected South Coast AQMD Cost:** \$176,300

**Expected Total Cost:** \$2,000,000

### **Description of Technology and Application:**

There are a number of aftertreatment technologies which have shown substantial emissions reductions in diesel engines. These technologies include zoned catalyst soot filters, early light -off catalysts, dual SCR systems, pre-NO<sub>x</sub> absorbers, and ammonia slip catalysts. Additional heating technologies available to keep desired catalyst temperatures such as heated dosing and heated catalysts are also part of the complete aftertreatment system design for near-zero emission NO<sub>x</sub>. This project category is to develop and demonstrate these aftertreatment technologies alone or in tandem with an alternative fuel to produce the lowest possible PM, ultrafine particles, nanoparticles, NO<sub>x</sub>, CO, carbonyl and hydrocarbon emissions in retrofit and new applications. With the increasing focus on zero and near-zero emissions goods movement technologies, this category should examine idle reduction concepts and technologies that can be employed at ports and airports.

Possible projects include advancing the technologies for on-road retrofit applications, such as heavy-duty line-haul and other large displacement diesel engines, street sweepers, waste haulers and transit buses. Applications for non-road may include construction equipment, yard hostlers, gantry cranes, locomotives, commercial harbor craft, ground support equipment and other similar industrial applications. Potential fuels to be considered in tandem are low-sulfur diesel, emulsified diesel, biodiesel, gas-to-liquids, hydrogen and natural gas. This project category will also explore the performance, economic feasibility, viability (reliability, maintainability and durability) and ease-of-use to ensure a pathway to commercialization.

### **Potential Air Quality Benefits:**

The transfer of mature emission control technologies, such as DPFs and oxidation catalysts, to the off-road sector is a potentially low-risk endeavor that can have immediate emissions reductions. Further development and demonstration of other technologies, such early light -off SCR and heated dosing, could also have NO<sub>x</sub> reductions of up to 90%.

**Proposed Project:**      Develop and Demonstrate Advanced Aftertreatment Catalyst Heating Technologies

**Expected South Coast AQMD Cost:**                      \$220,375

**Expected Total Cost:**                                      \$1,000,000

**Description of Technology and Application:**

The objective of this project is to support the demonstration and integration of aftertreatment systems incorporating technologies such as heated dosing and electrically heated catalysts used for on-road heavy duty vehicles. Current aftertreatment systems are required to maintain an operating temperature of 200°C or higher for optimal performance. Diesel engines for heavy duty commercial vehicles have been discovered to operate at temperatures below 200°C during specific parts of the driving cycle, such as low loads and cold starts. Emissions during the low-load and cold starts have been shown to increase up to 30% and PM up to 20%. Previous technologies, such as the mini-burner, were successful mitigating the cold catalyst issue. There were draw backs in this technology due to increased CO2 emissions. The mini burner was not favorable as a successful approach because it increased fuel consumption. New aftertreatment technologies, coupled with advanced engine technologies, have shown potential to reduce emissions up to 99% without a fuel penalty. Technologies such as:

- Close-coupled catalysts
- Dual-heated diesel-exhaust fluid dosing
- Heated catalysts

Current aftertreatment design incorporates a close-coupled catalyst, selective catalyst reduction filter, dual SCR, and an ammonia-slip catalyst. Included in this design is a required heat source at low loads, cold starts and motoring conditions. The use of an electric heat source has become feasible due to advancements in electrical-powered applications and integration with the vehicle.

**Potential Air Quality Benefits:**

This project is expected to contribute to the total emission reductions in heavy-duty on road engines. Emission reductions of 80-90% in heavy-duty diesel long-haul trucks has already been proven when an advanced aftertreatment system, incorporating an additional heat source, along with advanced engine technology such as cylinder deactivation is used. The fuel savings benefit is especially attractive to long-haul fleet operations. In order to meet the ultra-low NOx air quality standards and promote a national low NOx standard for heavy-duty diesel engines, an advanced aftertreatment system incorporating heated catalyst technology is required.

**Proposed Project:** Develop Methodology and Evaluate Onboard Emission Sensors for On-Road Heavy-Duty Vehicles

**Expected South Coast AQMD Cost:** \$220,375

**Expected Total Cost:** \$1,100,000

**Description of Technology and Application:**

New heavy-duty on-road vehicles represent one of the largest categories in the NO<sub>x</sub> emissions inventory in the Basin. In order to meet the 2023 and 2031 ozone standards, NO<sub>x</sub> emissions need to be reduced by 45% and an additional 55% from 2012 levels, respectively, mainly from mobile sources. Previous in-use emission studies, including studies funded by the South Coast AQMD, have shown significantly higher NO<sub>x</sub> emissions from on-road heavy-duty vehicles than the certification limit under certain in-use operations, such as low power duty cycles. In CARB's proposed Heavy-Duty On-Road "Omnibus" Low NO<sub>x</sub> regulation, multiple lower NO<sub>x</sub> standards will be phased in starting in 2022. In addition to the lower certification values, a low load test cycle, revisions to the not-to-exceed compliance test and NO<sub>x</sub> sensor data reporting are also proposed to ensure real-world emission reductions are realized over various duty cycles, especially those low power duty cycles in urban areas. An alternative proposed new methodology is to continuously measure real-time emissions from trucks with onboard sensors. Both industry, government and regulators are looking to use the sensors to better monitor emissions compliance and leverage the real-time data from sensors to enable advances concepts such as geofencing.

This project category is to investigate near term and long-term benefits from onboard sensors to understand in-use emissions better and reduce emissions from the advanced management concept. The first part of the project is to identify and conduct proof-of-concept demonstrations of feasible candidate technologies, such as:

- laboratory evaluation of existing sensors;
- development and evaluation of next generation sensors;
- development of algorithms to extract sensor information into mass-based metric;
- demonstrate feasibility to monitor emissions compliance using sensors;
- identify low cost option for cost and benefit analysis;
- demonstrate sensors on natural gas and other mobile sources such as light-duty, off-highway and commercial harbor craft; and
- development, deployment and demonstration of smart energy/emissions management systems

**Potential Air Quality Benefits:**

The proposed research projects will assist the trucking industry to monitor emissions, using sensors as one of the design platform options. Reduction of NO<sub>x</sub> and PM emissions from mobile sources is imperative for the Basin to achieve federal ambient air quality standards and protect public health.

**Proposed Project:** Demonstrate On-Road Technologies in Off-Road and Retrofit Applications

**Expected South Coast AQMD Cost:** \$176,300

**Expected Total Cost:** \$800,000

**Description of Technology and Application:**

On-road heavy-duty engines have demonstrated progress in meeting increasingly stringent federal and state requirements. New heavy-duty engines have progressed from 2 g/bhp-hr NO<sub>x</sub> in 2004 to 0.2 g/bhp-hr NO<sub>x</sub> in 2010, which is an order of magnitude decrease in just six years. Off-road engines, however, have considerably higher emissions limits depending on the engine size. For example, Tier 3 standards for heavy-duty engines require only 3 g/bhp-hr NO<sub>x</sub>. There are apparent opportunities to implement cleaner on-road technologies in off-road applications. There is also an opportunity to replace existing engines in both on-road and off-road applications with the cleanest available technology. Current regulations require a repower (engine exchange) to only meet the same emissions standards as the engine being retired. Unfortunately, this does not take advantage of recently developed clean technologies.

Exhaust gas cleanup strategies, such as SCR, electrostatic precipitators, baghouses and scrubbers, have been used successfully for many years on stationary sources. The exhaust from the combustion source is routed to the cleaning technology, which typically requires a large footprint for implementation. This large footprint has made installation of such technologies on some mobile sources prohibitive. However, in cases where the mobile source is required to idle for long periods of time, it may be more effective to route the emissions from the mobile source to a stationary device to clean the exhaust stream.

Projects in this category will include utilizing proven clean technologies in novel applications, such as:

- demonstrating certified LNG and CNG on-road engines in off-road applications including yard hostlers, switcher locomotives, gantry cranes, waste haulers and construction equipment;
- implementing lower emission engines in repower applications for both on-road and off-road applications; and
- applying stationary best available control technologies, such as SCR, scrubbers, baghouses and electrostatic precipitators, to appropriate on- and off-road applications, such as idling locomotives, commercial harbor craft at dock and heavy-duty line-haul trucks at weigh stations.

**Potential Air Quality Benefits:**

The transfer of mature emission control technologies, such as certified engines and SCR, to the off-road and retrofit sectors offers high potential for immediate emissions reductions. Further development and demonstration of these technologies will assist in the regulatory efforts which could require such technologies and retrofits.



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## Health Impacts Studies

**Proposed Project:** Evaluate Ultrafine Particle Health Effects

**Expected South Coast AQMD Cost:** \$88,150

**Expected Total Cost:** \$1,000,000

### **Description of Technology and Application:**

Reducing diesel exhaust from vehicles has become a high priority in the Basin since CARB identified the particulate phase of diesel exhaust as a surrogate for all of the toxic air contaminant emitted from diesel exhaust. Additionally, health studies indicate that the ultrafine portion of particulate matter may be more toxic on a per-mass basis than other fractions. Several technologies have been introduced and others are under development to reduce diesel emissions. These include among others low-sulfur diesel fuel, particulate matter traps and heavy-duty engines operating on alternative fuel such as CNG and LNG. Recent studies have shown that control technologies applied to mobile sources have been effective in reducing the mass of particulates emitted. However, there is also evidence that the number of ultrafine particles on and near roadways has increased, even while the mass of particulates has decreased. To have a better understanding of changes in ultrafine particulate emissions from the application of the new technologies and the health effects of these emissions, an evaluation and comparison of ultrafine particulate matter and the potential impacts on community exposures are necessary.

In this project, measurements and chemical composition of ultrafine particulates will be done, as well as studies conducted to characterize their toxicity. The composition of the particulates can further be used to determine the contribution from specific combustion sources. Additionally, engine or chassis dynamometer testing may be conducted on heavy-duty vehicles to measure, evaluate and compare ultrafine particulate matter, PAH and other relevant toxic emissions from different types of fuels such as CNG, low-sulfur diesel, biofuels and others. This project needs to be closely coordinated with the development of technologies for alternative fuels, aftertreatment and new engines in order to determine the health benefits of such technologies.

Furthermore, gasoline direct injection (GDI) vehicles are known for higher efficiency and power output but the PM emissions profile is not well understood especially on secondary organic aerosol (SOA) formation potential. As manufacturers introduce more GDI models in the market to meet new fuel economy standards, it is important to understand the SOA potential from these vehicles as it could lead to further impact on the ambient PM concentration in our region. Consequently, in 2015 a project was initiated with UCR/CE-CERT to investigate the physical and chemical composition of aerosols from GDI vehicles using a mobile environmental chamber that has been designed and constructed to characterize secondary emissions. Based on initial results indicating an increase in particle numbers, follow-up in-use studies to assess PM emissions including with and without particle filters will be beneficial.

### **Potential Air Quality Benefits:**

The AQMP for the South Coast Basin relies on significant penetration of low emission vehicles to attain federal clean air standards. Reduction of particulate emissions from the combustion of diesel and other fuels is a major priority in achieving these standards. This project would help to better understand the nature and number of ultrafine particulates generated by different types of fuels and advanced control technologies as well as provide information on potential health effects of ultrafine particles. Such an understanding is important to assess the emission reduction potentials and health benefits of these technologies. In turn, this will have a direct effect on the policy and regulatory actions for commercial implementation of alternative fuel vehicles in the Basin.

**Proposed Project:** Conduct Monitoring to Assess Environmental Impacts

**Expected South Coast AQMD Cost:** \$132,225

**Expected Total Cost:** \$500,000

**Description of Technology and Application:**

Facilities, buildings, structures, or highways which attract mobile sources of pollution are considered “indirect” sources. Ambient and saturation air monitoring near sources such as ports, airports, rail yards, distribution centers and freeways is important to identify the emissions exposure to the surrounding communities and provide the data to then conduct the health impacts due to these sources. This project category would identify areas of interest and conduct ambient air monitoring, conduct emissions monitoring, analyze the data and assess the potential health impacts from mobile sources. The projects would need to be at least one year in duration in order to properly assess the air quality impacts in the area.

**Potential Air Quality Benefits:**

The proposed project will assist in the evaluation of adverse public health impacts associated with mobile sources. The information will be useful in (a) determining whether indirect sources have a relatively higher impact on residents living in close proximity; and (b) providing guidance to develop some area-specific control strategies in the future should it be necessary.

**Proposed Project:** Assess Sources and Health Impacts of Toxic Air Contaminants**Expected South Coast AQMD Cost:** \$132,225**Expected Total Cost:** \$300,000**Description of Technology and Application:**

Previous studies of ambient levels of toxic air contaminants, such as the MATES series of studies, have found that diesel exhaust is the major contributor to health risk from air toxics. Analyses of diesel particulate matter in ambient samples have been based on measurements of elemental carbon. While the bulk of particulate elemental carbon in the Basin is thought to be from combustion of diesel fuels, it is not a unique tracer for diesel exhaust.

The MATES III study collected particulate samples at ten locations in the Basin. Analysis of particulate bound organic compounds was utilized as tracers to estimate levels of ambient diesel particulate matter as well as estimate levels of particulate matter from other major sources. Other major sources that were taken into consideration include automobile exhaust, meat charbroiling, road dust, wood smoke and fuel oil combustion. Analyzing for organic compounds and metals in conjunction with elemental carbon upon collected particulate samples was used to determine contributing sources.

MATES IV, completed in 2015, included an air monitoring program, an updated emissions inventory of toxic air contaminants and a to air toxics, MATES IV also measured ultrafine particle concentrations and black carbon at the monitoring sites as well as near sources such as airports, freeways, rail yards, busy intersections and warehouse operations.

MATES V was launched in 2017 to update the emissions inventory of toxic air contaminants and modeling to characterize risks, including measurements and analysis of ultrafine particle concentrations typically emitted or converted from vehicle exhaust. Based on preliminary results of MATES V, further assessment may need to be performed to assess secondary organic aerosols; including installation of sensors and additional monitoring activities.

This project category would include other related factors, such as toxicity assessment based on age, source (heavy-duty, light-duty engines) and composition (semi-volatile or non-volatile fractions) to better understand the health effects and potential community exposures. Additionally, early identification of new health issues could be of considerable value and could be undertaken in this project category.

**Potential Air Quality Benefits:**

Results of this work will provide a more robust, scientifically sound estimate of ambient levels of diesel particulate matter as well as levels of particulate matter from other significant combustion sources, including gasoline and diesel generated VOCs. This will allow a better estimation of potential exposures to and health effects from toxic air contaminants from diesel exhaust in the Basin. This information in turn can be used to determine the health benefits of promoting clean fuel technologies.

## Technology Assessment/Transfer and Outreach

**Proposed Project:** Assess and Support Advanced Technologies and Disseminate Information

**Expected South Coast AQMD Cost:** \$352,600

**Expected Total Cost:** \$800,000

### Description of Project:

This project supports the assessment of clean fuels and advanced technologies, their progress towards commercialization and the dissemination of information on demonstrated technologies. The objective of this project is to expedite the transfer of technology developed as a result of Technology Advancement Office projects to the public domain, industry, regulatory agencies and the scientific community. This project is a fundamental element in the South Coast AQMD's outreach efforts to expedite the implementation of low emission and clean fuels technologies and to coordinate these activities with other organizations.

This project may include the following:

- technical review and assessment of technologies, projects and proposals;
- support for alternative fuel refueling and infrastructure;
- advanced technology curriculum development, mentoring and outreach to local schools;
- emissions studies and assessments of zero emission alternatives;
- preparation of reports, presentations at conferences, improved public relations and public communications of successful demonstrations of clean technologies;
- participation in and coordination of workshops and various meetings;
- support for training programs related to fleet operation, maintenance and refueling of alternative fuel vehicles;
- publication of technical papers as well as reports and bulletins; and
- production and dissemination of information, including websites.

These objectives will be achieved by consulting with industry, scientific, health, medical and regulatory experts and co-sponsoring related conferences and organizations, resulting in multiple contracts. In addition, an ongoing outreach campaign will be conducted to encourage decision-makers to voluntarily switch to alternatively fueled vehicles and train operators to purchase, operate and maintain these vehicles and associated infrastructure.

### Potential Air Quality Benefits:

South Coast AQMD adopted fleet regulations requiring public and private fleets within the Basin to acquire alternatively fueled vehicles when making new purchases. Expected benefits of highlighting success stories in the use of advanced alternatively fueled vehicles could potentially expedite the acceptance and commercialization of advanced technologies by operators seeking to comply with the provisions of the recently adopted South Coast AQMD fleet rules. The resulting future emissions benefits will contribute to the goals of the AQMP.

**Proposed Project:** Support Implementation of Various Clean Fuels Vehicle Incentive Programs**Expected South Coast AQMD Cost:** \$264,450**Expected Total Cost:** \$400,000**Description of Project:**

This project supports the implementation of ZEV incentive programs, the Carl Moyer incentives program, school bus incentive program, and the South Coast AQMD residential EV charger rebate program. Implementation support includes application review and approval, grant allocation, documentation to the CARB, verification of vehicle operation and other support as needed. Information dissemination is critical to successful implementation of a coordinated and comprehensive package of incentives. Outreach will be directed to vehicle dealers, individuals and fleets. To date, the South Coast AQMD residential EV charger rebate program, which is jointly supported by the South Coast AQMD Clean Fuels Fund (\$500,000) and the Mobile Source Air Pollution Reduction Review Committee (MSRC) for \$500,000, has provided over 1,300 rebates and \$360,000 in funding to residents in the South Coast AQMD jurisdiction.

**Potential Air Quality Benefits:**

As described earlier, the South Coast AQMD will provide matching funds to implement several key incentives programs to reduce diesel emissions in the Basin. Furthermore, the South Coast AQMD recently adopted fleet regulations requiring public and private fleets within the Basin to acquire alternatively fueled vehicles when making new purchases. Expected benefits of highlighting zero emission vehicle incentives could potentially expedite the acceptance and commercialization of advanced technologies by operators seeking to comply with the provisions of the recently adopted South Coast AQMD fleet rules. The resulting future emissions benefits will contribute to the goals of the AQMP. The school bus program and the Carl Moyer incentives program will also reduce large amounts of NO<sub>x</sub> and PM emissions in the basin in addition to reducing toxic air contaminants.

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**Appendix A**

**South Coast AQMD Advisory Groups**

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## Technology Advancement Advisory Group<sup>1</sup>

Dr. Matt Miyasato, Chair ..... South Coast AQMD

Don Anair ..... Union of Concerned Scientists

Chris Cannon ..... Port of Los Angeles

Steve Cliff..... California Air Resources Board

\*Dr. Michael Kleinman ..... University of California Irvine

Yuri Freedman ..... Southern California Gas Company

\*George Payba ..... Los Angeles Department of Water and Power

Phil Heirigs ..... Western States Petroleum Association

\*Vic La Rosa ..... Total Transportation Solutions Inc.

Tim Olson ..... California Energy Commission

David Pettit ..... Natural Resources Defense Council

Dr. Sunita Satyapal ..... Department of Energy

Heather Tomley ..... Port of Long Beach

Dawn Wilson ..... Southern California Edison

\*newly appointed member

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<sup>1</sup> Members as of February 14, 2020

## SB 98 Clean Fuels Advisory Group<sup>2</sup>

Dr. Matt Miyasato, Chair .....	South Coast AQMD
*Steve Ellis .....	American Honda Motor Company Inc.
Dr. John Budroe .....	California Environmental Protection Agency, Office of Environmental Health Hazard Assessment
*Dr. John Wall .....	Independent Consultant in Combustion Technology
Dr. Mark Duvall.....	Electric Power Research Institute
Dr. Mridul Gautam.....	West Virginia University, Adjunct Professor, & University of Nevada-Reno
Dr. Wayne Miller .....	University of California, Riverside, College of Engineering, Center for Environmental Research and Technology
*Dr. Petros Ioannou .....	University of Southern California Director of the Center for Advanced Transportation Technologies
Dr. Scott Samuelson.....	University of California, Irvine, Combustion Laboratory/National Fuel Cell Research Center
Dr. Robert Sawyer .....	Sawyer Associates
Andreas Truckenbrodt .....	Independent Consultant in Fuel Cell Technologies
Kevin Walkowicz.....	National Renewable Energy Laboratory
Michael Walsh .....	Independent Consultant in Motor Vehicle Pollution Control

\*newly appointed member

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<sup>2</sup> Members as of February 14, 2020

## **Appendix B**

### **Open Clean Fuels Contracts as of January 1, 2020**

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Contract	Contractor	Project Title	Start Term	End Term	South Coast AQMD \$	Project Total \$
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## Hydrogen and Mobile Fuel Cell Technologies and Infrastructure

15150	Air Products and Chemicals Inc.	Install and Upgrade Eight Hydrogen Fueling Stations Throughout SCAB (including South Coast AQMD's Diamond Bar Hydrogen Station)	10/10/14	04/09/20	1,000,000	17,335,439
15366	EPC LLC	Operate and Maintain Publicly Accessible Hydrogen Fueling Station at South Coast AQMD's Headquarters	10/10/14	04/09/20	0	0
15609	ITM Power, Inc.	Installation of Riverside Renewable Hydrogen Fueling Station	10/06/15	01/31/20	200,000	2,325,000
15611	Ontario CNG Station, Inc.	Installation of Ontario Renewable Hydrogen Fueling Station	07/10/15	07/09/20	200,000	2,325,000
15618	FirstElement Fuel, Inc.	Installation of Eight Hydrogen Stations in Various Cities (two renewable, six delivered)	02/05/16	02/04/21	1,000,000	16,442,000
15619	H2 Frontier Inc.	Installation of Chino Renewable Hydrogen Station	12/04/15	12/03/20	200,000	4,558,274
15635	Center for Transportation and Environment	ZECT II: Develop and Demonstrate One Class 8 Fuel Cell Range-Extended Electric Drayage Truck	04/27/16	10/26/20	821,198	7,109,384
16025	Center for Transportation and Environment	Develop and Demonstrate Fuel Cell Hybrid Electric Medium-Duty Trucks	02/05/16	08/04/20	980,000	7,014,000
16251	H2 Frontier, Inc.	Develop and Demonstrate Commercial Mobile Hydrogen Fueler	05/06/16	05/05/21	200,000	1,665,654
17059	Calstart Inc.	Develop and Demonstrate Fuel Cell Extended-Range Powertrain for Parcel Delivery Trucks	10/27/16	02/29/20	589,750	1,574,250
17312	Hydrogenics USA Inc.	ZECT II: Develop Fuel Cell Range-Extended Drayage Truck	11/20/17	05/19/21	125,995	2,433,553
17316	Center for Transportation and the Environment	Develop and Demonstrate Ten Zero Emission Fuel Cell Electric Buses	06/09/17	04/30/20	1,000,000	45,328,859
17317	American Honda Motor Company, Inc.	Three Year Lease of One Honda 2017 Clarity Fuel Cell Vehicle for TAO's Fleet Demonstration Program	03/22/17	03/21/20	17,304	17,304
17343	American Honda Motor Company, Inc.	Three Year Lease of One Honda 2017 Clarity Fuel Cell Vehicle for TAO's Fleet Demonstration Program	02/21/17	02/20/20	17,328	17,328
17385	American Honda Motor Company, Inc.	Three Year Lease of One Honda 2017 Clarity Fuel Cell Vehicle for TAO's Fleet Demonstration Program	05/17/17	05/16/20	17,304	17,304
18150	California Department of Food and Agriculture, Division of Measurement Standards	Conduct Hydrogen Station Site Evaluations for Hydrogen Station Equipment Performance (HyStEP) Project	06/28/18	02/27/20	100,000	805,000

Contract	Contractor	Project Title	Start Term	End Term	South Coast AQMD \$	Project Total \$
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Hydrogen and Mobile Fuel Cell Technologies and Infrastructure (cont'd)

18158	Alliance for Sustainable Energy, LLC (on behalf of National Renewable Energy Laboratory)	California Hydrogen Infrastructure Research Consortium H2 @ Scale Initiative	08/31/18	03/30/20	100,000	760,000
19172	Longo Toyota	Three-Year Lease of Two 2018 Toyota Mirai Fuel Cell Vehicles	10/28/18	10/27/21	35,108	35,108
19191	University of California Irvine	Development of Solid Oxide Fuel Cell and Gas Turbine (SOFC-GT) Hybrid Technology	06/21/19	06/20/20	200,000	900,000
19248	Tustin Hyundai	Three Year Lease of 2019 Fuel Cell Hyundai Nexa	03/07/19	03/06/22	\$25,193	\$25,193
20038	University of California Irvine	Expand Hydrogen Fueling Station	10/18/19	02/17/27	\$400,000	\$1,800,000

Engine Systems and Technologies

17197	VeRail Technologies Inc.	Develop and Demonstrate Ultra-Low Emission Natural Gas Switcher Locomotive	03/03/17	09/30/20	1,000,000	5,100,000
17393	Southwest Research Institute	Develop Ultra-Low Emissions Diesel Engine for On-Road Heavy-Duty Vehicles	05/30/18	01/31/20	575,000	1,325,000
18194	CALSTART Inc.	Develop and Demonstrate Near-Zero Emissions Opposed Piston Engine	05/30/18	07/31/20	1,000,000	15,500,000
18122	Clean Energy	Southern California Trucking Demonstration of Near-Zero ISX12N Beta Engines	01/05/18	01/04/20	3,495,000	5,995,000
18211	West Virginia University Innovation Corporation	Develop Thermal Management Strategy Using Cylinder Deactivation for Heavy-Duty Diesel Engines	06/08/18	06/07/20	250,000	700,000
19439	Cummins, Inc.	Natural Gas Engine and Vehicles Research and Development	08/30/19	08/29/23	250,000	10,996,626

Electric/Hybrid Technologies and Infrastructure

13433	U.S. Hybrid Corporation	Develop and Demonstrate Two Class 8 Zero-Emission Electric Trucks	06/26/13	3/31/20	75,000	150,000
14052	Altec Capital Services, LLC	Lease of Two Plug-In Hybrid Electric Vehicles	01/02/15	01/01/20	61,302	61,302
14184	Clean Fuel Connection Inc.	DC Fast Charging Network Provider	04/04/14	06/30/20	920,000	1,220,000
16022	Gas Technology Institute	ZECT II: Develop and Demonstrate One Class 8 CNG Hybrid Electric Drayage Truck	12/04/15	06/30/20	1,578,802	5,627,319
16046	Transportation Power, Inc.	ZECT: Develop and Demonstrate Two Class 8 CNG Plug-In Hybrid Electric Drayage Trucks	12/04/15	3/31/20	195,326	2,103,446
16081	Broadband TelCom Power, Inc.	Provide EV Hardware and Control System at South Coast AQMD Headquarters including Installation Support, Warranty and Networking	04/27/16	04/26/22	367,425	367,425

Contract	Contractor	Project Title	Start Term	End Term	South Coast AQMD \$	Project Total \$
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## Electric/Hybrid Technologies and Infrastructure (cont'd)

16200	California State University Los Angeles	Cost-Share Regional Universities for U.S. DOE EcoCAR 3 Competition	04/14/16	04/15/20	100,000	300,000
17029	University of California Irvine	Demonstrate and Evaluate Plug-In Smart Charging at Multiple Electric Grid Scales	06/29/17	06/28/20	250,000	750,000
17065	Clean Fuel Connection, Inc.	EV Infrastructure Installer	12/02/16	12/31/21	805,219	805,219
17105	BYD Motors Inc.	Develop and Demonstrate Up to 25 Class 8 Battery Electric Drayage Trucks	04/14/17	10/13/23	794,436	8,942,400
17207	Peterbilt Motors	Develop and Demonstrate Up to 12 Class 8 Battery Electric Drayage Trucks	04/07/17	10/06/23	642,436	11,006,340
17225	Volvo Technology of America LLC	Develop and Demonstrate Up to Two Class 8 Battery Electric Drayage Trucks	06/09/17	06/08/20	1,741,184	9,458,446
17244	Kenworth Truck Company	Develop and Demonstrate Up to Two Class 8 Battery Electric Drayage Trucks	09/08/17	01/08/20	2,823,475	9,743,739
17353	Odyne Systems, LLC	Develop and Demonstrate Medium-Heavy-Duty (Class 5-7) Plug-In Hybrid Electric Vehicles for Work Truck Applications	06/09/17	09/08/20	900,000	6,955,281
18075	Selman Chevrolet Company	Lease Two 2017 Chevrolet Bolt All-Electric Vehicles for Three Years for TAO's Fleet Demonstration Program	08/18/17	08/17/20	26,824	26,824
18129	Electric Power Research Institute	Versatile Plug-In Auxiliary Power System Demonstration	06/28/18	06/27/20	125,000	273,000
18151	Rail Propulsion System	Develop and Demonstrate Battery Electric Switcher Locomotive	04/05/18	12/30/20	210,000	925,000
18232	Hyster-Yale Group Inc.	Electric Top-Pick Development, Integration and Demonstration	09/14/18	09/13/21	2,931,805	3,678,008
18277	Velocity Vehicle Group DBA Los Angeles Truck Centers LLC	Southern California Advanced Sustainable Freight Demonstration	09/07/18	03/06/22	3,568,300	4,198,000
18280	Honda of Pasadena	Three-Year Lease of One Honda 2018 Clarity Plug-In Vehicle	02/07/18	02/06/21	18,359	18,359
18287	EVgo Services LLC	Charging Station and Premises Agreement for Installation of One DC Fast Charger at South Coast AQMD Headquarters	06/27/18	06/26/28	0	0
18397	Port of Long Beach	Demonstrate Zero Emission Cargo Handling Vehicle at POLB	01/04/19	05/31/20	350,000	8,668,410
19166	Phoenix Cars LLC dba Phoenix Motorcars	Southern California Airports – Zero Emission Shuttle Transportation	01/31/19	01/30/22	3,122,426	7,311,456
19190	Daimler Trucks North America	Zero Emissions Trucks and EV Infrastructure Project	12/18/18	06/20/22	8,230,072	31,340,144
19182	Los Angeles County	Assistance with Mercedes-Benz USA, LLC Electric Vehicle Chargers Donations	TBD	TBD	0	0

Contract	Contractor	Project Title	Start Term	End Term	South Coast AQMD \$	Project Total \$
Electric/Hybrid Technologies and Infrastructure (cont'd)						
19183	Southern California Public Power Authority (SCPPA)	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	01/10/19	01/10/22	0	0
19202	City of Compton	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	04/11/19	04/10/22	0	0
19250	Baldermar Caraveo	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	03/06/19	03/05/22	0	0
19251	Gary Brotz	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	03/27/19	03/26/22	0	0
19252	Hui Min Li Chang	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	03/29/19	03/28/22	0	0
19253	Jennifer Chin	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	04/19/19	04/18/22	0	0
19254	Liping Huang	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	04/11/19	04/18/22	0	0
19255	Ramona Manning	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	04/05/19	04/04/22	0	0
19256	Tony Chu	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	04/04/19	04/03/22	0	0
19278	Volvo Group North America, LLC	Develop and Demonstrate Zero Emissions Heavy-Duty Trucks, Freight Handling Equipment, EV Infrastructure and Renewable Energy- Low Impact Green Heavy Transport Solutions (LIGHTS)	04/14/19	06/30/21	4,000,000	91,246,900
19279	Douglas Harold Boehm	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	03/29/19	03/28/22	0	0
19280	Emile I. Guirguis	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	04/19/19	04/18/22	0	0
19281	Helen Chi	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	03/27/19	03/26/22	0	0
19282	Hosneara Ahmed	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	04/05/19	04/04/22	0	0
19283	Hsuan Hu	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	03/27/19	03/26/22	0	0
19284	Jyi Sy Chiu	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	04/05/19	04/04/22	0	0
19285	Mercedes Manning	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	04/19/19	04/18/22	0	0



Contract	Contractor	Project Title	Start Term	End Term	South Coast AQMD \$	Project Total \$
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Electric/Hybrid Technologies and Infrastructure (cont'd)

19286	Monica Sii	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	04/19/19	04/19/22	0	0
19287	Quei-Wen P Yen	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	03/29/19	03/28/22	0	0
19288	Rae Marie Johnson	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	04/05/19	04/04/22	0	0
19289	Yilong Yang	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	04/09/19	04/08/22	0	0
19295	Ivan Garcia	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	04/11/19	04/10/22	0	0
19296	Jamei Kun	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	04/19/19	01/18/22	0	0
19297	Laizheng Wei	Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers	04/19/19	04/18/22	0	0
19438	Puente Hills Hyundai LLC	Lease Two 2019 Hyundai Kona EVs for Three Years	06/06/19	06/05/22	61,156	61,156
20054	Puente Hills Hyundai LLC	Lease One 2019 Hyundai Kona EV for Three Years	08/23/19	08/22/22	29,640	29,640

Fueling Infrastructure and Deployment (NG/RNG)

12667	West Covina Unified School District	Upgrade CNG Fueling Facility	10/12/12	03/01/20	60,000	60,000
15541	Foundation for California Community Colleges	Implement Enhanced Fleet Modernization Program	05/07/15	04/01/20	21,270	30,000
16075	City of Desert Hot Springs	Purchase One Heavy-Duty CNG-Powered Truck	03/11/16	03/10/20	38,000	63,000
16244	CR&R, Inc.	Renewable Natural Gas Production and Vehicle Demonstration Project	09/03/16	03/02/20	900,000	55,000,000
17092	Kore Infrastructure, LLC	Construct RNG Production Facility and Demonstrate RNG with Next Generation Natural Gas Engine	10/14/16	10/13/21	2,500,000	25,500,000
18336	ABC Unified School District	Replace Diesel School Buses with Near-Zero Emissions CNG Buses	10/05/18	11/30/34	117,900	162,900
18337	Alta Loma School District	Replace Diesel School Buses with Near-Zero Emissions CNG Buses	10/05/18	11/30/34	78,600	108,600
18344	Bellflower Unified School District	Replace Diesel School Buses with Near-Zero Emissions CNG Buses	09/07/18	11/30/34	39,300	54,300
18346	Chaffey Joint Union High School District	Replace Diesel School Buses with Near-Zero Emissions CNG Buses	10/05/18	11/30/34	235,800	325,800

Contract	Contractor	Project Title	Start Term	End Term	South Coast AQMD \$	Project Total \$
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Fueling Infrastructure and Deployment (NG/RNG) (cont'd)

18348	Cypress School District	Replace Diesel School Buses with Near-Zero Emissions CNG Buses	09/07/18	11/30/34	39,300	54,300
18349	Downey Unified School District	Replace Diesel School Buses with Near-Zero Emissions CNG Buses	09/14/18	11/30/34	157,200	217,200
18350	Fountain Valley School District	Replace Diesel School Buses with Near-Zero Emissions CNG Buses	09/07/18	11/30/34	39,300	54,300
18351	Fullerton Joint Union High School District	Replace Diesel School Buses with Near-Zero Emissions CNG Buses	10/05/18	11/30/34	157,200	217,200
18354	Hemet Unified School District	Replace Diesel School Buses with Near-Zero Emissions CNG Buses	10/05/18	11/30/34	196,500	271,500
18355	Huntington Beach Union High School District	Replace Diesel School Buses with Near-Zero Emissions CNG Buses	10/05/18	11/30/34	589,500	814,500
18363	Orange Unified School District	Replace Diesel School Buses with Near-Zero Emissions CNG Buses	09/14/18	11/30/34	39,300	54,300
18364	Placentia-Yorba Linda Unified School District	Replace Diesel School Buses with Near-Zero Emissions CNG Buses	10/05/18	11/30/34	235,800	325,800
18365	Pupil Transportation Cooperative	Replace Diesel School Buses with Near-Zero Emissions CNG Buses	10/05/18	11/30/34	235,800	325,800
18367	Rialto Unified School District	Replace Diesel School Buses with Near-Zero Emissions CNG Buses	10/05/18	11/30/34	510,900	705,700
18368	Rim of the World Unified School District	Replace Diesel School Buses with Near-Zero Emissions CNG Buses	10/05/18	11/30/34	117,900	162,900
18369	Rowland Unified School District	Replace Diesel School Buses with Near-Zero Emissions CNG Buses	11/02/18	11/30/34	117,900	162,900
18370	San Jacinto Unified School District	Replace Diesel School Buses with Near-Zero Emissions CNG Buses	09/14/18	11/30/34	78,600	108,600
18374	Upland Unified School District	Replace Diesel School Buses with Near-Zero Emissions CNG Buses	10/12/18	11/30/34	157,200	217,200

Stationary Clean Fuels Technology

13045	ClearEdge (novated from UTC Power Corp.)	Energy Supply and Services Agreement to Install One 400 kW Phosphoric Acid Fuel Cell at South Coast AQMD Headquarters	09/28/12	09/27/22	450,000	4,252,680
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Fuel/Emissions Studies

15680	National Renewable Energy Laboratory	ComZEV: Develop Detailed Technology and Economics-Based Assessment for Heavy-Duty Advanced Technology Development	08/25/15	06/30/20	520,000	540,000
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Contract	Contractor	Project Title	Start Term	End Term	South Coast AQMD \$	Project Total \$
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## Fuel/Emissions Studies (cont'd)

17245	West Virginia University Research Corporation	Conduct In-Use Emissions Testing and Fuel Usage Profile on On-Road Heavy-Duty Vehicles	06/09/17	02/28/20	1,625,000	1,625,000
17276	University of California Riverside/CE-CERT	Develop ECO-ITS Strategies for Cargo Containers	08/03/17	08/02/20	543,000	2,190,233
17277	University of Southern California	Conduct Market Analysis for Zero Emission Heavy-Duty Trucks in Goods Movement	11/03/17	02/28/20	350,000	524,000
17278	University of Southern California	Develop Freight Loading Strategies for Zero Emissions Heavy-Duty Trucks in Goods Movement	11/03/17	02/01/20	200,000	1,001,000
17286	University of California Riverside/CE-CERT	Conduct In-Use Emissions Testing and Fuel Usage Profile on On-Road Heavy-Duty Vehicles	06/09/17	02/28/20	1,625,000	1,625,000
17352	California State University Maritime Academy	Develop and Demonstrate Vessel Performance Management Software and Vehicles	06/09/17	06/08/21	50,086	195,195
18090	University of California Riverside/CE-CERT	Study Secondary Organic Aerosol Formation from Heavy-Duty Diesel and Natural Gas Vehicles	12/05/17	06/30/20	85,000	85,000
18206	University of California Irvine	Assess Air Quality and Greenhouse Gas Impacts of a Microgrid-Based Electricity System	04/06/18	04/05/20	660,000	1,300,000
19208	University of California Riverside	Conduct Emission Study on Use of Alternative Diesel Blends in Off-Road Heavy Duty Engines	06/21/19	04/30/20	261,000	1,353,499
20058	University of California Riverside	Evaluate Meteorological Factors and Trends Contributing to Recent Poor Air Quality in Basin	08/23/19	08/23/20	188,798	188,798

## Technology Assessment and Transfer/Outreach

08210	Sawyer Associates	Technical Assistance on Mobile Source Control Measures and Future Consultation on TAO Activities	02/22/08	02/28/20	35,000	35,000
09252	JWM Consulting Services	Technical Assistance with Review and Assessment of Advanced Technologies, Heavy-Duty Engines, and Conventional and Alternative Fuels	12/20/08	06/30/20	30,000	30,000
12376	University of California Riverside	Technical Assistance with Alternative Fuels, Biofuels, Emissions Testing and Zero-Emission Transportation Technology	06/13/14	05/31/22	225,000	225,000
12453	Tech Compass	Technical Assistance with Alternative Fuels, Fuel Cells, Emissions Analysis and Aftertreatment Technologies	06/21/12	05/31/20	85,000	85,000

Contract	Contractor	Project Title	Start Term	End Term	South Coast AQMD \$	Project Total \$
Technology Assessment and Transfer/Outreach (cont'd)						
15380	ICF Resources LLC	Technical Assistance with Goods Movement, Alternative Fuels and Zero Emissions Transportation Technologies	12/12/14	12/11/20	30,000	30,000
16262	University of California Davis-Institute of Transportation Studies	Support Sustainable Transportation Energy Pathways (STEPs)	01/05/18	01/04/22	240,000	5,520,000
17097	Gladstein, Neandross & Associates, LLC	Technical Assistance with Alternative Fuels and Fueling Infrastructure, Emissions Analysis and On-Road Sources	11/04/16	06/30/20	200,000	200,000
17358	AEE Solutions, LLC	Technical Assistance with Heavy-Duty Vehicle Emissions Testing, Analysis and Engine Development	06/09/17	05/31/21	200,000	200,000
19078	Clean Fuel Connection Inc.	Technical Assistance with Alternative Fuels, EVs, Charging and Infrastructure, and Renewable Energy	09/07/18	09/30/21	328,500	328,500
19227	Gladstein, Neandross & Associates LLC	Technical Assistance with Alternative Fuels & Fueling Infrastructure, Emissions Analysis & On-Road Sources	02/01/19	01/31/21	200,000	200,000
19302	Hydrogen Ventures	Technical Assistance with Hydrogen Infrastructure and Related Projects	04/24/19	04/23/21	50,000	50,000
20046	RadTech International	Cosponsor the RadLaunch Program	09/10/19	06/30/20	5,000	50,000
20085	CALSTART Inc.	Technical Assistance for Development & Demonstration of Infrastructure and Mobile Source Applications	11/8/2019	11/07/21	150,000	150,000
20098	Coordinating Research Council, Inc.	Cosponsor the 30th Real World Emissions Workshop	10/25/19	04/30/20	5,000	75,000
20104	Gladstein, Neandross & Associates LLC	Cosponsor the 2020 Renewable Gas 360 Symposium	11/01/19	02/28/20	25,000	175,000

## **Appendix C**

### **Final Reports for 2019**

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## Participate in California Fuel Cell Partnership for CY 2018 and Provide Support for Regional Coordinator

### Contractor

Frontier Energy Inc.

### Cosponsors

7 Automakers  
3 Energy companies  
5 Public agencies  
2 Technology companies  
29 Associate members

### Project Officer

Lisa Mirisola

### Background

Established with eight members in 1999, the California Fuel Cell Partnership (CaFCP) is a collaboration in which private and public entities are independent participants. It is not a joint venture, legal partnership or unincorporated association. Therefore, each participant contracts with Frontier Energy (previously Bevilacqua-Knight, Inc./BK) for their portion of CaFCP administration. South Coast AQMD joined the CaFCP in April 2000, and the CaFCP currently includes 48 organizations interested in furthering commercialization of fuel cell vehicle and fueling infrastructure technology.

### Project Objectives

Goals for 2018:

- Identify technology challenges and information gaps within the state's hydrogen station network
- Coordinate and collaborate on approaches to achieving 200 hydrogen stations in California
- Identify new concepts & approaches to initiate exponential station network growth
- Communicate progress of Fuel Cell Electric Vehicles (FCEVs) and hydrogen vehicles to current and new stakeholder audiences.
- Support two Fuel Cell Electric Bus Centers of Excellence (No. and So. Calif.)
- Increase awareness and market participation of fuel cell electric trucks, including supporting the deployment of funded pilot projects
- Coordinate nationally and internationally to share and align approaches

### Status

The members of the CaFCP intend to continue their cooperative efforts. This final report covers the South Coast AQMD for 2018 membership. This contract was completed on schedule.



**Figure 1: CaFCP LA County Fire Fighter Training, Los Angeles, CA in October 2018 including H2 delivery truck show-and-tell.**

### Technology Description

The CaFCP members together or individually are operating fuel cell passenger cars, transit buses, drayage trucks and associated fueling infrastructure in California. The passenger cars include Honda's Clarity, Hyundai's Tucson and Nexa, and Toyota's Mirai. The fuel cell transit buses include 13 placed at AC Transit, 15 at Sunline Transit, one with Orange County Transportation Authority and one with UC Irvine Student Transportation. It is expected that 22 more will be added by the end of 2019. Class 8 fuel cell drayage trucks include the Ballard powered BAE/Kenworth truck, the Hydrogenics fuel cell powered TransPower truck and Toyota's Portal Trucks.

### Results

Specific accomplishments include:

- 5,900 consumers and fleets have purchased or leased passenger FCEVs since entering commercial market in 2015;
- Transit agency members have 30 fuel cell electric buses currently in operation and more than 22 funded in 2018;

- There are 39 retail hydrogen fueling stations in operation in California and 25 in development.
- CaFCP staff and members continue to conduct targeted outreach and education in communities throughout California and provide information when requested to non-California requestors;
- CaFCP operates and maintains the Station Operational Status System (SOSS) that the 39 open retails hydrogen stations in the U.S. use to report status. This data, in turn, feeds real-time information (address, availability, etc.) to FCEV drivers through a CaFCP mobile website and several other apps and systems that support consumers.
- CaFCP actively engages in medium- & heavy-duty FCEV codes & standards coordination, specifically through sponsoring the Society of Automotive Engineers (SAE) J2600 (fueling connection) for inclusion of high-flow H35 fueling geometry for fuel cell electric bus (FCEB) fueling and fueling protocol standard development.
- CaFCP organized a Heavy-Duty H2 Infrastructure Industry Workshop on May 3 with the objective to develop the content for a Heavy-Duty Vehicle H2 Fueling Infrastructure fact sheet for decision maker education, to be published in 2019.
- Organized a February 2019 stakeholder workshop for input and structure of the 2019 FCEB Roadmap 2.0.

## Benefits

Compared to conventional vehicles, fuel cell vehicles offer zero smog-forming emissions, reduced water pollution from oil leaks, higher efficiency and much quieter and smoother operation. When renewable fuels are used as a source for hydrogen, fuel cell vehicles also encourage greater energy diversity and lower greenhouse gas emissions (CO<sub>2</sub>).

By combining efforts, the CaFCP can accelerate and improve the commercialization process for all categories of vehicles: passenger, bus, truck, etc. The members have a shared vision about the potential of fuel cells as a practical solution to many of California's environmental issues and similar issues around the world. The CaFCP provides a unique forum where infrastructure, technical and interface challenges can be identified early, discussed, and potentially resolved through cooperative efforts.

## Project Costs

Auto members provide vehicles, and the staff and facilities to support them. Energy members engage in fueling infrastructure activities. The CaFCP's annual operating budget is about \$1.15 million, and includes operating costs, program administration, joint studies and public outreach and education. Each full member makes an annual contribution of approximately \$70,000 towards the common budget. Some government agencies contribute additional in-kind products and services. South Coast AQMD provides an additional \$50,000 annually to support a Southern California Regional Coordinator. South Coast AQMD's additional contribution for 2018 medium- & heavy-duty FCEV codes and standards support was \$125,000.

## Commercialization and Applications

While research by multiple entities will be needed to reduce the cost of fuel cells and improve fuel storage and infrastructure, the CaFCP has played a vital role in demonstrating fuel cell vehicle reliability and durability, fueling infrastructure and storage options and increasing public knowledge and acceptance of the vehicles and fueling.

CaFCP's goals relate to preparing for and supporting market launch through coordinated, individual and collective efforts. CaFCP members, individually or in groups:

- Prepare for larger-scale manufacturing, which encompasses cost reduction, supply chain and production.
- Reduce costs of station equipment, increase supply of renewable hydrogen at lower cost, and develop new retail station approaches.
- Support cost reduction through incentives and targeted research, development and demonstration projects.
- Continue research, development and demonstration of advanced concepts in renewable and other low-carbon hydrogen.
- Provide education and outreach to public and community stakeholders on the role of FCEVs and hydrogen in the evolution to electric drive.

In 2019, the primary goals are the same as the 2018 goals listed above, but can be expected to shift more towards heavy-duty vehicle application due to the adoption of regulation for transit bus fleets.



# Participate in California Fuel Cell Partnership for CY 2019 and Provide Support for Regional Coordinator

**Contractor**

Frontier Energy Inc.

**Cosponsors**

Automakers, energy companies, local, state and federal public agencies, technology companies, universities, transit agencies and others.

**Project Officer**

Lisa Mirisola

the South Coast AQMD for 2019 membership. This contract was completed on schedule.

**Background**

Established with eight members in 1999, the California Fuel Cell Partnership (CaFCP) is a collaboration in which private and public entities are independent participants. It is not a joint venture, legal partnership or unincorporated association. Therefore, each participant contracts with Frontier Energy (previously Bevilacqua-Knight, Inc./BK) for their portion of CaFCP administration. South Coast AQMD joined the CaFCP in April 2000. The CaFCP currently includes 17 executive members and 34 full and associate members with a focus on furthering commercialization of fuel cell vehicles, fueling infrastructure technologies and renewable and decarbonized hydrogen production.

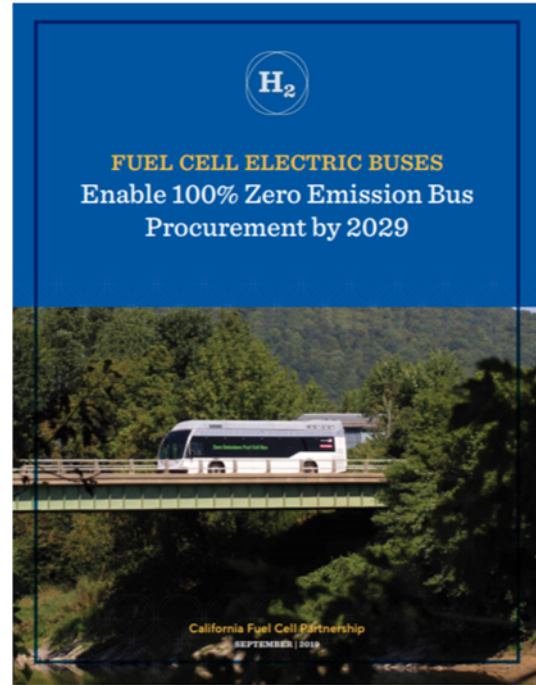
**Project Objectives**

The goals for 2019 include the following:

- Identify technology challenges and information gaps within the state’s hydrogen station network
- Coordinate and collaborate on approaches to achieving 200 hydrogen stations in California
- Identify new concepts & approaches to initiate exponential station network growth
- Communicate progress of fuel cell electric vehicles (FCEVs) and hydrogen to current and new stakeholder audiences
- Increase awareness and market participation of fuel cell electric trucks and buses, including supporting the deployment of pilot projects
- Coordinate nationally and internationally to share and align approaches

**Status**

The members of the CaFCP intend to continue their cooperative efforts. The final report covers



**Figure 1: CaFCP released its second fuel cell electric bus road, calling for 11 essential actions and setting new industry targets.**

**Technology Description**

Many CaFCP members together or individually are operating fuel cell passenger cars, transit buses, drayage trucks and associated fueling infrastructure in California. Passenger cars include Honda's Clarity, Hyundai's Nexo and Toyota's Mirai. Fuel cell bus operators include AC Transit (16 buses), Sunline Transit (15), Orange County Transportation Authority (10) and UC Irvine Student Transportation (1), with 7 more expected in 2020. Class 8 fuel cell drayage trucks include a Ballard powered BAE/Kenworth truck, the Hydrogenics fuel cell powered TransPower truck and Toyota’s Portal trucks.

**Results**

Specific accomplishments include:

- Since 2015, 7,994 consumers and fleets have purchased or leased passenger FCEVs
- Transit agencies have 42 fuel cell electric buses in operation and more than 7 funded in 2019

- 40-plus light-duty retail hydrogen stations in operation in California and 20 in development; 4 bus stations in operation and 3 truck stations in development
- CaFCP staff and members continue to conduct targeted outreach and education in throughout California and provide information to non-California requestors
- CaFCP operates and maintains the Station Operational Status System (SOSS) that the 40-plus open retail hydrogen stations use to report status. This data, in turn, feeds real-time information (address, availability, etc.) to FCEV drivers through a CaFCP mobile website and other apps and systems. SOSS data also supports the new ZEV infrastructure credit in the Low Carbon Fuel Standard program
- CaFCP actively engages in medium- & heavy-duty FCEV codes & standards coordination, specifically through sponsoring SAE J2600 (fueling connection) for inclusion of high-flow H35 fueling geometry for fuel cell electric bus (FCEB) fueling and fueling protocol standard development
- Published the 2019 FCEB Roadmap 2.0, *Fuel Cell Electric Buses Enable 100% Zero Emission Bus Procurement by 2029*

### Benefits

Compared to conventional vehicles, fuel cell vehicles offer zero smog-forming emissions, reduced water pollution from oil leaks, higher efficiency and much quieter and smoother operation. When renewable fuels and electricity are used as a source for hydrogen, fuel cell vehicles also encourage greater energy diversity and lower greenhouse gas emissions (CO<sub>2</sub>).

By combining efforts, the CaFCP can accelerate and improve the commercialization process for all categories of vehicles: passenger, bus, truck, etc. The members have a shared vision about the potential of fuel cells as a practical solution to many of California's environmental issues and similar issues around the world. The CaFCP provides a unique forum where infrastructure, technical and interface challenges can be identified early, discussed, and potentially resolved through cooperative efforts.

### Project Costs

Auto members provide vehicles, and the staff and facilities to support them. Energy members

engage in fueling infrastructure activities, including hydrogen production. CaFCP's annual operating budget is about \$1.15 million, and includes operating costs, program administration, joint studies and public outreach and education. Each executive member makes an annual contribution of approximately \$70,000 towards the common budget. Some government agencies contribute additional in-kind products and services. South Coast AQMD provides an additional \$50,000 annually to support a Southern California Regional Coordinator.

### Commercialization and Applications

Research and scaling of technology by multiple entities will be needed to reduce the cost of fuel cells and improve fuel storage and infrastructure. CaFCP has played a vital role in demonstrating fuel cell vehicle reliability and durability, fueling infrastructure and storage options and increasing public knowledge and acceptance of the vehicles and fueling.

CaFCP's goals relate to preparing for and supporting market launch through coordinated individual and collective effort. CaFCP members, individually or in groups:

- Prepare for larger-scale manufacturing, which encompasses cost reduction, supply chain and production
- Reduce costs of station equipment, increase supply of renewable hydrogen at lower cost, and develop new retail station approaches
- Support cost reduction through incentives and targeted research, development and demonstration projects
- Continue research, development and demonstration of advanced concepts in renewable and other low-carbon hydrogen
- Provide education and outreach to public and community stakeholders on the role of FCEVs and hydrogen in the evolution to electric drive

In 2020, the primary goals are the same as the 2019 goals listed above but can be expected to shift more towards heavy-duty vehicle application due to the adoption of regulation for transit bus fleets and the proposed Advanced Clean Truck regulation being considered in 2020.

## Develop & Demonstrate Twenty Plug-In Hybrid Electric Vehicles

### Contractor

Quantum Fuel Systems LLC (formerly Quantum Technologies Worldwide, Inc.)

### Cosponsors

South Coast Air Quality Management District

### Project Officer

Lisa Mirisola

### Background

Since hybrid electric passenger vehicle prototypes have been converted to plug-in hybrids, there has been increasing support for PHEVs from a wide array of organizations, including electric utilities, environmental groups, energy independence organizations, and other air districts. Several automobile manufacturers announced plans to investigate the technology, but voice concerns about the battery durability in terms of calendar and cycle life.

### Project Objective

At its November 3, 2006 meeting, the Governing Board approved RFP #P2007-14 to design, engineer, convert, test, certify, demonstrate, and maintain for 60 months 30 plug-in hybrid electric vehicles with supporting infrastructure at up to 15 demonstration sites in the South Coast Air Basin. At the March 2, 2007 meeting, the Governing Board awarded funding to Quantum to convert twenty new Ford Escape Hybrid vehicles to plug-in hybrid electric vehicles (PHEVs) using lithium-ion battery systems and controls.

### Technology Description

Similar to commercially available hybrid-electric vehicles, PHEVs utilize a battery pack and an electric motor in concert with an internal combustion engine. PHEVs, however, can employ a larger battery pack which can be designed to extend the electric portion of the driving cycle, providing improved fuel economy,

lower greenhouse gas emissions, and reduced petroleum dependence. The larger battery pack must be fully recharged external to the vehicle so a charger, plug, and energy management system must be integrated into the vehicle. This design is an example of a blended strategy that provides electric range in limited, low power demand situations, but not miles of dedicated all electric range now available from major automakers.

### Status

The battery pack supplier was changed from ALP in the original proposal to EnerDel for this conversion to a 11 kWh lithium-ion replacement for the Ford NiMH hybrid battery. After the first six vehicles were converted and crash-tested, twenty converted plug-in hybrids were delivered to South Coast AQMD in 2010 under CARB EO B-55.



**Figure 1: Enerdell battery integrated by Quantum Technologies**

Originally, the demonstration period was set for five years, but the project was extended to January 31, 2019 to provide ongoing support for maintenance and operation in the South Coast AQMD fleet. As of July 2018, the 20 vehicles accumulated over a million miles, with three vehicles over 100,000 miles each. Eighteen of the vehicles are still in operation as PHEVs in the

South Coast AQMD fleet. One vehicle was scrapped in 2018 after an accident, and one was returned to stock Ford Escape Hybrid configuration in 2018.

## Results

This was the first aftermarket plug-in hybrid certified by CARB using newly adopted procedures for low volume manufacturers.

Ten of the vehicles were initially wrapped and used primarily for outreach purposes. Although some cities were interested in operating the vehicles, plug-in hybrids started to become available from major automakers, so the funds originally identified for adding infrastructure at fleets in the South Coast region were redirected to provide ongoing support to the vehicles used in the South Coast AQMD fleet.

In 2010, The Society of Automotive Engineers (SAE) revised Recommended Practice J1772 for charging vehicles. The cost to convert the connector for the Quantum Escape PHEVs was evaluated and determined to be cost prohibitive.



**Figure 2: Quantum PHEV wrapped for outreach & education**

## Benefits

The Quantum converted plug-in hybrid's greatest value was as outreach tools to begin to educate the public and show the potential for plug-in hybrids before commercial plug-in hybrids were introduced in December 2010 by General Motors (Chevrolet Volt) and Toyota (Prius PHV).

One of the Quantum PHEVs has accumulated about 4,000 miles in test routes while operating as a mobile platform for the South Coast AQMD's Air Quality Spec program.



**Figure 3: Quantum PHEV operated as mobile platform for South Coast AQMD Air Quality Spec. program**

## Project Costs

The price of the 2010 Ford Escape Hybrid vehicles with navigation/energy flow displays prior to conversion increased by \$70,000 for twenty vehicles since the original proposal was submitted in 2007. The total cost for this project was \$2,885,266 with South Coast AQMD cost share not to exceed \$2,165,613. Funds unspent were \$9,133.

## Commercialization and Applications

During the term of this contract, plug-in hybrid electric passenger vehicles have been commercialized by Ford, General Motors, Toyota, and many other automakers. The business case for aftermarket conversion of hybrid passenger vehicles to plug-in hybrid is not currently attractive for additional investment or commercialization, and the market for medium and heavy-duty vehicles is still developing.



South Coast AQMD Contract #13058

December 2019

## Develop Microturbine Series Hybrid System for Class 7 Heavy-Duty Vehicle Applications

### Contractor

Capstone Turbine Corp.

### Cosponsors

Kenworth Truck Company  
San Joaquin Valley APCD (SJVAPCD)

### Project Officer

Phil Barroca

### Background

Medium and heavy-duty diesel delivery trucks are a significant source of particulate matter and NO<sub>x</sub> emissions. Due to serious health concerns, it is especially important to reduce these criteria pollutants in heavily populated urban areas where such delivery trucks normally operate. The State of California, the US Environmental Protection Agency (EPA), and many countries around the world are also seeking ways to mitigate climate change by reducing greenhouse gas emissions such as CO<sub>2</sub>. To support these concerns, South Coast AQMD, SJVAPCD, the California Air Resources Board (CARB), EPA, the Department of Energy, and others are providing funds for development and demonstration of new technologies that offer the potential to both reduce criteria pollutant and greenhouse gas emissions, while simultaneously decreasing operating costs in order to make these new technologies economically viable. The subject project is aimed at addressing these issues using a refrigerated box body Class 7 truck where emissions and fuel costs include both the drivetrain as well as the refrigeration unit.

### Project Objective

The overall objective for the Class 7 Hybrid Truck project is to demonstrate the performance and quantify the emissions and fossil fuel displacement potential of an initial prototype when operating in a real commercial application in the South Coast Air Basin.

### Technology Description

The electric drive system consists of two permanent magnet electric motors, each capable of 150 horse power output. They are connected on a common

shaft driving an Eaton Ultrashift transmission. Gear ratios have been preselected to optimize the characteristics of the electric drive automatic shifting. The electric motors receive power from a 47kWh Lithium-Ion battery pack at a nominal 622Vdc. The battery energy storage capacity provides about a 10 to 20-mile range on its own, depending on drive cycle characteristics. A Level II onboard battery charging system is included with a standard J1772 connection. Accessory drives are all electric, including power steering, air conditioning, and a Bendix air brake compressor.



**Figure 1: Hybrid Kenworth Class 7 Reefer truck with CNG powered Capstone turbine**

A 65kW Capstone microturbine operating on compressed natural gas serves as an on-board battery charger, or range extender. Fuel is provided from an Agility behind-the-cab 61 diesel-gallon-equivalent compressed natural gas storage system and includes both regular fill and fast fill connections. Depending on the drive cycle, operating range can be extended to more than 200 miles. The microturbine outputs direct connection (dc) directly to the battery system. The vehicle controller automatically switches the microturbine on and off and adjusts power demand, depending on the battery state of charge. Microturbine exhaust exists through a diffuser under the chassis and behind the cab. Exhaust emissions are extremely clean, and the microturbine is CARB certified.

The refrigerated box body is a 24-foot Supreme Kold King insulated model. The refrigeration unit is a Carrier Supra 860 with Transicold controller. The Carrier unit includes a diesel engine but is intended for the demonstration project to operate on the highway

using the standby electrical connection to an inverter powered from the hybrid's 622Vdc battery pack.

**Status**

The prototype Class 7 Hybrid Truck was built and successfully operated on the PACCAR Technical Center test track as well as actual on-road city and highway routes. Representative drive cycles were defined for the potential demonstration partners. Using these drive cycles, emissions and fuel economy testing was completed on a chassis dynamometer at UC Riverside on the prototype hybrid truck as well as a comparable Class 7 diesel truck. Unanticipated development effort and reliability issues related to the batteries, the on-board battery charger, the air brake compressor, and the 600V class drive motors caused project delays, which resulted in a decision not to extend the project into the customer demonstration phase. However, none of these issues are insurmountable barriers to achieving a successful future commercial product.

**Results**

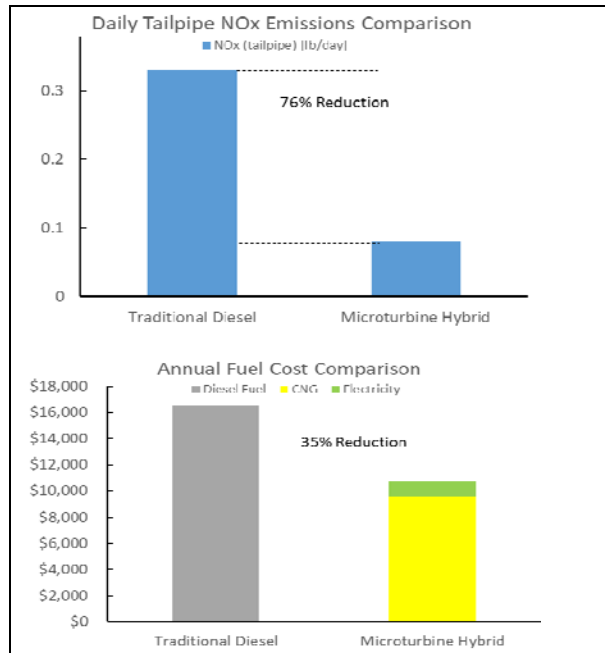
The three representative drive cycles include both urban and rural delivery routes, details of which are summarized in the Task 2 Report - Define Customer Use Profile and Requirements. UC Riverside measured criteria pollutant and fuel consumption of both the Class 7 hybrid and a comparable traditional diesel. The hybrid truck successfully completed all three drive cycles, with the microturbine range extender able to avoid depleting the high voltage batteries' state-of-charge.

Emissions of the refrigeration unit operating on its integrated diesel engine were also characterized and are included in the overall operating comparison with traditional technology.

Figure 2 provides two graphs comparing NOx and fuel cost for one of the representative drive cycles. Details are provided in the Task 5 Track Test and Analysis Final Report. It should be noted that the NOx emissions for the microturbine range extender are actually less than what the EPA reports for the clean California grid when used to charge the batteries, so the NOx graph comparison only includes the tailpipe emissions from the Capstone microturbine.

CO<sub>2</sub> emissions comparisons included the benefit of electric utility charging, resulting in up to 30% well-to-wheels reduction for the hybrid.

Performance results are in line with predictions made using a simple hybrid vehicle simulation model.



**Figure 2: NOx Tailpipe and Fuel-Cost Comparisons**

**Benefits**

The benefits of the hybrid system clearly show both significant reductions in criteria and greenhouse gas emissions, as well as reduced fuel costs.

**Project Costs**

Total project costs were estimated at \$850,000, with \$360,000 in funding awarded from the South Coast AQMD. Project costs were shared with the San Joaquin Valley APCD, with a significant cost-share from Capstone and Kenworth. South Coast AQMD actual funding is expected not to exceed \$300,000 as Tasks 6 and 7 were not completed under this contract after all.

**Commercialization and Applications**

The benefits noted above include significant operating cost savings for potential truck operators. However, the initial capital cost of electrifying a truck remain substantially more than traditional drivetrains. Battery life and replacement costs are also not yet well understood. The current increase in electric vehicle sales should both decrease costs as well as provide actual long-term field experience to better estimate battery life.

Cost projections at sales volumes of 10,000 hybrid trucks per year indicate a reasonable payback time of less than five years, making this technology a potentially viable option in the future.

# Develop and Demonstrate Plug-In Hybrid Electric Retrofit System for Class 6 to 8 Trucks

## Contractor

Odyne Systems LLC

## Cosponsors

California Energy Commission (CEC)  
Department of Energy (DOE)  
Odyne Systems LLC

## Project Officer

Seungbum Ha

## Background

Odyne Systems, LLC, has become a leading designer and manufacturer of parallel plug-in hybrid electric vehicle systems for the commercial truck market. The project was proposed, in conjunction with a \$1.2M California Energy Commission (CEC) grant to retrofit 5 vehicles in the State of California with the Odyne hybrid system (CEC Agreement ARV-11-013). Design duty cycle and component sizing is derived from the 119 vehicle telematics data which are the results of the 2013-2015 South Coast AQMD, Department of Energy (DOE) and Electric Power Research Institute (EPRI) deployment project (South Coast AQMD 10659)

## Project Objective

The project objectives were to design, develop and retrofit one medium or heavy-duty plug-in hybrid vehicle (PHEV) work truck with extended stationary engine-off technology and to qualify improvements in fuel economy and emissions through prototype tests and deployment within the South Coast Air Quality Management District.

The focus of the retrofit design activity will be to evaluate commercially available smaller and lower cost component alternatives and system solutions which will meet the performance requirements of the customer in a smaller and easier to retrofit package.

## Technology Description

The Odyne Plug-in Hybrid system incorporates a novel approach in connecting the hybrid drive train to the vehicle offering idle reduction, regenerative braking, launch assist, climate control, and exportable power. Odyne's unique, modular design interfaces seamlessly with a vehicle's transmission and can be installed on a wide range of chassis, powertrains and work truck applications. The minimally intrusive design provides both hybrid driving functionality and jobsite anti-idle electrification without significant redesign of the existing vehicle platforms.

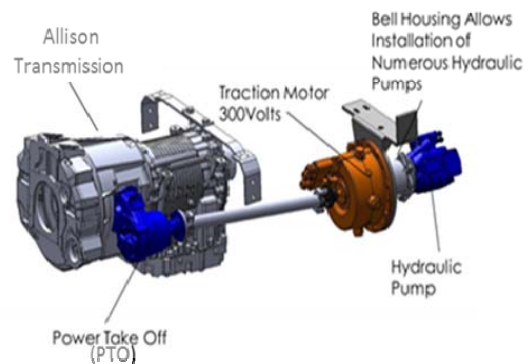


Figure 1: Odyne PHEV Powertrain

## Status

The project was completed in June 2019. The final report detailing vehicle demonstration and evaluation was submitted in August 2019. The demonstration vehicle, deployed at Southern California Edison (SCE), remains in daily use within the utility fleet.

The Odyne Plug-in Hybrid and ePTO system developed in this project was released for commercial sale and was approved for the California Air Resource Board HVIP voucher program in 2019. Odyne is continuing to work with suppliers on reducing component costs and

working with supporting agencies to initiate projects to increase the driving and full day fuel and emissions savings in order to continue to improve the customer value and return on investment.

**Results**

Based on telematics results from the 2013 119 vehicle deployment project, Odyne was able to downsize the specification for the hybrid motor, traction inverter, and battery and create a next generation, lower cost product for development and test. Full functional design validation was completed to verify performance. The testing demonstrated the capability to power equipment requiring up to 16 kW (21 HP), export 120/240V power up to 6 kW, support 12V vehicle loads up to 1.2 kW and provide 16,000 BTU of cabin heat or air conditioning.

SCE was identified as the utility willing to participate in this program. The vehicle selected by SCE was a 2014 International 4300 with an Altec TA-60 Aerial Bucket obtained from the existing SCE fleet. Odyne contracted Valley Power, an Ontario, CA company, to perform the retrofit installation of the prototype hybrid system

Telematics systems were utilized to determine the real-world duty cycles for the deployment vehicle. The SCE vehicle is utilized within medium range to the fleet base for a utility vehicle with an average daily distance of approximately 25 miles and an average speed of just over 17 MPH. At the job site, the SCE unit averaged 4.48 ePTO hours over the course of the evaluation period.

Emissions testing was performed at the UC Riverside College of Engineering-Center for Environmental Research and Technology (CE-CERT) facility. Results applied to the vehicle duty cycles determined by telematics analysis yielded the average savings displayed in Table 1.

SCE Avg. Full Day Emissions (25.6 Miles, 4.28 hour ePTO)				
	CO2 g	NOx g	Fuel gal	Grid Energy kWh
Conventional	94844	134.0	9.553	0.00
Hybrid	38630	39.4	3.890	8.98
Hybrid Change	-59%	-71%	-59%	X

**Table 1. Demonstration vehicle average daily fuel and emissions savings**

**Benefits**

The results of the Telematics data and Full Cycle Emissions Analysis demonstrates that the Odyne Plug-in Hybrid system deployed in this project can achieve fuel use and greenhouse gas (GHG) emissions reductions of 58% and NOx emission reductions of 71% when compared to a similarly equipped conventionally fueled vehicle. Annual operational costs are predicted to be reduced by \$6,733. A full cycle (Wells-to-Wheels) analysis of the emissions results utilizing the California Greenhouse Gases, Regulated Emissions and Energy Use in Transportation (CA-GREET) 2.0 model information with the duty cycles identified demonstrated that the inclusion of.

**Costs**

Pending completion of the final report and final report milestone payment, the project will have been completed at the proposed cost to South Coast AQMD of \$389,000. The CEC cost sharing project ARV-11-013 was completed at a final contribution of \$1,185,000. The Department of Energy cost sharing project DE-EE0001077/AQMD 10659 was completed at a final contribution of \$13,790,958. Odyne Project expenses totaled \$1,123,970.

**Commercialization and Applications**

The Odyne system developed in this project was released for commercial sale as the G2V3 Odyne Plug-in Hybrid and ePTO systems. The testing and field demonstration proved that a single, 14 kWh battery and smaller power electronics were suitable for medium sized aerial devices which allowed Odyne to reduce the base system cost to utility customers by over \$10,000.

Based, in part, on the testing performed in this project, the Odyne Plug-In Hybrid system was approved for the California Air Resource Board Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) in 2019. Odyne is continuing to work with suppliers on reducing component costs and working with supporting agencies to initiate projects to increase the driving and full day fuel and emissions savings to continue to improve the customer value and return on investment.



## Develop & Demonstrate Vehicle-to-Grid Technology

### Contractor

National Strategies, LLC

### Cosponsors

California Energy Commission  
NRG Energy  
Torrance Unified School District

### Project Officer

Joseph Impullitti/Mei Wang

### Background

Electric vehicle (EV) school buses are on the horizon, but there is a reluctance by the original equipment manufacturers (OEMs) to develop them due to the high capital costs of acquisition to school districts/operators when compared to fossil fuel school buses. Finding a path to cost parity between EV and fossil fuel school buses is a critical step in encouraging school districts to move towards the use of cleaner running buses.

### Project Objective

The Vehicle-to-Grid (V2G) Electric School Bus Demonstration Project sought to demonstrate that V2G capable school buses can overcome the capital cost barriers associated with EV technology and be financially viable on a total cost-of-ownership basis. The project plan was to retrofit two 1996 Type C diesel school buses with Transportation Power, Inc.'s (TransPower) "ElecTruck™" drive system coupled with V2G hardware, software and charging infrastructure. The two buses were to be demonstrated in actual service with Torrance Unified School District (TUSD).

### Technology Description

The technology is a battery-electric drive system that uses a low-cost electric motor coupled to an automated manual transmission, a large pack of prismatic lithium iron phosphate batteries, and advanced controls.

### Status

The project was completed on April 30, 2019, and the full report has been filed with South Coast AQMD. The major elements included fully

integrating the 1996 school buses with the TransPower "ElecTruck™" drive system, the commissioning/testing of the school buses, and passing inspection by the California Highway Patrol (CHP), so that the EV school buses could safely operate for pupil transportation. While the

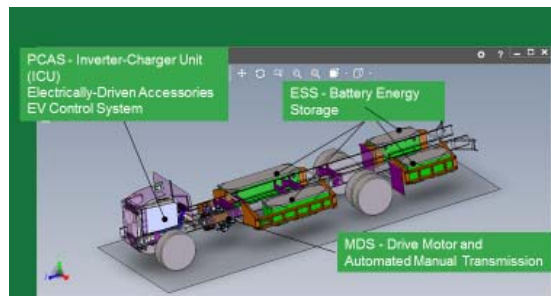


Figure 1: Electric School Bus Design Concept

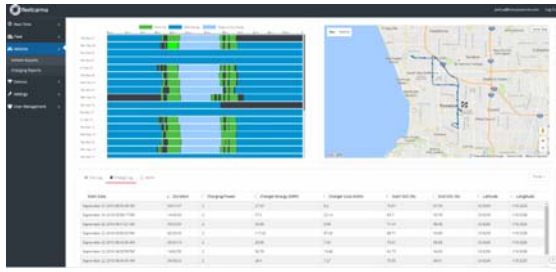
development of the EV school buses was conducted, the team initiated the design and installation of the EV charging system that would allow for V2G operations. This process included the completion of an interconnection agreement with Southern California Edison (SCE). Notably, this was the first such agreement for an EV school bus in the world. With the EV school buses completed and the charging system installed, the EV school buses began student transportation at TUSD in September 2016. V2G operation was initiated in March 2019.

### Results

This project was able to show that the technology does exist to meet the 80 miles per day national average range requirements of the student transportation industry. The project was also able to pass all CHP requirements for school bus safety. It also proved that a charging infrastructure could be installed that would allow for V2G operations and a successful interconnection agreement with the local utility could be completed. Most importantly, the project delineated a clear path for EV school buses to reach total cost of ownership (parity with fossil fuel school buses, meaning the reality of zero emission vehicle (ZEV) student transportation is at hand.

It should be noted that the larger stakeholder group associated with the project, from the school bus drivers to the California Independent System

Operator, all confirmed the positive benefits of EV school buses with V2G.



**Figure 2: Fleet Carma Data from Recent Operation of V2G School Bus in Service at TUSD. Horizontal bar chart shows green for morning & afternoon driving in service, light blue is mid-day charge, dark blue is overnight charge.**

Several issues did come up stemming from both the decision to retrofit existing 20-year-old school buses and the reluctance of the OEM to provide robust support to the effort. While the age of the buses and the act of retrofitting were not the only source of challenges, they did create significant delays and exacerbate reliability issues. Therefore, while the retrofit model cannot be recommended based on this project, it still resulted in lessons learned toward technical feasibility.

It should be noted that being the first school bus V2G project led to significant delays on the interconnection agreement with SCE. This further delayed the project due to California Public Utility Commission rule interpretations. However, the team and SCE worked together to eventually achieve an interconnection agreement that did result in energy savings for TUSD, reducing total cost of ownership impacts for TUSD.

The estimated future cost of converting school buses to electric is \$200,000-\$300,000, depending on purchase volume and other variables.

## Benefits

The project benefits are significant across the region. The team was able to show that ZEV student transportation is both technically and financially viable for nearly all school bus routes in South Coast AQMD. While replacing only two school buses at TUSD with EV V2G units had negligible emission reductions when compared to the total fleet, the project still was able to successfully demonstrate the potential of ZEV student transportation and provide a path forward. In reducing the use of fossil fuel transportation for young children, whose lungs are still developing, the benefits go far beyond the economic benefits to school districts.

The project was also able to fully demonstrate the viability of V2G for EV school buses. Though the data is limited, it did show potential savings of \$6,000 per year per bus in energy cost avoidance for TUSD. The \$6,000 is a “net” figure, considering all the energy consumption associated with the EV school buses. While it includes the savings from switching from petroleum fuel to electricity, it should be noted that these savings would be much diminished without the electric-bill-management effect provided by V2G. That the V2G operations were limited to “behind the meter” operation suggests that even more “upside” could be realized from EV school bus V2G operations.

## Project Costs

The total project costs, including the two buses converted for TUSD and four others funded by the CEC, was \$3.8 million, consistent with initial estimates. The project funding partners were: South Coast AQMD-\$250,000; California Energy Commission-\$1,473,488; and National Strategies-\$1,654,201.

## Commercialization and Applications

From a commercialization and application perspective, the project was very successful. Prior to awarding the funds to the project team, there was not a single EV school bus in operation in California. Further, there were no school bus OEMs providing EV school buses in the market. As this project moved forward and early results were positive, the EV school bus market changed markedly. All three major school bus OEMs and a few smaller ones announced plans to produce EV school buses, most with some form of V2G technology. Further, by project end, there were approximately 75 EV school bus operating in the state with a significant number on order with OEMs that would likely double that number by year’s end.

Further, this project led to the realization that V2G was not a theory but a reality. Based on the initial results of this project, the South Coast AQMD and the U.S. Department of Energy awarded Blue Bird Corporation a \$10 million grant that will result in the first commercially available U.S.-manufactured EV V2G school bus that can be deployed in all 50 states. Most participants in this project are also involved in the Blue Bird project. Therefore, this project initiated the path for full EV V2G school bus commercialization.

# Study Electrification Options of Energy Services for EJ Communities and Non-Attainment Areas

## Contractor

Electric Power Research Institute (EPRI)  
Ramboll

## Cosponsors

California Energy Commission (CEC)  
Electric Power Research Institute (EPRI)

## Project Officer

Patricia Kwon

## Background

This study analyzes the potential for electric appliances such as furnaces and heat pumps, as well as electric vehicles to provide air quality and health effects benefits for residents in environmental justice (EJ) communities. Combined with residential solar and wind generation, electrification is a key strategy for achieving greenhouse gas emission reduction targets. However, the effects of electrification on air quality are less clear. This study is an extension of previous work looking at the benefits of electrification on air quality.

## Project Objective

Electric Power Research Institute (EPRI) conducted a statewide analysis of the economic and environmental attributes of electrification. The analysis focused on the costs and benefits of electrification technologies on residents in EJ communities.

## Technology Description

Air quality models analyzed the effects of existing electrification technologies deployed at a larger scale. Assumptions for the potential for electrification are primarily from the study *Long Term Energy Scenarios in California* (EPC 14-069, Mahone et al, 2018<sup>1</sup>). The Mahone et al study

investigated potential pathways to achieve California’s greenhouse gas (GHG) emissions goals. The “in-state biomass” scenario was used since it emphasized various electrification strategies. Additional assumptions were necessary since many emissions sources affecting air quality are not included in GHG models. Electrification includes a broad array of technologies for transitioning direct fossil fuel use to electricity. Examples of electrification technologies include batteries and motors for electrification of transportation, heat pumps for electrification of space and water heating, and technologies for industrial electrification. Air quality modeling and a health effects analysis was performed based on levels of electrification from different sources. Air quality modeling extended the current emissions inventories to the year 2050 and looked specifically at the effects of electrification on pollutant levels in future years, and health effects stemming from pollutant levels in future model years.

## Benefits

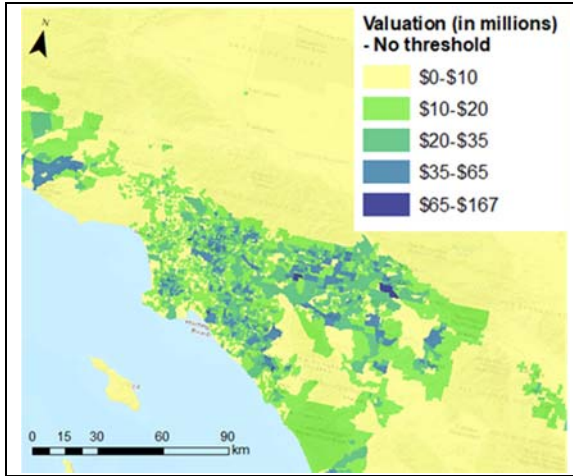
Precise costs for electrification are difficult to estimate due to the variety of factors that affect lifetime costs, but cost estimates show that the air quality benefits are much greater than costs and are “paid back” in a few years. Monetized health benefits from reduced ozone and PM2.5 were estimated at \$108 billion for the state of California in 2050, including \$56 billion in benefits for the South Coast Air Basin. The improvements in air quality were used in a health impacts model to calculate the monetized benefits as shown in the table below.

Pollutant	Avoided mortalities	Valuation
PM <sub>2.5</sub>	6,242	\$54.3B
Ozone	179	\$1.6B
<b>Total</b>	<b>6,421</b>	<b>\$55.9B</b>

**Table 1: Pathways Model. CEC Publication Number CEC-500-2018-012**

<sup>1</sup> Mahone, A., Subin, Z., Kahn-Lang, J., Allen, D., Li, V. De Moor, G., Ryan, N., Price, S. *Deep Decarbonization in a High Renewables Future: Updated Results from the California.*

Figure 1 shows the monetized health benefit of electrification within the South Coast Basin, by census tract.



**Figure 1: Monetized Health Benefits of Electrification within South Coast Basin by Census Tract**

**Results**

In 2050, the study shows summer average maximum daily 8-hour ozone below 65 parts per billion (ppb) in the South Coast Air Basin, with ozone reductions exceeding 5 ppb in most of the South Coast Air Basin and as much as 10 ppb. In 2050, PM<sub>2.5</sub> would be reduced by 2 µg/m<sup>3</sup> and up to 14 2 µg/m<sup>3</sup> in most of the South Coast Air Basin due to electrification. In addition, the study showed that electrification would significantly reduce mortality rates in EJ communities.

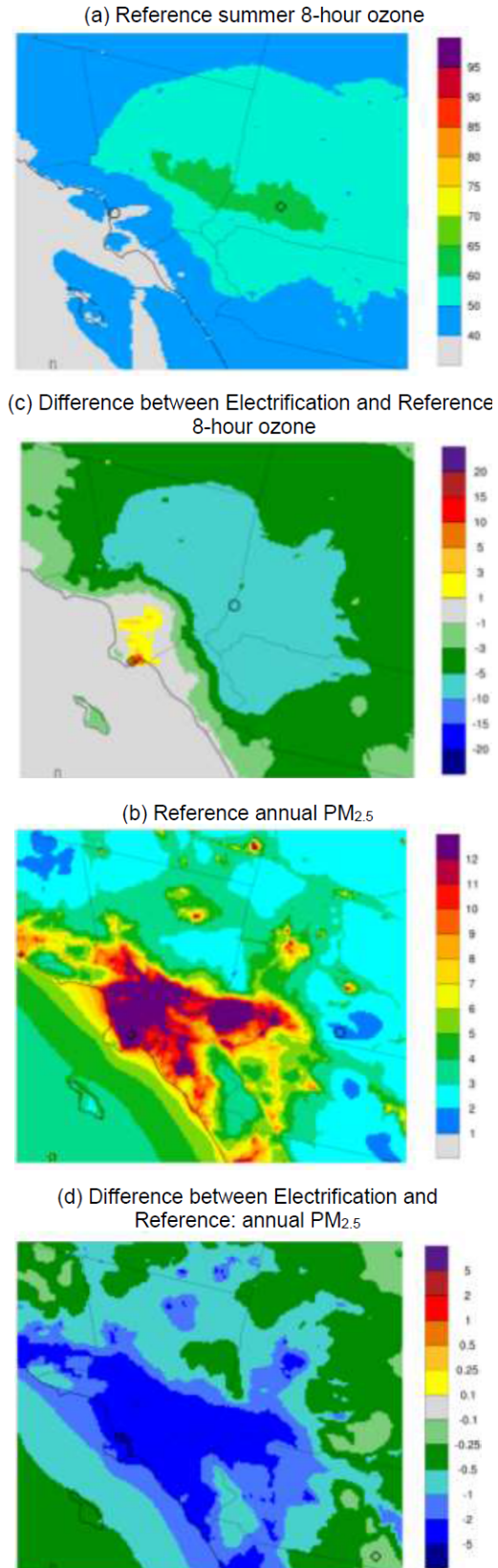
Recommendations are to identify strategies to provide funding for the cost of electrical infrastructure upgrades for homes of low-income residents in EJ communities due to the high cost of retrofits in existing homes.

**Project Costs**

Total project cost is \$1,558.657, with funding provided by CEC (\$799,444), EPRI (\$609,213), and South Coast AQMD (\$150,000).

**Commercialization and Applications**

Electrification technologies such as electric vehicles and heat pumps are commercially available but are generally more expensive than conventional options. Incentivizing these technologies is necessary to cover the differential cost.



**Figure 2: Electrification Effects for Summer Max Daily Average 8-Hour Ozone and Max Annual PM<sub>2.5</sub>**



## Purchase & Deploy One Heavy-Duty CNG Paratransit Vehicle

### Contractor

Coachella Valley Association of Governments (CVAG)

### Cosponsors

South Coast AQMD

### Project Officer

Phil Barroca

### Background

In 2015, the Coachella Valley Association of Governments (CVAG) Homelessness Committee identified homeless services as a significant community need. The first comprehensive center for homeless services in western Coachella Valley was built to provide shelter, training, and services to help homeless individuals work to regain self-sufficiency. The facility is located in an area where public transportation is not available, making it difficult for homeless people to get to and from the center. The existing shuttle buses in use were getting older and in constant need of repair. This project replaced an older, higher emitting shuttle bus with a vehicle using cleaner more advanced technology.

### Project Objective

The South Coast AQMD Board approved funding for CVAG to purchase a heavy-duty CNG paratransit vehicle to ensure that a clean vehicle would be used to transport homeless people to access services and shelter. To maximize accessibility, the vehicle will have a wheelchair lift and meet Americans with Disabilities Act (ADA) requirements. The Air Quality Management Plan relies on accelerated implementation of advanced technologies within Southern California to achieve federal and state ambient air quality standards and further reductions in air toxic exposure. Conversion of high mileage gasoline or diesel-powered vehicles to natural gas-powered vehicles can significantly

reduce criteria pollutants, greenhouse gas emissions, and use of petroleum-based fuel. This vehicle will help South Coast AQMD meet the goals of the Air Quality Management Plan.

### Technology Description

One heavy-duty dedicated compressed natural gas-powered paratransit vehicle will be used to shuttle homeless people throughout Coachella Valley. The vehicle purchased was a Class E, 32 foot, Ford F-550 powered by a 6.8L V-10 gasoline engine. This engine was converted to dedicated CNG power using a CARB-certified conversion system. The vehicle also has wheelchair lift capability and meets ADA requirements. The bus has a 28-person capacity.

This project replaced a 2007 diesel-powered Ford F450 Econoline van with over 165,000 miles on it. This older, higher emitting shuttle bus was decommissioned and dismantled as part of this project.



**Figure 1: Compressed natural gas (CNG) powered paratransit shuttle bus.**

### Status

The vehicle was deployed in September 2016, primarily for use transporting clients to and from Roy's Desert Resource Center located north of Palm Springs. In July 2017, this emergency shelter was repurposed as a long-term board and care facility operated by the Riverside University Health System. Upon closure of Roy's, CVAG entered into a contract with Path of Life Ministries to operate the West Valley Navigation Center program following a competitive bid process. In

late 2017, the scope of the program expanded to address homelessness throughout all of Coachella Valley, and the program was renamed 'CV Housing First.'

Operation of the vehicle was transferred to this new program operator in anticipation of the need to provide similar shuttle services for homeless individuals. However, the new program adopted a 'housing first' model, which provides low barrier access to housing as quickly as possible, thereby reducing reliance on emergency shelter. This meant a reduced need to shuttle homeless people to and from a mass shelter every day.

In July 2019, Path of Life Ministries notified CVAG that they no longer needed to use the shuttle as part of the regional homelessness program and the bus was returned. CVAG is currently evaluating options for future use of the vehicle in efforts to address regional homelessness.

The CNG van was driven 31,100 miles during the term of this project. Most of these miles were driven to and from Roy's Desert Resource Center to various locations throughout Coachella Valley. The vehicle is currently in storage at the County of Riverside fleet services yard in Cabazon, CA.

## Results

From September 2016 through September 2019, the vehicle traveled over 31,100 miles.

Overall, the vehicle has performed well. A safety recall related to the lights was handled in late 2016. The vehicle and CNG technology have not experienced any significant problems except for the safety recall related to the lights and an electrical issue caused by an aftermarket 'kill switch' installed by the subcontractor for Roy's Desert Resource Center. Both issues have been corrected. CVAG's subcontractor's experience with this technology and dealership/technical support has been satisfactory.

## Benefits

While Roy's Desert Resource Center was in operation, the vehicle successfully transported homeless people to and from the emergency shelter in western Coachella Valley on a daily basis. Use of a clean vehicle with advanced technology no doubt produced fewer emissions than the older vehicle that was previously in use.

It also made it easier for hundreds of homeless people to access shelter and services as they worked to get back on their feet.

## Project Costs

Purchase and registration of the CNG Van cost \$137,599.50. The van was 100% funded by South Coast AQMD. Costs to insure and operate this vehicle were paid for by CVAG and its subcontractors.

## Commercialization and Applications

Keeping in regular contact with unsheltered homeless people can be a challenge, making it difficult to provide consistent services and help in securing a more permanent housing solution. In areas with reliable public transportation, bus drivers can serve as an important access point to those homeless individuals that regularly use the same familiar routes. In Coachella Valley, many areas where homeless people are located are not served by public transportation. Use of this vehicle has the potential of enhancing the region's coordinated efforts to address homelessness while also being environmentally friendly by reducing the impact on air quality.

## Implement Alternative Fuel Station Expansion

### Contractor

Ontario Compressed Natural Gas (CNG)

### Cosponsors

South Coast AQMD  
Mobil Source Air Pollution Reduction Review  
Committee (MSRC)

### Project Officer

Phil Barroca

### Background

Ontario Compressed Natural Gas (CNG) Station is a conventional fueling station located at a high vehicle-volume intersection in Ontario, CA near the Ontario Airport and the I-10 goods movement corridor. The station is positioned on a corner with access from both adjacent streets and is designed to accommodate all vehicles including heavy-duty trucks and tractor-trailer configurations. The station features a 24/7 manned Circle K convenience store, an express carwash, and a variety of conventional and alternative fuels. Conventional fuels are located on two islands and CNG and hydrogen fuel are positioned on a second set of islands. Conventional fuels include gasoline and diesel, E85, and renewable diesel. The facility also includes electric vehicle chargers including a fast charger. Prior to expansion the station had two CNG dispensers on one island. Hydrogen is produced on-site and is dispensed through with 350 bar and 700 bar nozzles. Ontario CNG sought out funding to support an expansion of the CNG station to address demand and long refueling times for consumers. Ontario CNG continues to provide solutions to overcome key barriers that have hindered the greater use of natural gas and other alternative transportation fuels, e.g. supporting infrastructure.

### Project Objective

In 2015 Ontario CNG requested funding support from the South Coast AQMD and MSRC to expand their CNG refueling capability to help address increasing demand, longer fueling times, and vehicle congestion. The project objective was to double CNG compression, double on-site storage capacity, double the number of CNG dispensers and hoses, and add one high flow

nozzle on each fueling island to facilitate faster fueling of heavy-duty Class 7 and 8 vehicles. In addition, the project sought to make all necessary civil, mechanical, and electrical upgrades to support the expansion of the CNG at the site, provide incentive for fleets to use the facility by improving refueling efficiencies, reduce air pollution in this region by increasing the infrastructure of clean alternative fuel natural gas as a transportation fuel, and secure a renewable natural gas (RNG) agreement for at least 240,000 gasoline gallon equivalents (GGE)/year to help reduce greenhouse gas emissions and help reduce the Carbon Intensity of California's transportation fuel.

### Technology Description

The technology used in this funding project includes one 250 h.p. ANGI compressor package NG300 using an Ariel compressor rated at 461



Fig. 1 ANGI Compressor

scfm, two dispensers rated at 3600 psi, two high-flow Kraus-Global CT 5000 fueling nozzles (up to 5000 scfm) for heavy-duty vehicles, two standard-flow Kraus-Global CT 1000 fueling nozzles (up to 1000 scfm), three Square D electrical boxes, one electrical transformer, two air fans, four above-ground spherical storage vessels, storing 268 scf @5,500 psi, two emergency switches, two explosion valves, electrical wiring and stainless-steel tubing.

### Status

Ontario CNG contracted Allsup Corporation and the services of Keith Sharpe (CNG specialist, engineer) to design, permit and construct the CNG station. All equipment installations were completed and commissioning of all new equipment was executed in mid-2016.



Figure 2: CNG Station after expansion

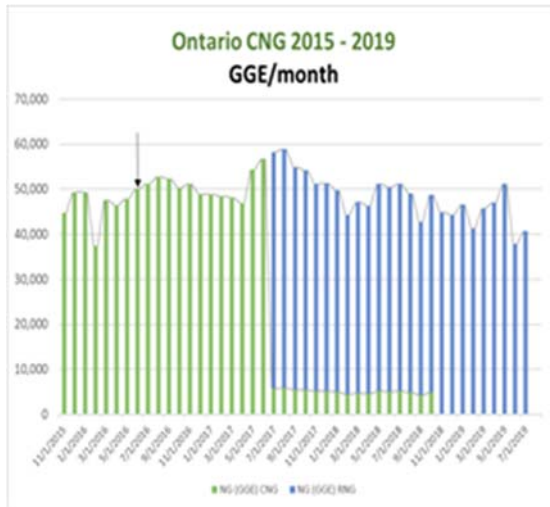
**Results**

The Ontario CNG Station expansion project has completed its objectives of doubling its CNG fueling capacity and vehicle refueling accessibility



**Fig. 3 Class 8 Tractor/Trailer fueling for round trip run Ontario/Las Vegas**

and has reduced the waiting period for vehicle refueling. Doubling the accessibility with two fueling islands is providing Class 8 tractor-trailer rigs with the ability to pull-up and refuel without waiting. Monthly fuel throughput from November 2015 to June 2016 was 46,000 GGE. The average monthly average throughput since June 2016 is close to 51,000 GGE (see monthly fuel throughput graph below).



As the graph depicts, Ontario CNG initiated RNG fueling in mid-2017 and assumed 100% RNG fueling one year later. The station averages 50,000 GGE/month or 600,000 GGE/year thereby exceeding the RNG specifications in the contract by a factor of 1.5

**Benefits**

The Ontario CNG Station project is resulting in displacing more than 50,000 GGE of petroleum-

based fuel per month and through its RNG agreement is dispensing 100% RNG. Based on the most recent Greenhouse Gases, Regulated Emissions and Energy use in Transportation (GREET) model assumptions, this station is helping to reduce 600 lbs. per month of NOx emissions and 500 tons per month of CO<sub>2</sub>eqv emissions. Additionally, this facility is providing convenient, reliable and fast filling of CNG to every Class vehicle from passenger class to medium-duty shuttle vans, CNG powered tow-trucks, street sweepers and school buses, and Class 8 tractor trailers that fuel at this facility for their nearly 500 mile roundtrip run between Ontario, CA and Las Vegas, NV.

Estimated Emission Reductions/Month				
	Fuel Displaced		Alt. Fuel	Emission Reduced
	Gasoline	Diesel	RNG	
GGE/month	25,000	25,000	50,000	
NOx (g/GGE)	7.225	7.391	1.854	13
NOx (lbs/mo.)	398	407	204	601
CO <sub>2</sub> eqv (g/GGE)	10,785	10,951	1,637	20,099
CO <sub>2</sub> eqv (tons/mo.)	297	302	90	508

**Project Costs**

The estimated project cost was \$798,535. The South Coast AQMD provided \$200,000 and the MSRC provided \$150,000 to this project. The final cost of the project was \$751,882.

**Commercialization and Applications**

The technology employed in this project includes an 4 stage Ariel compressor, spherical CNG storage vessels, cascade filling, both standard and high flow nozzles, and Kraus-Global dispensers at 3600 psi. All equipment is conventional equipment and has proven to be reliable as well as providing the consumer with easy to use dispensers. The biogas (RNG) agreement was a new experience and following initial efforts to locate and discuss terms of this agreement Ontario CNG sought the help of a brokerage firm to negotiate and define terms of the agreement.



**Fig. 4 CNG fueling of Street Sweeper, Airport Shuttle Van, Passenger Class vehicles**



# Renewable Natural Gas Research Center Project

## Contractor

University of California Riverside

## Cosponsors

Southern California Gas Company  
National Center for Sustainable Transportation  
University of California, Riverside

## Project Officer

Phil Barroca

## Background

Renewable Natural Gas (RNG) is pipeline quality gas that is fully interchangeable with fossil natural gas but is produced from a renewable feedstock and can be used as a 100% substitute for, or blended with, conventional natural gas. RNG is an important alternative fuel that can help the State of California meet several greenhouse gas (GHG) and renewable energy targets. As a transportation fuel, RNG can result in approximately 90% reduction in GHG emissions. Despite considerable potential, current RNG use on national and state levels are not significant.

## Project Objective

The objective of this project is to establish a Center for Renewable Natural Gas at the University of California Riverside (UCR). The project is also aimed at evaluating RNG production potential in California and conducting a survey of thermochemical conversion technologies available for RNG production. Outreach and educational activities were conducted as part of the project.

## Technology Description

The information required to construct the biomass availability assessment in California was obtained from publications by California Energy Commission, California Integrated Waste Management Board and the California Biomass Collaborative. The assessment includes estimates of the total biomass generated in California and the technical values of the amount that can be effectively utilized for fuel purposes. The gross amount of available biomass is calculated based on biomass source population and a source specific production factor. Power generation and

curtailment data is from California Independent System Operator reports. Conversion technology options were evaluated using literature data.

## Status

A Final Report has been submitted and is currently under review. All other aspects of the project have been completed. The results of this research effort have been presented at the 2018 RNG conference held in Monarch Bay, CA and the 2018 RNG Works conference held in Denver, CO. The research team has also presented the results to interested stakeholders including state agency staff. Additional information about these presentations are available upon request.

## Results

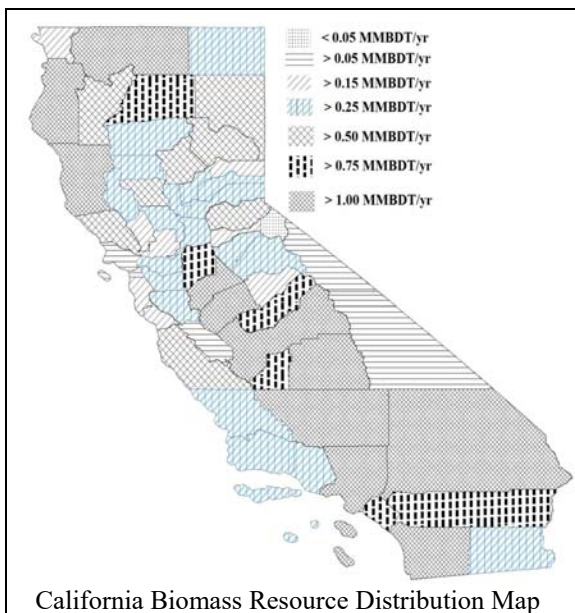
RNG production potential in California through thermochemical conversion was evaluated by assessing technical biomass availability in the state. Biomass feedstocks are defined broadly and include most carbonaceous matter including waste. The types of waste biomass available in the state are classified into three categories: municipal solid waste (MSW), agricultural residue and forest residue.

MSW is the largest biomass contributor in the state with approximately 18.0 million bone-dry tons (MMBDT)/year of technical production. The technical availability estimates of agricultural residues (including animal manure, food processing and fiber-based feedstocks) is about 8.6 MMBDT/year. The technical forest residue biomass availability in California is about 14.3 MMBDT/year. A total of 32.1 MMBDT/year of biomass is estimated to be technically available in the state. The energy content of this biomass is equivalent to approximately 602 million British thermal units per year.

A survey of current renewable electricity generation and curtailment trends in California was conducted. A total of 615 solar power plants and 128 wind power plants are currently under operation in the state. Real-time data from November 2016 to October 2017 show significant curtailment throughout the year ranging from 6.2 GWh to 85.2 GWh. During the entire twelve-month study period, about 440 GWh of power was curtailed in California. Power to gas and

other forms of long-term storage integrated into the electric grid can mitigate these losses and also allow smooth integration of additional renewables into the grid.

Oxygen/air blown gasification, hydrogasification and pyrolysis are the three major technology options available for thermochemical biomass conversion to a gaseous fuel, including RNG. A literature survey of available thermochemical conversion technologies was conducted. Although no commercial thermochemical biomass to RNG conversion facilities are currently in operation, several gasification and pyrolysis technologies are undergoing pilot scale demonstration and development. Design basis for two thermochemical and power-to-gas conversion projects were developed as part of this project. Significant research, development, and deployment efforts are necessary to achieve successful commercialization of thermochemical RNG production.



Outreach and education activities including a ribbon cutting ceremony for the Center for Renewable Natural Gas and an RNG themed symposium were also conducted as part of the project.

### Benefits

As part of this grant, UCR has established a research center dedicated to the development of technologies that will enable RNG production and use in substantial quantities in California and

elsewhere. The new center, referred to as the Center for Renewable Natural Gas, leverages ongoing research and collaborations at the Bourns College of Engineering – Center for Environmental Research & Technology (CE-CERT) at UCR to maximize the impact.

The production potential estimates show that significant resources are available in the state that can be converted into RNG through thermochemical processes such as gasification and pyrolysis.

Design basis for a demonstration scale thermochemical RNG production facility and a commercial scale power to gas project that will produce hydrogen from wind power were developed as part of the project.

The UCR CE-CERT hosted a ribbon cutting ceremony for the Center for Renewable Natural Gas and a Renewable Natural Gas Symposium was held on May 17, 2017. The symposium included talks and in-depth discussions of RNG adoption from lab to market and was attended by more than 200 participants. Guest speakers included representatives from the CEC, the Southern California Gas Company, CARB, Fuel Cell & Hydrogen Technologies, and the National Renewable Energy Laboratory. Panel discussion topics included Thermochemical RNG Production, Commercial Scale Power to Gas, RNG Policy in California, and Challenges to Expediting Commercial RNG Production.

### Project Costs

The project was completed within budget with a total funding of \$261,110. Cost-sharing was as follows: South Coast AQMD (\$100,000), Southern California Gas Company (\$100,000), National Center for Sustainable Transportation (NCST) (\$25,000), and \$36,000 of in-kind contribution in the form of facility fee waivers from UCR.

### Commercialization and Applications

The survey of thermochemical conversion technologies included design basis development for two projects. The Center for Renewable Natural Gas is pursuing funding opportunities for these projects in partnership with the technology developers and will assist in relevant demonstration and commercialization activities.

## Innovative Transportation System Solutions for NOx Reductions in Heavy-Duty Fleets

### Contractor

University of California, Riverside  
Bourns College of Engineering–Center for  
Environmental Research and Technology

### Cosponsors

University of California Transportation Center  
(UCTC)

### Project Officer

Seungbum Ha

The objectives of this project are as follows:

1. Develop a routing system to provide eco-friendlier routes for heavy-duty trucks to help reduce their impact on air quality and public health, specifically with regard to the pollutant NOx
2. Perform field testing to validate the routing system
3. Discuss the potential NOx reduction benefits of implementing intelligent routing system for HDD.

### Background

Heavy-duty trucks are a critical component of U.S. goods movement; however, these trucks consume a large amount of fuel and emit significant emissions, namely the greenhouse gas CO<sub>2</sub>, and the air pollutants, particulate matter (PM) and NO<sub>x</sub>. The objective of this project is to develop an intelligent transportation system to reduce the impact of heavy-duty truck NO<sub>x</sub> emissions on air quality and public health, and to quantify the potential NO<sub>x</sub> reductions in the South Coast Air Basin emission inventory.

In this project, the College of Engineering–Center for Environmental Research and Technology (CE-CERT) developed a routing methodology and a set of algorithms specifically designed to minimize NO<sub>x</sub> emissions for four model year groups of heavy-duty trucks. This work builds on CE-CERT's previous research in the area of eco-routing algorithms for light-duty and heavy-duty vehicles. Selected validation was performed on two heavy-duty trucks which were tested in the field. The effectiveness of the NO<sub>x</sub>-minimizing routing algorithms was evaluated and their potential for NO<sub>x</sub> emission savings was estimated. The in-field testing shows NO<sub>x</sub> savings of at least a 17% for the low NO<sub>x</sub> routes. Although this result is difficult to extrapolate to a larger scope, it implies the potential for significant NO<sub>x</sub> emission reductions with the use of intelligent routing.

### Project Objective

In previous research at CE-CERT, various eco-routing algorithms for passenger vehicles and heavy-trucks were developed. This work focused on expanding these efforts to include routing by minimized NO<sub>x</sub> emissions for heavy-duty trucks.

The research in this project focuses on the following truck categories: Pre-2004, 2004-2006, 2007-2009 and 2010+. In-field testing and validation were performed with two vehicles in the 2010+ vehicle category.

### Technology Description

Eco-routing for this project determines the NO<sub>x</sub> minimized route on a roadway network between an origin and destination point for a given vehicle and real-time traffic conditions. Routing is based on average link velocity, current vehicle selective catalytic reductions (SCR) temperature (if available) and static vehicle and network parameters such as roadway grade, link length and vehicle mass.

Routing uses the popular Dijkstra's single-source shortest path algorithm. Distance based emission rates are developed using operating mode-based emission rates from the Motor Vehicle Emission Simulator (MOVES) database. To generate the distance based emission rates, MOVES drive cycles representative of heavy-duty trucks are modeled using MOVES emission rates for various vehicle weights and road grades. The average drive cycle velocity, vehicle weight and grade are associated with a gram per mile emission value to create an emission rate lookup table.

Vehicle categories 1-3 are none Selective Catalytic Reduction (SCR) equipped trucks and NO<sub>x</sub> emissions for these vehicles at any time are primarily impacted by vehicle activity at that time (i.e. not path dependent). Routing for these vehicles uses the developed distance based emission rates and link length to calculate link emissions as required by the routing algorithm.

Vehicle category 4 is 2010+ SCR equipped trucks. For these vehicles, NOx emissions are heavily dependent on SCR operating temperature, which in turn is heavily dependent on the SCR operating temperature from the preceding link (i.e. path dependent). For these vehicles, a two-step routing process is used in order to decrease the computational complexity and demand on the routing algorithm of tracking multiple temperature histories for each links.

In the two-step approach, candidate routes are determined in the first step based on the shortest time or distance. In the second step, NOx emissions for each candidate route is modeled in it's entirety using emission rates from a specially developed emission rate lookup table and temperature corrections based on a link-based SCR temperature and efficiency model.

The SCR temperature model uses a Multivariable Linear Regression (MLR) modeling approach to associate the average SCR temperature on a link with the average SCR temperature on the previous link, the link velocity, link length and link grade.

The temperature model estimates SCR temperature throughout a route. SCR temperature is used to adjust emission factors based on SCR temperature related NOx conversion efficiency. Temperature adjusted distance based emission rates and link length are used to calculate NOx emissions on each link. Link NOx emissions are integrated over each candidate route to calculate total NOx emissions for each candidate route to determine the NOx minimized route.

### **Status**

This project was completed on January 31, 2019. The final report is on file with South Coast AQMD and provides details of the routing system.

### **Results**

Data collection was performed for 4 vehicle trips, each trip consisting of two competing routes. Measured emission data from the routes were calculated and compared with results from the NOx routing method developed in this project. Results show the error between the estimated NOx from the routing model and NOx emissions from the electronic control unit (ECU). More importantly, results show the comparison of NOx emissions from both routes for the modeled and measured data. The results show the following:

- The routing model was able to correctly predict the low NOx route in each case, even

though the lowest NOx emission route was not necessarily the shortest in time or distance.

- Measured NOx between competing routes shows NOx differences in the range from 17% to 91%.
- The lowest NOx routes were also the shortest time routes for half of the trips.
- The lowest NOx routes were the longest distance routes and had the highest fuel consumption in all cases. Reduced NOx routes showed higher fuel consumption in the range of 7% to 32%.
- The lowest NOx routes had the highest average trip speed in all cases. This is not necessarily surprising since increased SCR performance depends on higher exhaust temperatures which usually occurs when the engine load is high, consuming more fuel.
- Modeled NOx prediction error was in the range of 16% to 79%. This level of error is expected since there are many sources of potential error including the accuracy of collected NOx data and the link-level resolution of the modeling process.

### **Benefits**

Validation results of the routing model show the potential for significant NOx emission reductions due to proper route choice. In the cases tested, results show measured savings of at least 17% between competitive routes. These results are difficult to extrapolate to a larger scope, however they do imply the potential for significant NOx emission reductions with the use of intelligent routing. Reductions in NOx emissions were shown to come at the expense of higher fuel consumption.

### **Project Costs**

The total project cost is estimated at \$139,980 and South Coast AQMD's share was \$79,980 from the Clean Fuels Fund. The research under this contract is an expansion of research performed by UC, Riverside under the UCTC project "Eco-Friendly Navigation System Research for Heavy-Duty Trucks".

### **Commercialization and Applications**

This research may have important implications in the area of heavy-duty truck routing. The research demonstrates the ability of the truck routing system to evaluate the cost of a route in terms of NOx emissions with sufficient accuracy to predict the lowest cost NOx route. This technology could be added to any routing system with real-time traffic information.

South Coast AQMD Contract #15636

December 2019

## Evaluate PEV Utilization through Advanced Charging Strategies in a Smart Grid System

### Contractor

University of California, Riverside (UCR)

### Cosponsors

Winston Batteries Ltd.  
SolarMax Technology, Inc.

### Project Officer

Alfonso Baez

### Background

The South Coast AQMD Board and staff previously prioritized in-basin renewable distributed electricity generation and storage to support electric vehicle technology applications. UC Riverside has successfully deployed plug-in electric vehicle (PEV) integrated microgrid operations consisting of 500kW of photovoltaic (PV) generation coupled with 2 MWh of energy storage. This project further advances the utilization of microgrid integrated charging of PEVs by optimizing charging activity and vehicle-to-grid (V2G) operations.

### Project Objective

The main objective of this project is to optimize PEV charging within a microgrid testbed that demonstrates the coordinated integration and management of energy assets including: renewable generation, energy storage, and controllable loads to effectively manage PEV energy needs. The microgrid system was further expanded to optimize V2G activities relative to driver needs and microgrid operations.

### Technology Description

The deployed microgrid testbed consists of PV generation coupled with battery energy storage and facility load management to support electric vehicle (EV) charging of passenger vehicles and an electric transit vehicle. The system continuously monitors energy production, storage, demand and vehicle charging requirements to optimize daily

energy needs. Peak electrical load demand from the utility is minimized while facilitating the charging of electric vehicles. V2G functionality allows for expanded energy storage algorithms and system optimization. Microgrid management decisions have been implemented and utilized to maximize grid stability, reliability, vehicle usage, and efficiency.

### Status

This project was initiated in January 2016 and completed on December 31, 2019. The final report is on file with South Coast AQMD and provides full details of the V2G system integration, architecture, design, installation, operation, benefits and results. The microgrid continues to operate and has provided V2G functionality transferable to microgrid PEV coupled deployments throughout California. The deployment and operational team continues to develop and deploy PEV integrated microgrids based on the achievements demonstrated with this South Coast AQMD-sponsored V2G testbed deployment.



PEV connected to energy storage with V2G capability.

### Results

PEV integration and optimization within the microgrid allows for more efficient energy management. The increased energy efficiency and reduced losses allows for emissions reduction of both greenhouse gas (GHG) and criteria pollutant emissions compared to the baseline scenarios.

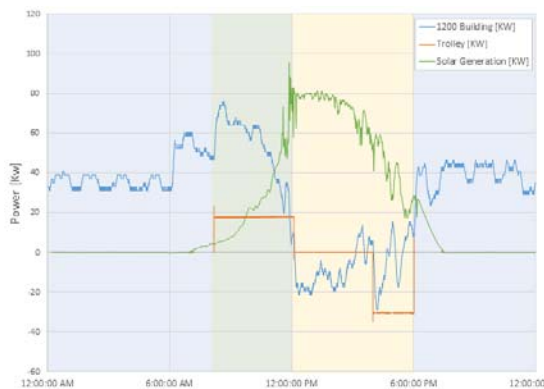
The system performance evaluation includes emissions, energy efficiency, operation and maintenance requirements, overall environmental impacts, and performance tradeoffs. The 10 year PEV project lifetime reduction utilizing the efficiency gains achieved through optimized PEV charging will reduce 36,790 kWh of electrical generation which is approximately 19.5 tons of CO<sub>2</sub> equivalent greenhouse gases.

	Grid Power (CAMX Mix)	Solar PV Generation
GHGs (gCO <sub>2</sub> e/kWh)	539	9
NOx (g/kWh)	0.68	5.8E-03
SOx (g/kWh)	0.38	9.8E-04

**Project life GHG and criteria pollutant emissions on a kWh generation basis for grid power and solar generation calculated using microgrid PEV optimization.**

### Benefits

Daily energy management system (EMS) control algorithms for PEV charging provide energy savings, peak demand shaving, and cost reductions during all three different time-of-use (TOU) rate periods. The system configuration is optimized for on-peak demand reduction and savings. Load shifting operations are managed with off-peak battery charging and discharging during on-peak and mid-peak rate periods. The shift of energy consumption results in substantial savings.



**Energy from UC Riverside’s V2G trolley bus being utilized to mitigate peak demand.**

The most significant energy savings are achieved utilizing real-time control algorithms that track real time solar PV generation, battery energy capacity,

energy demand, and PEV activity. The algorithms developed and deployed minimize peak loads for specific buildings while simultaneously reducing peak energy demand charges. The demand charge savings is about one-third (1/3) of total savings. The figure shows peak demand reduction achieved by charging the electric trolley during periods of excess solar PV production and discharging during evening on-peak demand when solar production diminishes. This load shifting activity demonstrates mutual energy benefits to both the utility and the rate payer.

### Project Costs

The cumulative value of the project to date is \$8,813,100 when considering the original deployment and system additions. Continued energy savings further increase the value and expanded benefits of the project. The South Coast AQMD provided funding at a level of \$2,170,000. The remaining \$6,643,100 was provided as cost-share by the University of California, Riverside (\$839,388), Winston Batteries Ltd. (\$5,000,000), and SolarMax Technology Inc. (\$803,712).

### Commercialization and Applications

The developed technologies of demand charge management, zero net energy building management, and electric vehicle charging mitigation are at an early stage of development and demonstration. These technologies have a potential for maximizing the benefits from distributed assets and lowering electricity costs within commercial and industrial facilities.

This project has successfully completed the following activities leading to further commercialization potential:

- Deployment and management of solar PV generation to offset PEV charging
- Integration of battery energy storage to maximize facility and PEV use supported by renewable generation
- Advanced EMS algorithms to manage battery activity, controllable loads, and facility needs
- Regional monitoring of EV charging and power requirements
- Grid management algorithm development to utilize the stored electricity for PEV charging needs that has minimal electric grid impact
- Integration and optimization of V2G technology
- Quantification of microgrid benefits
- Final reporting to SCAQMD.



## Conduct In-Use PM Emissions Study for Gasoline Direct Injection Vehicles

### Contractor

University of California Riverside, Center for Environmental Research and Technology

### Cosponsors

MECA

### Project Officer

Joseph Lopat

### Background

Currently, there is an increased concern in both the United States (US) and European Union (EU) about the degradation of the actual atmospheric pollution levels of nitrogen oxides (NO<sub>x</sub>) and particulate matter (PM) in spite of the stricter vehicle emission limits in recent years. Differences between conditions for chassis or engine test cycles defined by vehicle emission regulations and real driving can contribute to the differences between expected and actual pollution levels. Recent air quality studies show significant exceedances for NO<sub>x</sub> and PM emissions, mainly in urban areas with high populations where emissions are mainly contributed by transport sources. Portable emission measurement systems (PEMS) were introduced and have been used for the purpose of investigating and regulating real driving emissions (RDE) of vehicles.

### Project Objective

This program evaluated the gaseous and particulate emissions from 3 current model year gasoline direct injection (GDI) vehicles using PEMS. Testing on two of the GDI vehicles was conducted with and without catalyzed gasoline particle filters (GPFs). All vehicles were tested on-road on four routes that were designed to be broadly different in order to differentiate vehicle operating effects on the exhaust emissions. The test routes were chosen to reflect a relatively rich diversity of topological characteristics, altitudes, driving patterns, and ambient conditions representative of typical vehicle operation in Southern California. The goal of this study was to investigate the real-world emissions from GDI vehicles, including NO<sub>x</sub> and ultrafine particles, under

a variety of driving conditions mimicking urban, rural, and highway driving patterns, and included changes in altitude, road grade, and environmental conditions.

### Technology Description

For this program, 3 current model year GDI vehicles were used. For two vehicles, a catalyzed GPF was installed in place of the underfloor three-way catalytic converter (TWC). The GPFs were sized based on the engine displacement of each vehicle and they were catalyzed with precious metal loadings typical of underfloor catalysts matching the certification levels of the two vehicles. The third vehicle was used to develop routes for baseline testing.

### Status

This project was successfully completed in December 2018. Comprehensive data analysis for real-world emissions was completed in August 2019. The College of Engineering-Center for Environmental Research and Technology (CE-CERT) produced a journal paper describing the results of this project that will also serve as the final report. To date, one journal paper has been submitted and several presentations in different national and international conferences have been conducted.



Figure 1: Portable emissions equipment attached to late model automobile.

### Results

Results showed elevated emissions during on-road testing that will likely affect air quality and health in populated areas in the South Coast Air Basin. However, the use of catalyzed GPFs in older and

current technology GDI vehicles can be proved an effective tool to mitigate gaseous and particulate emissions. Results revealed significant reductions in soot mass or black carbon emissions and particle number emissions with the catalyzed GPFs over all test routes.

Under the present test conditions, mountainous driving showed elevated PM emissions compared to driving without elevation change. It is important to note that the highest PM emissions were seen for the urban routes (i.e., downtown LA and downtown San Diego) where public exposure for these pollutants is highest. All test routes showed greater soot mass and particle number emissions for the low and intermediate speed bins and high acceleration events, typical of start and stop driving patterns at traffic lights and congested roads.

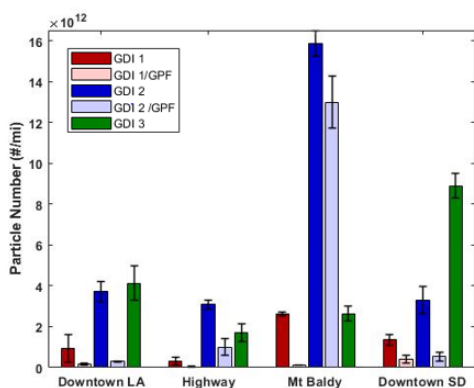


Figure 2: Particulate Number emissions measured on-road in 4 routes.

Catalyzed GPFs were found to be effective in reducing NOx emissions due to the additional catalytic volume compared to the original TWC configuration, suggesting additional NOx reductions in real-driving conditions. It should be stressed however, that NOx emissions for some of the vehicles on some of the test routes significantly exceeded the NOx emissions certification standard. These are important findings considering that adverse health effects of NO<sub>2</sub> and NOx emissions will affect urban air pollution by participating in the ground level ozone formation. Higher on-road NOx emissions from the passenger car sector will challenge current and future efforts in California to meet the requirements for ambient ozone driven by the National Ambient Air Quality Standard. In addition to NOx emissions, carbon monoxide (CO) emissions were found to exceed the certification standards for some vehicles and test routes. CO emissions demonstrated increases over the more dynamic urban routes and did not show reductions with the catalyzed GPFs over real-world conditions.

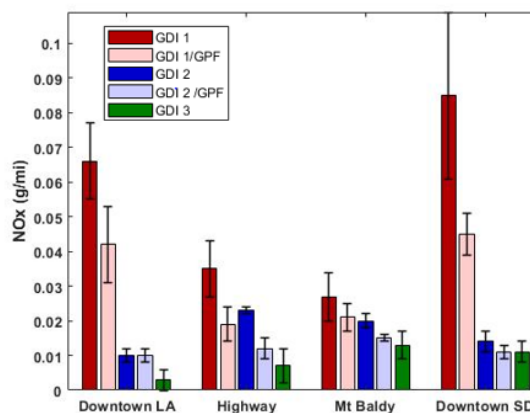


Figure 3: NoX measured on-road in 4 routes.

### Benefits

It is important to understand the real-world emissions from current GDI vehicles. Our findings suggest that GDI vehicles are important sources of tailpipe on-road PM and NOx emissions and will also be important contributors to secondary organic aerosol (SOA) formation due to precursor emissions responsible for SOA. The projected increased penetration of GDI vehicles in the US market, suggests that future health studies aimed at characterizing the toxicity of GDI emissions, as well as studies for the better understanding of SOA production from these engines are needed to understand the health and air quality risks associated with non-GPF-equipped GDI emissions. The fact that GPF adoption from US vehicle manufacturers is not as dynamic as in the European Union, due to the more stringent European particle number standard especially over RDE testing, should raise concerns about the lack of societal and air quality benefits from the GDI fleet.

### Project Costs

	South Coast AQMD	MECA	Total
Testing & Reporting	\$222,000	\$51,500	\$273,500

### Commercialization and Applications

It is expected that GDI vehicles will be a major source of air pollution in urban centers. Real-world emissions and the mechanisms of their formation under different driving patterns need to be further investigated. The use of GPFs will be proved very effective in reducing black carbon and ultrafine particle emission.



## Develop & Evaluate Aftertreatment Systems for Large Displacement Diesel Engines

### Contractor

Southwest Research Institute (SwRI)

### Cosponsors

South Coast AQMD

U.S. EPA

California Air Resources Board (CARB)

Manufacturers of Emissions Controls

(MECA)

### Project Officer

Joseph Lopat

### Background

The original ARB Low NO<sub>x</sub> Demonstration program involved an examination of the feasibility of technologies to achieve a target tailpipe NO<sub>x</sub> level of 0.02 g/hp-hr on both a diesel and natural gas engine platform. A key part of the technical demonstration involved aging of the final system engine in an accelerated fashion to simulate full useful life degradation, so that the system performance could be demonstrated at the end of useful life. However, during that aging process an unexpected failure occurred which disturbed the experiment, resulting in the exposure of the aftertreatment system to unrepresentative conditions. The failure involved the canning of the Passive NO<sub>x</sub> Adsorber (PNA), which in turn resulted in failure materials being ingested into the downstream SCR-on-Filter (SCRf). The failure is illustrated in Figure 1. Due to time and budget constraints, the experiment could not be restarted. Although the parts were repaired, and the experiment was completed, the failure left two open issues:

- How much of the degradation observed in the original Stage 1 experiment was “normal,” versus how much was “abnormal” (resulting from the unrepresentative failure conditions).
- The SCRf was left in a fragile state following the failure, with several areas of channel micro-cracking that could later expand to a full failure with continued use. This was an issue because the parts were needed to support Low Load calibration and demonstration efforts in the CARB Stage 2 program.

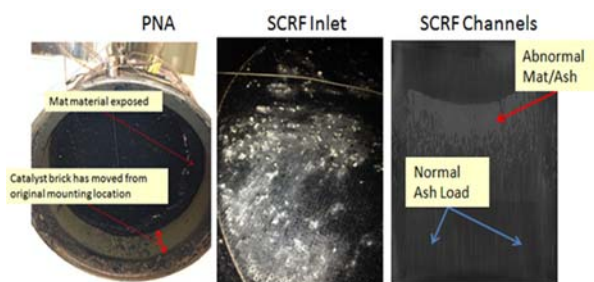


Figure 1. Illustration of Stage 1 Failure on PNA and Downstream SCRf

### Project Objective

SwRI will develop, age and test a second set of catalysts to represent real-world low load and low temperature test cycles. The parts will be aged for 1,000 hours and emissions testing will be performed at set intervals along the Federal Test Procedure (FTP) transient cycle. Once complete, the new hardware will be tested with the engine under the developed cycles from Stage 1. The objective of this effort is to overcome the aging issues encountered in Stage 1, as well as to provide a robust aftertreatment system for the next phase of work, which will include development of a larger displacement diesel engine suitable for long-haul operations, including an aftertreatment system optimized to achieve the 0.02 g/bhp-hr NO<sub>x</sub> emissions level.

### Technology Description

The diesel demonstration platform was a 2014 Volvo MD13TC EU6 engine. The final configuration of the low NO<sub>x</sub> aftertreatment system is shown in Figure 2.

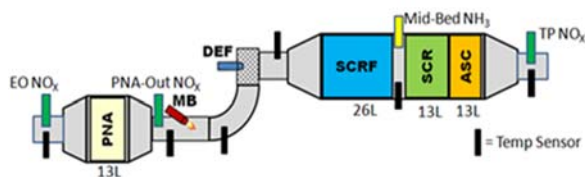


Figure 2. Final Stage 1 Low NO<sub>x</sub> Aftertreatment System Configuration

### Status

The project was completed August 4, 2019. The final report is on file at South Coast AQMD and on

the CARB website. The objectives were eventually met. A catastrophic engine failure occurred and was determined not to have affected the results. The engine critical components related to emissions were not damaged and were re-used in a new engine assembly.

## Results

The Stage 1b Test plan involved repeating the 1000-hour accelerated aging experiment that was performed under Stage 1, using a fresh set of parts identical to the original parts. To gain better insight into system degradation over time, the parts were tested at two intermediate points during aging, in addition to before and after the completion of the full aging duration. Tests were conducted at the 0-hour point (following de-greening), and at 33%, 67%, and 100% of the full useful life (FUL) aging duration of 1000 hours. The aging was conducted using the SwRI-developed DAAAC (Diesel Accelerated Aftertreatment Aging Cycles) methodology, which accounts for both thermal and chemical aging components. For this experiment, the aging achieved a full 10X acceleration of thermal aging, and a 4.5X acceleration of chemical aging. However, at the end of aging, the SCRf contained a near maximum life duration of ash loading, prior to ash cleaning. To assess the impact of ash cleaning on the SCRf, an additional ash cleaning experiment and test were added to the test plan, supported by the Manufacturers of Emission Controls Association (MECA). Final results of the Stage 1b program are summarized in Figure 3. The results indicate the following trends:

- Cold-Start FTP performance in Stage 1b was similar to that observed during Stage 1. Cold-start performance loss is driven primarily by loss of PNA performance. This indicates that the canning failure did not disturb the aging of the PNA itself.
- Hot-Start Standard Test Procedures (STP) performance in Stage 1b was considerably better than what was observed in Stage 1. The system maintained 99.6% NO<sub>x</sub> conversion in Stage 1b, as compared to only 99.3% in Stage 1. This was primarily driven by the behavior of the SCRf, and it indicates that the SCRf was significantly disturbed by the upstream canning failure in Stage 1.
- Composite FTP NO<sub>x</sub> levels were 0.023 g/hp-hr after ash cleaning in Stage 1b, as opposed to 0.034 g/hp-hr in Stage 1, a considerable performance improvement.
- RMC-SET NO<sub>x</sub> levels were 0.032 g/hp-hr in Stage 1b as opposed to 0.038 g/hp-hr in Stage

1, again due primarily to the better performance of the SCRf that was not subjected to the upstream canning failure.

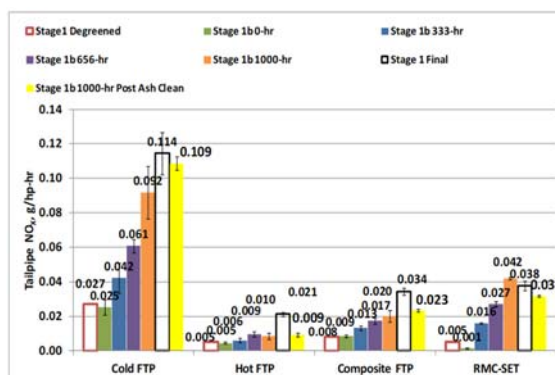


Figure 3. Final Results for Stage 1b Program (showing comparison to Stage 1 results)

## Benefits

The known useful life of an aftertreatment system is valuable in predicting current and future emissions. Modeling emissions inventories can be more accurate using data provided in this project. Data such as the percent NO<sub>x</sub> conversion at the end of useful life. This project success was also important as it was the first stage in the development of a heavy-duty near zero NO<sub>x</sub> diesel engine.

## Project Costs

The project was the first stage addition with a total cost of \$480,000. \$80,000 was contributed in-kind by MECA. The remaining funds were contributed by the US EPA Clean Air Technology Initiative grant with \$290,000 and the South Coast AQMD with \$110,000.

## Commercialization and Applications

This program is an important data point regarding the capability of heavy-duty diesel engines to reach Low NO<sub>x</sub> levels in a durable manner. The system proved to be capable of high NO<sub>x</sub> conversion at both high loads and light loads. As such the data is applicable to heavy-duty engines in a variety of applications, including both line haul tractors and vocational applications.

The aftertreatment system aged in this program was also used to support the CARB Stage 2 program, which extended the performance of the system to Low Load applications such as urban and drayage duty cycles.

Several technology elements of the engine and aftertreatment system could potentially be incorporated in future on-highway engines to meet Low NO<sub>x</sub> standards.

# **Appendix D**

## **Technology Status**

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## Technology Status

For each of the core technologies discussed earlier in this report, staff considers numerous factors that influence the proposed allocation of funds, ranging from overall Environment & Health Benefits, Technology Maturity and Compatibility, and Cost, summarized in this technology status evaluation system.

Within the broad factors included above, staff has included sub-factors for each specific type of project that may be considered, as summarized below:

### Environment and Health

Criteria Pollutant Emission Reduction potential continues to receive the highest priority for projects that facilitate the NO<sub>x</sub> reduction goals outlined in the 2016 AQMP. Technologies that provide co-benefits of Greenhouse Gas and Petroleum Reduction are also weighted favorably, considering the Clean Fuels Program is able to leverage funds available through several state and federal programs, as well as overall health benefits in reducing exposure to Ozone and PM<sub>2.5</sub>, especially along disadvantaged communities.

### Technology Maturity & Compatibility

Numerous approaches have been used to evaluate technology maturity and risk that include an evaluation of potential uncertainty in real world operations. This approach can include numerous weighting factors based on assessed importance of a particular technology. Some key metrics that can be considered include Infrastructure Constructability that would evaluate the potential of fuel or energy for the technology and readiness of associated infrastructure, Technology Readiness that includes not only the research and development of the technology, but potential larger scale deployments that consider near-term implementation duty and operational compatibility for the end users. These combined factors can provide an assessment for market readiness of the technology.

### Cost/Incentives

The long-term costs and performance of advanced technologies are highly uncertain, considering continued development of these technologies is likely to involve unforeseen changes in basic design and materials. Additionally, economic sustainability – or market driven – implementation of these technologies is another key factor for the technology research, development, demonstration and deployment projects. Therefore, in an effort to accelerate the demonstration and deployment, especially some pre-commercialization technologies, incentive programs such as those available from local, state and federal programs are key, but may be underfunded for larger scale deployments.

Staff has developed an approach to evaluating the core technologies, especially some of the specific platforms and technologies discussed in the draft plan and annual report. The technology status evaluation below utilizes experience with implementing the Clean Fuels Program for numerous years, as well as understanding the current development and deployment state of the technologies and associated infrastructure, and are based on the following measurement:

● Excellent    ● Good    ○ Satisfactory    ● Poor    ● Unacceptable

The table below summarizes staff evaluation of the potential projects anticipated in the Plan Update, and it is noted that technology developers, suppliers and other experts may differ in their approach to ranking these projects. For example, staff ranks Electric/Hybrid Technologies and Infrastructure as Excellent or Good for Criteria Pollutant and GHG/Petroleum Reduction, but Poor to Good for Technology Maturity & Compatibility, and Satisfactory to Unacceptable for Costs and Incentives to

affect large scale deployment. It is further noted that the Clean Fuels Fund’s primary focus remains on-road vehicles and fuels, and funds for off-road and stationary sources are limited.

This approach has been reviewed with the Clean Fuels and Technology Advancement Advisory Groups, as well as the Governing Board.

Technologies & Proposed Solutions	Environment & Health			Technology Maturity & Compatibility				Cost	
	Emissions Reduction	GHG/Petroleum Reduction	Health Benefits	Infrastructure Constructability	Technology Readiness	Near-Term Implementation/ Duty Cycle Fulfillment Capability	Operations Compatibility	Relative Cost & Economic Sustainability	Incentives Available
<b>Electric/Hybrid Technologies &amp; Infrastructure</b>									
Plug-In Hybrid Heavy-Duty Trucks with Zero-Emission Range	●	○	●	●	○	●	●	●	●
Heavy-Duty Zero-Emission Trucks	●	●	●	●	○	●	○	●	●
Medium-Duty Trucks	●	●	●	●	○	○	●	●	●
Medium- and Heavy-Duty Buses	●	●	●	●	○	●	○	●	●
Light-Duty Vehicles	●	●	●	●	●	●	●	○	●
Infrastructure	-	-	-	●	●	●	●	●	●
<b>Hydrogen &amp; Fuel Cell Technologies &amp; Infrastructure</b>									
Heavy-Duty Trucks	●	●	●	○	●	●	●	●	●
Heavy-Duty Buses	●	●	●	○	●	●	●	●	●
Off-road – Locomotive/Marine	●	●	●	○	●	●	●	●	●
Light-Duty Vehicles	●	●	●	○	●	○	○	●	●
Infrastructure – Production, Dispensing, Certification	-	-	-	○	○	●	●	●	●
<b>Engine Systems</b>									
Ultra-Low emissions Heavy-Duty Engines	●	●	●	●	○	○	●	●	○
Alternative Fuel Medium- and Heavy-Duty Vehicles	●	●	●	●	●	●	●	●	○
Off-Road Applications	●	●	●	●	●	●	●	●	○
<b>Fueling Infrastructure &amp; Deployment</b>									
Production of Renewable Natural Gas – Biowaste/Feedstock	●	●	●	●	●	●	●	●	●
Synthesis Gas to Renewable Natural Gas	●	●	●	●	●	●	●	○	○
Expansion of Infrastructure/Stations/Equipment/RNG Transition	●	●	●	●	●	●	●	●	○
<b>Stationary Clean Fuel Technologies</b>									
Low-Emission Stationary & Control Technologies	●	●	●	●	○	○	●	○	●
Renewable Fuels for Stationary Technologies	○	●	●	●	○	○	○	○	●
Vehicle-to-Grid or Vehicle-to-Building/Storage	●	●	●	○	○	●	○	●	●
<b>Emission Control Technologies</b>									
Alternative/Renewable Liquid Fuels	●	●	●	●	○	○	●	●	○
Advanced Aftertreatment Technologies	●	○	●	○	○	●	●	●	○
Lower-Emitting Lubricant Technologies	○	○	●	-	●	●	●	●	○
● Excellent    ● Good    ○ Satisfactory    ● Poor    ● Unacceptable									

## **Appendix E**

### **List of Acronyms**

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**LIST OF ACRONYMS**

AB—Assembly Bill	CVAG—Coachella Valley Association of Governments
AC—absorption chiller	CWI—Cummins Westport, Inc.
ADA—American with Disabilities Act	CY—calendar year
AER—all-electric range	DC—direct connection
AFRC—air/fuel ratio control	DCFC—direct connection fast charger
AFVs—Alternative Fuel Vehicles	DCM—dichloromethane
APCD—Air Pollution Control District	DEG—diesel equivalent gallons
AQMD—Air Quality Management District	DGE—diesel gallon equivalents
AQMP—Air Quality Management Plan	DF—deterioration factor
ARB—Air Resources Board	DME—dimethyl ether
ARRA—American Recovery & Reinvestment Act	DMS—Division of Measurement Standards
AWMA—Air & Waste Management Association	DMV—Department of Motor Vehicles
BACT—Best Available Control Technology	DOC—diesel oxidation catalysts
BET—battery electric truck	DOE—Department of Energy
BEV—battery electric vehicle	DOT—Department of Transportation
BSNO <sub>x</sub> —brake specific NO <sub>x</sub>	DPF—diesel particulate filters
BMS—battery management system	DPT3—Local Drayage Port Truck (cycle) - where 3=local (whereas 2=near-dock, etc.)
CAAP—Clean Air Action Plan	DRC—Desert Resource Center
CAFR—Comprehensive Annual Financial Report	DRI—Desert Research Institute
CaFCP—California Fuel Cell Partnership	ECM—emission control monitoring
CARB—California Air Resources Board	EDD—electric drayage demonstration
CATI—Clean Air Technology Initiative	EDTA—Electric Drive Transportation Association
CBD—Central Business District (cycle) - a Dyno test cycle for buses	EGR—exhaust gas recirculation
CCF—California Clean Fuels	EIA—Energy Information Administration
CCHP—combined cooling, heat and power	EIN—Energy Independence Now
CCV—closed crankcase ventilation	EMFAC—Emission FACTors
CDA—cylinder deactivation	EPRI—Electric Power Research Institute
CDFA/DMS—California Department of Food & Agriculture/Division of Measurement Standards	E-rEV—extended-range electric vehicles
CEC—California Energy Commission	ESD—emergency shut down
CE-CERT—College of Engineering – Center for Environmental Research and Technology	ESS—energy storage system
CEMS—continuous emission monitoring system	EV—electric vehicle
CEQA—The California Environmental Quality Act	EVSE—electric vehicle supply equipment
CFCI—Clean Fuel Connection, Inc.	FCEB – fuel cell electric bus
CFD—computational fluid dynamic	FCV—fuel cell vehicle
CHBC—California Hydrogen Business Council	FTA—Federal Transit Administration
CHE—cargo handling equipment	FTP—federal test procedures
CNG—compressed natural gas	g/bhp-hr—grams per brake horsepower per hour
CNGVP—California Natural Gas Vehicle Partnership	GC/MS—gas chromatography/mass spectrometry
CO <sub>2</sub> —carbon dioxide	GCW—gross combination weight
CO—carbon monoxide	GCVW—gross container vehicle weight
ComZEV—Commercial Zero-Emission Vehicle	GDI—gasoline direct injection
CPA—Certified Public Accountant	GGE—gasoline gallon equivalents
CPUC—California Public Utilities Commission	GGRF—Greenhouse Gas Reduction Relief Fund
CRDS—cavity ring-down spectroscopy	GHG—Greenhouse Gas
CRT—continuously regenerating technology	GNA—Gladstein, Neandross & Associates, LLC
	GREET- Greenhouse Gasses, Regulated Emissions and Energy Use in Transportation
	GTL—gas to liquid

## LIST OF ACRONYMS (cont'd)

GVWR—gross vehicle weight rating	MTA—Metropolitan Transportation Authority (Los Angeles County “Metro”)
H&SC—California Health and Safety Code	NAAQS—National Ambient Air Quality Standards
HCCI—Homogeneous Charge Combustion Ignition	NAFA—National Association of Fleet Administrators
HCNG—hydrogen-compressed natural gas (blend)	NFPA—National Fire Protection Association
HDDT—highway dynamometer driving schedule	NCP—nonconformance penalty
HD-FTP—Heavy-Duty Federal Test Procedure	NEV—neighborhood electric vehicles
HD-OBD—heavy-duty on-board diagnostics	NextSTEPS—Next Sustainable Transportation Energy Pathways
HPLC—high-performance liquid chromatography	NG/NGV—natural gas/natural gas vehicle
HT—high throughput	NH <sub>3</sub> —ammonia
HTFCs—high-temperature fuel cells	NHTSA—National Highway Traffic Safety Administration
H2NIP—Hydrogen Network Investment Plan	NMHC—non-methane hydrocarbon
HTPH—high throughput pretreatment and enzymatic hydrolysis	NO—nitrogen monoxide
HypPO—Hydrogen Progress, Priorities and Opportunities report	NO <sub>2</sub> —nitrogen dioxide
Hz—Hertz	NO + NO <sub>2</sub> —nitrous oxide
ICE—internal combustion engine	NOPA—Notice of Proposed Award
ICEV—internal combustion engine vehicle	NO <sub>x</sub> —oxides of nitrogen
ICU—inverter-charger unit	NRC—National Research Council
ICTC—Interstate Clean Transportation Corridor	NREL—National Renewables Energy Laboratory
IVOC—intermediate volatility organic compound	NSPS—New Source Performance Standard
kg—kilogram	NSR—New Source Review
LACMTA—Los Angeles County Metropolitan Transit Authority	NZ—near zero
LADOT—City of Los Angeles Dept. of Transportation	OBD—On-Board Diagnostics
LADWP—Los Angeles Department of Water and Power	OCS—overhead catenary system
LCFS—Low Carbon Fuel Standard	OCTA—Orange County Transit Authority
Li—lithium ion	OEHHA—Office of Environmental Health Hazard Assessment
LIMS—Laboratory Information Management System	OEM—original equipment manufacturer
LLNL—Lawrence Livermore National Laboratory	One-off—industry term for prototype or concept vehicle
LNG—liquefied natural gas	PAH—polyaromatic hydrocarbons
LPG—liquefied petroleum gas or propane	PbA—lead acid
LSM—linear synchronous motor	PCM—powertrain control module
LSV—low-speed vehicle	PEMFC—proton exchange membrane fuel cell
LUV—local-use vehicle	PEMS—portable emissions measurement system
LVP—low vapor pressure	PEV—plug-in electric vehicle
MATES—Multiple Air Toxics Exposure Study	PHET—plug-in hybrid electric truck
MECA—Manufacturers of Emission Controls Association	PHEV—plug-in hybrid vehicle
MOA—Memorandum of Agreement	PM—particulate matter
MOVES—Motor Vehicle Emission Simulator	PM <sub>2.5</sub> —particulate matter ≤ 2.5 microns
MPa—MegaPascal	PM <sub>10</sub> —particulate matter ≤ 10 microns
MPFI—Multi-Port Fuel Injection	POS—point of sale
MPG—miles per gallon	ppm—parts per million
MPGde—miles per gallon diesel equivalent	ppb—parts per billion
MSRC—Mobile Source Air Pollution Reduction Review Committee	PSI—Power Solutions International
MSW—municipal solid wastes	PTR-MS—proton transfer reaction-mass spectrometry
MY—model year	RD&D—research, development and demonstration

**LIST OF ACRONYMS (cont'd)**

RDD&D (or RD3)—research, development, demonstration and deployment	U.S.EPA—United States Environmental Protection Agency
RFP—Request for Proposal	V2B—vehicle-to-building
RFS—renewable fuel standards	V2G—vehicle-to-grid
RI—reactive intermediates	V2G/B—vehicle-to-building functionality
RNG—renewable natural gas	VMT—vehicle miles traveled
RTP/SCS—Regional Transportation Plan/Sustainable Communities Strategy	VOC—volatile organic compounds
SAE—Society of Automotive Engineers	VPP— virtual power plant
SB—Senate Bill	WVU—West Virginia University
SCAB—South Coast Air Basin or “Basin”	ZECT—Zero Emission Cargo Transport
SCAQMD—South Coast Air Quality Management District	ZEV—zero emissions vehicle
SCFM—standard cubic feet per minute	
SCE—Southern California Edison	
SCR—selective catalytic reduction	
SHR—Steam Hydrogasification Reaction	
SI—spark ignited	
SI-EGR—spark-ignited, stoichiometric, cooled exhaust gas recirculation	
SIP—State Implementation Plan	
SJVAPCD—San Joaquin Valley Air Pollution Control District	
SOAs—secondary organic aerosols	
SoCalGas—Southern California Gas Company (A Sempra Energy Utility)	
SULEV—super ultra-low emission vehicle	
SUV—Sports Utility Vehicle	
TAO—Technology Advancement Office	
TAP— (Ports’) Technology Advancement Program	
TC—total carbon	
TEMS—transportable emissions measurement system	
THC—total hydrocarbons	
TO—task order	
tpd—tons per day	
TRB—Transportation Research Board	
TRL—technology readiness level	
TSI—Three Squares, Inc.	
TTSI—Total Transportation Services, Inc.	
TWC—three-way catalyst	
UCR—University of California Riverside	
UCR/CE-CERT—UCR/College of Engineering/Center for Environmental Research & Technology	
UCLA—University of California Los Angeles	
UDDS—urban dynamometer driving schedule	
$\mu\text{g}/\text{m}^3$ —microgram per cubic meter	
ULEV—ultra low emission vehicle	
UPS—United Postal Service	
U.S.—United States	



## South Coast Air Quality Management District

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# South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4178  
(909) 396-2000 • www.aqmd.gov

BOARD MEETING DATE: March 6, 2020

AGENDA NO. 29

PROPOSAL: Approve Annual RECLAIM Audit Report for 2018 Compliance Year

SYNOPSIS: The annual report on the NOx and SOx RECLAIM program is prepared in accordance with Rule 2015 - Backstop Provisions. The report assesses emission reductions, availability of RECLAIM Trading Credits (RTCs) and their average annual prices, job impacts, compliance issues, and other measures of performance for the twenty-fifth year of this program. Recent trends in trading future year RTCs are analyzed and presented in this report. A list of facilities that did not reconcile their emissions for the 2018 Compliance Year is also included with the report. This action is to approve the Annual RECLAIM Audit Report for 2018.

COMMITTEE: No Committee Review

RECOMMENDED ACTION:

Approve the Annual RECLAIM Audit Report for 2018 Compliance Year.

<p>APPROVED by the South Coast Air Quality Management District Board</p> <p>Date: <i>March 6, 2020</i></p> <p>AD:DO <i>Jay Thomas</i> Clerk of the Board</p>
--

  
Wayne Natri  
Executive Officer

**Background**

The Board adopted the RECLAIM program on October 15, 1993 to provide a more flexible compliance program than command-and-control for specific facilities which represent South Coast AQMD's largest emitters of NOx and SOx. Although RECLAIM was developed as an alternative to command-and-control, it was designed to meet all state and federal Clean Air Act and other air quality regulations and program requirements, as well as a variety of performance criteria in order to ensure public health protection, air quality improvement, effective enforcement, and the same or lower implementation costs and job impacts. RECLAIM is what is commonly referred to as a "cap and trade" program. Facilities subject to the program were initially

allocated declining annual balances of RECLAIM Trading Credits (RTCs, denominated in pounds of emissions in a specified year) based upon their historical production levels and upon emissions factors established in the RECLAIM regulation. RECLAIM facilities are required to reconcile their emissions with their RTC holdings on a quarterly and annual basis (*i.e.*, hold RTCs equal to or greater than their emissions). These facilities have the flexibility to manage how they meet their emission goals by installing emission controls, making process changes or trading RTCs amongst themselves. RECLAIM achieves its overall emission reduction goals provided aggregate RECLAIM emissions are no more than aggregate allocations.

RECLAIM Rule 2015 - Backstop Provisions, requires that staff conduct annual program audits to assess various aspects of the program and to verify that program objectives are met. Staff has completed audits of facility records and completed the annual audit of the RECLAIM program for Compliance Year 2018 (which encompasses the time period for Cycle 1 from January 1, 2018 to December 31, 2018 and for Cycle 2 from July 1, 2018 to June 30, 2019). Based on audited emissions in this report and previous annual reports, staff has determined that RECLAIM met its emissions goals for Compliance Year 2018, as well as for all previous compliance years with the only exception of NOx emissions in Compliance Year 2000. For that year, NOx emissions exceeded programmatic allocations (by 11%) primarily due to emissions from electric generating facilities during the California energy crisis. For Compliance Year 2018, audited NOx emissions were 22% less than programmatic NOx allocations and audited SOx emissions were 14% less than programmatic SOx allocations.

### **Audit Findings**

The audit of the RECLAIM Program's Compliance Year 2018 and trades of RTCs that occurred during calendar year 2019 show:

- **Overall Compliance** – Audited NOx and SOx emissions from RECLAIM facilities were significantly below programmatic allocations.
- **Universe** – The RECLAIM universe consisted of 258 facilities as of June 30, 2018. No new facilities were included, two facilities were excluded, and three facilities in the RECLAIM universe shut down during Compliance Year 2018. Thus, 253 active facilities were in the RECLAIM universe on June 30, 2019, the end of Compliance Year 2018.

Two facilities were excluded from RECLAIM when they exercised the option to opt-out after the October 5, 2018, and prior to the July 12, 2019 amendments to Rule 2001, the time period during which such an opt-out provision was allowed. Of the three facilities that shut down, two facilities cited a decreased demand for their product, whereas the third facility ceased operations citing financial difficulties. All five facilities, either excluded from RECLAIM or permanently ceasing operations, were in NOx RECLAIM.

- Facility Compliance** – The vast majority of RECLAIM facilities complied with their allocations during the 2018 compliance year (94% of NO<sub>x</sub> facilities and 97% of SO<sub>x</sub> facilities). Sixteen facilities (less than six percent of total facilities) exceeded their allocations (15 facilities exceeded their NO<sub>x</sub> allocations, and one facility exceeded their SO<sub>x</sub> allocations) during Compliance Year 2018. The 15 facilities that exceeded their NO<sub>x</sub> allocations had total NO<sub>x</sub> emissions of 454.4 tons and did not have adequate allocations to offset 30.4 of those tons. The exceedances represent 0.35% of total RECLAIM NO<sub>x</sub> universe allocations and 6.7% of total NO<sub>x</sub> emissions from the 15 facilities. The one SO<sub>x</sub> facility that exceeded its SO<sub>x</sub> allocation had total SO<sub>x</sub> emissions of 0.50 tons and did not have adequate allocations to offset 0.29 tons. This exceedance represents 0.01% of total RECLAIM SO<sub>x</sub> universe allocations and 58.0% of total SO<sub>x</sub> emissions from the facility. Pursuant to Rule 2010(b)(1)(A), all 16 facilities had their respective exceedances deducted from their annual allocations for the compliance year subsequent to South Coast AQMD staff determination that the facilities exceeded their Compliance Year 2018 allocations.
- Job Impacts** – Based on a survey of the RECLAIM facilities, the RECLAIM program had minimal impact on employment during the 2018 compliance year, which is consistent with previous years. RECLAIM facilities reported an overall net gain of 326 jobs, representing 0.32% of their total employment. One facility cited RECLAIM as a factor contributing to the addition of six jobs during Compliance Year 2018. No RECLAIM facility reported job losses due to RECLAIM during Compliance Year 2018. The job loss and job gain data are compiled strictly from reports submitted by RECLAIM facilities, and staff is not able to verify the accuracy of the reported job impacts data.
- Trading Activity** – The RTC trading market activity during calendar year 2019 was higher in terms of number of trades (by 8.6%), higher in volume of infinite-year block (IYB) RTCs excluding swaps (147.8%), significantly higher with respect to total value (by 760%), and slightly lower in volume for discrete-year RTCs (1.5%) when compared to calendar year 2018. A total of \$1.52 billion in RTCs has been traded since the adoption of RECLAIM, of which \$34.2 million occurred in calendar year 2019 (compared to \$3.94 million in calendar year 2018), excluding swaps.

The annual average prices of discrete-year NO<sub>x</sub> and SO<sub>x</sub> RTCs for Compliance Years 2018, 2019, and 2020 and IYB NO<sub>x</sub> and SO<sub>x</sub> RTCs traded in calendar year 2019 were below the applicable review thresholds for average RTC prices. The annual average prices of RTCs traded during calendar years 2018 and 2019 are summarized and compared to the applicable thresholds in Tables 1 and 2.

**Table 1 – Average Prices for Discrete-Year RTCs Traded during Calendar Years 2018 and 2019**

Year Traded	Average Price (\$/ton)				Review Thresholds (\$/ton)	
	2017 NOx RTC	2018 NOx RTC	2019 NOx RTC	2020 NOx RTC	Rule 2015 (b)(6)	Health and Safety Code §39616(f)
2018	\$1,872	\$3,788	\$5,646	\$5,674	\$15,000	\$46,657
2019		\$2,261	\$5,410	\$12,190		
Year Traded	2017 SOx RTC	2018 SOx RTC	2019 SOx RTC	2020 SOx RTC	Rule 2015 (b)(6)	Health and Safety Code §39616(f)
2018	\$786	\$955	None traded	None traded	\$15,000	\$33,593
2019		\$1,764	\$7,985	None traded		

**Table 2 – Average Prices for IYB RTCs Traded during Calendar Years 2018 and 2019**

RTCs	Average Price (\$/ton)		Review Threshold (\$/ton) [Health and Safety Code §39616(f)]
	Traded in 2018	Traded in 2019	
NOx	\$13,223	\$94,183	\$699,852
SOx	\$30,000	\$13,213	\$503,893

- **Role of Investors** – Investors remained active in the RTC market, and their involvement in 2019 was comparable to prior years. Investors were involved in 122 of the 178 discrete NOx trades with price, and 9 of the 17 discrete SOx trades with price. With respect to IYB trades, investors’ participation was notable, and were involved in 21 of the 33 IYB NOx trades with price and three of six IYB SOx trades with price. Compared to calendar year 2018, investor holdings of total IYB NOx RTCs decreased from 3.8% to 1.3% and remained the same at 4.7% for IYB SOx RTCs at the end of calendar year 2019. Investors purchase RTCs, but are not RECLAIM facilities or brokers. (Brokers typically do not purchase RTCs but facilitate trades.)
- **Other Findings** – RECLAIM also met other applicable requirements including meeting the applicable federal offset ratio under New Source Review and having no significant seasonal fluctuation in emissions. Additionally, there is no evidence that RECLAIM resulted in any increase in health impacts due to emissions of air toxics. RECLAIM facilities and non-RECLAIM facilities are subject to the same requirements for controlling air toxic emissions.

**Attachments**

1. Annual RECLAIM Audit Report for 2018 Compliance Year
2. Board Meeting Presentation



## ATTACHMENT 1

# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

## Annual RECLAIM Audit Report for 2018 Compliance Year

**March 6, 2020**

**Executive Officer**

Wayne Natri

**Deputy Executive Officer**

**Engineering & Permitting**

Amir Dejbakhsh

**Assistant Deputy Executive Officer**

**Engineering & Permitting**

Jason Aspell

**Senior Air Quality Engineering Manager**

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William Wong, Principal Deputy District Counsel

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**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

**GOVERNING BOARD**

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Speaker of the Assembly  
Appointee

Vice Chairman: Ben Benoit  
Council Member, Wildomar  
Cities of Riverside County

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Supervisor, Fifth District  
County of Los Angeles

Lisa Bartlett  
Supervisor, Fifth District  
County of Orange

Joe Buscaino  
Council Member, Fifteenth District  
City of Los Angeles Representative

Michael A. Cacciotti  
Council Member, South Pasadena  
Cities of Los Angeles County/Eastern Region

Vanessa Delgado  
Senate Rules Committee  
Appointee

Gideon Kracov  
Governor's Appointee

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Mayor Pro Tem, Highland  
Cities of San Bernardino County

Judith Mitchell  
Mayor, Rolling Hills Estates  
Cities of Los Angeles County/Western Region

V. Manuel Perez  
Supervisor, Fourth District  
County of Riverside

Carlos Rodriguez  
Council Member, Yorba Linda  
Cities of Orange County

Janice Rutherford  
Supervisor, Second District  
County of San Bernardino

EXECUTIVE OFFICER  
Wayne Nastri

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**LIST OF ABBREVIATIONS**

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AAQS	Ambient Air Quality Standards
ACEMS	Alternative Continuous Emissions Monitoring System(s)
AER	Annual Emission Report
APEP	Annual Permit Emissions Program
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
BACT	Best Available Control Technology
BARCT	Best Available Retrofit Control Technology
CAA	Clean Air Act
CARB	California Air Resources Board
CCAA	California Clean Air Act
CEMS	Continuous Emissions Monitoring System(s)
CEQA	California Environmental Quality Act
CGA	Cylinder Gas Audit
CPMS	Continuous Process Monitoring System(s)
EDR	Electronic Data Reporting
ERC	Emission Reduction Credit
GHG	Greenhouse Gas
IYB RTC	Infinite-Year Block RECLAIM Trading Credit
LAER	Lowest Achievable Emission Rate
LAP	Laboratory Approval Program
MDP	Missing Data Procedures
MRR	Monitoring, Reporting and Recordkeeping
MSERC	Mobile Source Emission Reduction Credit
NAAQS	National Ambient Air Quality Standards
NNI	No Net Increase
NOx	Oxides of Nitrogen
NSR	New Source Review
ODC	Ozone Depleting Compound
OEHHA	Office of Environmental Health Hazard Assessment
QCER	Quarterly Certification of Emissions Report
RACT	Reasonably Available Control Technology
RATA	Relative Accuracy Test Audit
RECLAIM	REgional CLean Air Incentives Market
RTC	RECLAIM Trading Credit
RTU	Remote Terminal Unit
SIP	State Implementation Plan
SOx	Oxides of Sulfur
TAC	Toxic Air Contaminant
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
WATERS	Web Access To Electronic Reporting System

## EXECUTIVE SUMMARY

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### Introduction

The South Coast Air Quality Management District (South Coast AQMD) Governing Board adopted the REgional CLean Air Incentives Market (RECLAIM) program on October 15, 1993. The RECLAIM program represented a significant departure from traditional command-and-control regulations. RECLAIM's objective is to provide facilities with added flexibility in meeting emissions reduction requirements while lowering the cost of compliance. This is accomplished by establishing facility-specific emissions reduction targets without being prescriptive regarding the method of attaining compliance with the targets. Each facility may determine for itself the most cost-effective approach to reducing emissions, including reducing emissions at their facility, and/or purchasing RECLAIM Trading Credits (RTCs) from other RECLAIM facilities, or from other RTC holders.

Rule 2015 - Backstop Provisions includes provisions for annual program audits focusing on specific topics, as well as a one-time comprehensive audit of the program's first three years, to ensure that RECLAIM is meeting all state and federal requirements and other performance criteria. Rule 2015 also provides backstop measures if the specific criteria are not met. This report constitutes the Rule 2015 annual program audit report for Compliance Year 2018 (January 1 through December 31, 2018 for Cycle 1 and July 1, 2018 through June 30, 2019 for Cycle 2 facilities). This annual audit report covers activities for the twenty-fifth year of the program.

### Chapter 1: RECLAIM Universe

When RECLAIM was adopted in October 1993, a total of 394 facilities were identified as the initial "universe" of sources subject to the requirements of RECLAIM. From program adoption through June 30, 2018, the overall changes in RECLAIM participants were 134 facilities included into the program, 71 facilities excluded from the program, and 199 facilities ceased operation. Thus, the RECLAIM universe consisted of 258 active facilities at the end of Compliance Year 2017 (December 31, 2017 for Cycle 1 facilities and June 30, 2018 for Cycle 2 facilities). During Compliance Year 2018 (January 1, 2018 through December 31, 2018 for Cycle 1 facilities and July 1, 2018 through June 30, 2019 for Cycle 2 facilities), no facilities were included into the RECLAIM universe, two facilities were excluded, and three facilities (all in the NOx universe) shut down and are no longer in the active RECLAIM universe. These changes resulted in a net decrease of five facilities in the universe, bringing the total number of active RECLAIM facilities to 253 as of the end of Compliance Year 2018.

### Chapter 2: RTC Allocations and Trading

On November 5, 2010, the Governing Board adopted amendments to SOx RECLAIM to phase in SOx reductions beginning in Compliance Year 2013 and full implementation in Compliance Year 2019 and beyond. The amendments will result in an overall reduction of 48.4% (or 5.7 tons/day) in SOx allocations when fully implemented (Compliance Year 2019 and beyond). For Compliance Year

2018, the sixth year of implementation, the SOx allocation supply was reduced by 43% (or 5.0 tons/day) to 2,474 tons. On December 4, 2015, the Governing Board adopted amendments to NOx RECLAIM to phase in additional NOx reductions which began in Compliance Year 2016 and continue through Compliance Year 2022. The amendment will result in an overall NOx reduction of 45% (or 12 tons/day) when fully implemented for Compliance Year 2022 and beyond. For Compliance Year 2018, the third year of implementation, the NOx allocation supply was reduced by 11.3 % (or 3 tons/day). The only remaining change in RTCs supply during Compliance Year 2018 was due to allocation adjustments for clean fuel production pursuant to Rule 2002(c)(12) which increased overall NOx RTC supply by 7.9 tons and SOx RTC supply by 0.1 tons.

Since the inception of the RECLAIM program in 1994, a total value of \$1.52 billion dollars has been traded in the RTC trading market, excluding swap trades. During calendar year 2019, there were 304 RTC trade registrations, including swap trades. There were 296 RTC trade registrations with a total value of \$34.2 million traded, excluding swap trades. RTC trades are reported to South Coast AQMD as either discrete-year RTC trades or infinite-year block (IYB) trades (trades that involve blocks of RTCs with a specified start year and continuing into perpetuity).

Excluding swap trades, in calendar year 2019 a total of 1,796 tons of discrete-year NOx RTCs, 666 tons of discrete-year SOx RTCs, 526 tons of IYB NOx RTCs and 55 tons of IYB SOx RTCs were traded. The RTC trading market activity increased during calendar year 2019 compared to calendar year 2018, in terms of number of trades (by 8.6%), in volume for IYB RTCs (by 147.8%), in total value (by 769.0%). The volume traded of discrete-year RTCs decreased slightly by 1.5%. The majority of IYB NOx RTCs were bought by two petroleum refining companies.

Discrete-year RTC trades with price (i.e., price >\$0.00) registered during calendar year 2019 include trades for Compliance Years 2018, 2019, 2020, and 2021 NOx RTCs, and Compliance Years 2018 and 2019 SOx RTCs, excluding swap trades. The annual average prices of discrete-year NOx RTCs traded during calendar year 2019 were \$2,261, \$5,410, \$12,190, and \$8,678 per ton for Compliance Years 2018, 2019, 2020, and 2021 RTCs, respectively. The annual average prices for discrete-year SOx RTCs traded during the same period were \$1,764, and \$7,985 per ton for Compliance Years 2018 and 2019 RTCs, respectively.

Prices for discrete-year NOx and SOx RTCs for all compliance years are still well below the \$46,657 per ton of NOx and \$33,593 per ton of SOx discrete-year RTCs pre-determined overall program review thresholds established by the Governing Board pursuant to Health and Safety Code §39616(f), as well as the \$15,000 per ton threshold pursuant to Rule 2015(b)(6). Although the annual average price for Compliance Year 2020 discrete-year NOx RTCs was \$12,190 per ton, two trades in December 2019 were for \$19,000 per ton, which is above the \$15,000 per ton threshold.

The annual average price during calendar year 2019 for IYB NOx RTCs was \$94,183 per ton and the annual average price for IYB SOx RTCs was \$13,213 per ton. Therefore, annual average IYB RTC prices did not exceed the \$699,852 per ton of IYB NOx RTCs or the \$503,893 per ton of IYB SOx RTCs pre-determined overall program review thresholds established by the Governing



Board pursuant to Health and Safety Code §39616(f). IYB NOx RTC trade activities were concentrated towards the latter half of calendar year 2019, during which two petroleum refining companies acquired from investors 246 tons of IYB NOx RTCs.

Investors were again active in the RTC market during calendar year 2019. They were involved in 122 of the 178 discrete-year NOx trade registrations and 9 of the 17 discrete-year SOx trade registrations with price. Investors were also involved in 21 of the 33 IYB NOx and three of the six IYB SOx trades with price. Investors were involved in 64% of total value and 55% of total volume for discrete-year NOx trades, and 75% of the total value and 47% of the total volume for discrete-year SOx trades. At the end of calendar year 2019, investors' holdings of IYB NOx RTCs decreased to 1.3% of total NOx RECLAIM RTCs, while investors' holdings of IYB SOx RTCs stayed the same at 4.7% of the total SOx RECLAIM RTCs, compared to that of calendar year 2018.

### **Chapter 3: Emission Reductions Achieved**

For Compliance Year 2018, aggregate NOx emissions were below total allocations by 22% and aggregate SOx emissions were below total allocations by 14%. No emissions associated with breakdowns were excluded from reconciliation with facility allocations in Compliance Year 2018. Accordingly, no mitigation is necessary to offset excluded emissions due to approved Breakdown Emission Reports. Therefore, based on audited emissions, RECLAIM achieved its targeted emission reductions for Compliance Year 2018. With respect to the Rule 2015 backstop provisions, Compliance Year 2018 aggregate NOx and SOx emissions were both well below aggregate allocations and, as such, did not trigger the requirement to review the RECLAIM program.

### **Chapter 4: New Source Review Activity**

The annual program audit assesses New Source Review (NSR) activity from RECLAIM facilities in order to ensure that RECLAIM is complying with federal NSR requirements and state no net increase (NNI) in emissions requirements while providing flexibility to facilities in managing their operations and allowing new sources into the program. In Compliance Year 2018, a total of three NOx RECLAIM facilities had NSR NOx emission increases, and no SOx RECLAIM facilities had an NSR SOx emission increase due to expansion or modification. Consistent with all prior compliance years, there were sufficient NOx and SOx RTCs available to allow for expansion, modification, and modernization by RECLAIM facilities.

RECLAIM is required to comply with federal NSR emissions offset requirements at a 1.2-to-1 offset ratio programmatically for NOx emission increases and a 1-to-1 offset ratio for SOx emission increases on a programmatic basis. In Compliance Year 2018, RECLAIM demonstrated federal equivalency with a programmatic NOx offset ratio of 1,466-to-1 based on the compliance year's total unused allocations and total NSR emission increases for NOx. There were no SOx NSR emission increases that resulted from starting operations of new or modified permitted sources during the compliance year. RECLAIM inherently complies with the federally-required 1-to-1 SOx offset ratio for any compliance year, provided aggregate SOx emissions under RECLAIM are lower than or equal to aggregate SOx allocations for that compliance year. As shown in

Chapter 3 (Table 3-2 and Figure 3-2), there was a surplus of SOx RTCs during Compliance Year 2018. Therefore, RECLAIM more than complied with the federally-required SOx offset ratio and further quantification of the SOx offset ratio is unnecessary. Also, the NNI is satisfied by the program's 1-to-1 offset ratio. In addition, RECLAIM requires application of, at a minimum, California Best Available Control Technology (BACT), which is at least as stringent as federal Lowest Achievable Emission Rate (LAER) for major sources. The same BACT guidelines are used to determine BACT applicable to RECLAIM and non-RECLAIM facilities.

## Chapter 5: Compliance

Based on South Coast AQMD Compliance Year 2018 audit results, 254 of the 269 (94%) NOx RECLAIM facilities complied with their NOx allocations, and 31 of the 32 SOx facilities (97%) complied with their SOx allocations based on South Coast AQMD audit results. So, sixteen facilities exceeded their allocations (15 facilities exceeded their NOx allocations, and one facility exceeded its SOx allocation). The 15 facilities that exceeded their NOx allocations had aggregate NOx emissions of 454.4 tons and did not have adequate allocations to offset 30.4 tons (or 6.7%) of their combined emissions. The facility that exceeded its SOx allocations had total SOx emissions of 0.50 tons and did not have adequate allocations to offset 0.29 tons (or 58.0%). The NOx and SOx exceedance amounts are relatively small compared to the overall NOx and SOx allocations for Compliance Year 2018 (0.35% of total NOx allocations and 0.01% of total SOx allocations). The exceedances from these facilities did not impact the overall RECLAIM emission reduction goals. The overall RECLAIM NOx and SOx emission reduction targets and goals were met for Compliance Year 2018 (*i.e.*, aggregate emissions for all RECLAIM facilities were well below aggregate allocations). Pursuant to Rule 2010(b)(1)(A), these facilities had their respective exceedances deducted from their annual allocations for the compliance year subsequent to the date of South Coast AQMD's determination that the facilities exceeded their Compliance Year 2018 allocations.

## Chapter 6: Reported Job Impacts

This chapter compiles data as reported by RECLAIM facilities in their Annual Permit Emissions Program (APEP) reports. The analysis focuses exclusively on job impacts at RECLAIM facilities and determination if those job impacts were directly attributable to RECLAIM as reported by those facilities. Additional benefits to the local economy (*e.g.*, generating jobs for consulting firms, source testing firms and CEMS vendors) attributable to the RECLAIM program, as well as factors outside of RECLAIM (*e.g.*, the prevailing economic climate), impact the job market. However, these factors are not evaluated in this report. Also, job losses and job gains are strictly based on RECLAIM facilities' reported information. South Coast AQMD staff is not able to independently verify the accuracy of the facility reported job impact information.

According to the Compliance Year 2018 employment survey data gathered from APEP reports, RECLAIM facilities reported a net gain of 326 jobs, representing 0.32% of their total employment. One RECLAIM facility cited RECLAIM as a factor contributing to the addition of six jobs during Compliance Year 2018. No facility reported job losses due to RECLAIM, during Compliance Year 2018.

## Chapter 7: Air Quality and Public Health Impacts

Audited RECLAIM emissions have been in an overall downward trend since the program's inception. Compliance Year 2018 NO<sub>x</sub> emissions decreased (7.0%) relative to Compliance Year 2017, but Compliance Year 2018 SO<sub>x</sub> emissions were 4.5% greater than the previous year. Quarterly calendar year 2018 NO<sub>x</sub> emissions fluctuated within four percent of the mean NO<sub>x</sub> emissions for the year. Quarterly calendar year 2018 SO<sub>x</sub> emissions fluctuated within thirteen percent of the year's mean SO<sub>x</sub> emissions. There was no significant shift in seasonal emissions from the winter season to the summer season for either pollutant.

The California Clean Air Act (CCAA) required a 50% reduction in population exposure to ozone, relative to a baseline averaged over three years (1986 through 1988), by December 31, 2000. The Basin achieved the December 2000 target for ozone well before the deadline. In calendar year 2019, the per capita exposure to ozone (the average length of time each person is exposed) continued to be well below the target set for December 2000.

Air toxic health risk is primarily caused by emissions of certain volatile organic compounds (VOCs) and fine particulates, such as metals. RECLAIM facilities are subject to the same air toxic, VOC, and particulate matter regulations as other sources in the Basin. All sources are subject, where applicable, to the NSR rule for toxics (Rule 1401 and/or Rule 1401.1). In addition, new or modified sources with NO<sub>x</sub> or SO<sub>x</sub> emission increases are required to be equipped with BACT, which minimizes to the extent feasible the increase of NO<sub>x</sub> and SO<sub>x</sub> emissions. RECLAIM and non-RECLAIM facilities that emit toxic air contaminants are required to report those emissions to South Coast AQMD. Those emissions reports are used to identify candidates for the Air Toxics Hot Spots program (AB2588). This program requires emission inventories and, depending on the type and amount of emissions, facilities may be required to do public notice and/or prepare and implement a plan to reduce emissions. There is no evidence that RECLAIM has caused or allowed higher toxic risk in areas adjacent to RECLAIM facilities, than would occur under command-and-control, because RECLAIM facilities must comply with the same toxics rules as non-RECLAIM facilities.

## INTRODUCTION

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The South Coast Air Quality Management District (South Coast AQMD) REgional CLean Air Incentives Market (RECLAIM) program was adopted in October 1993 and replaced certain command-and-control rules regarding oxides of nitrogen (NOx) and oxides of sulfur (SOx) with a new market incentives program for facilities that meet the inclusion criteria. The goals of RECLAIM are to provide facilities with added flexibility in meeting emissions reduction requirements while lowering the cost of compliance. The RECLAIM program was designed to meet all state and federal Clean Air Act (CAA) and other air quality regulations and program requirements, as well as various other performance criteria, such as equivalent or better air quality improvement, enforcement, implementation costs, job impacts, and no adverse public health impacts.

Since RECLAIM represents a significant change from traditional command-and-control regulations, RECLAIM rules include provisions for program audits in order to verify that the RECLAIM objectives are being met. The rules provide for a comprehensive audit of the first three years of program implementation and for annual program audits. The audit results are used to help determine whether any program modifications are appropriate. South Coast AQMD staff has completed the initial tri-annual program audit and each individual annual program audit report through the 2018 Compliance Year Audit.

This report presents the annual program audit and progress report of RECLAIM's twenty-fifth compliance year (January 1 through December 31, 2018 for Cycle 1 and July 1, 2018 through June 30, 2019 for Cycle 2 RECLAIM facilities), also known as Compliance Year 2018. As required by Rule 2015(b)(1) – Annual Audits, this audit assesses:

- Emission reductions;
- Per capita exposure to air pollution;
- Facilities permanently ceasing operation of all sources;
- Job impacts;
- Annual average price of each type of RECLAIM Trading Credit (RTC);
- Availability of RTCs;
- Toxic risk reductions;
- New Source Review permitting activity;
- Compliance issues, including a list of facilities that were unable to reconcile emissions for that compliance year;
- Emission trends/seasonal fluctuations;
- Emission control requirement impacts on stationary sources in the program compared to other stationary sources identified in the Air Quality Management Plan (AQMP); and
- Emissions associated with equipment breakdowns.

The annual program audit report is organized into the following chapters:

1. **RECLAIM Universe**  
This chapter summarizes changes to the universe of RECLAIM sources that occurred up until July 1, 2018 (covered under the Annual RECLAIM Audit Report for 2017 Compliance Year), then discusses changes to the RECLAIM universe of sources in detail through the end of Compliance Year 2018.
2. **RTC Allocations and Trading**  
This chapter summarizes changes in emissions allocations in the RECLAIM universe, RTC supply and RTC trading activity, annual average prices, availability of RTCs, and market participants.
3. **Emission Reductions Achieved**  
This chapter assesses emissions trends and progress towards emission reduction goals for RECLAIM sources, emissions associated with equipment breakdowns, and emissions control requirement impacts on RECLAIM sources compared to other stationary sources. It also discusses the latest amendments to the RECLAIM program.
4. **New Source Review Activity**  
This chapter summarizes New Source Review (NSR) activities at RECLAIM facilities.
5. **Compliance**  
This chapter discusses compliance activities and the compliance status of RECLAIM facilities. It also evaluates the effectiveness of South Coast AQMD's compliance program, as well as the monitoring, reporting, and recordkeeping (MRR) protocols for NOx and SOx.
6. **Reported Job Impacts**  
This chapter addresses job impacts and facilities permanently ceasing operation of all emission sources.
7. **Air Quality and Public Health Impacts**  
This chapter discusses air quality trends in the South Coast Air Basin, seasonal emission trends for RECLAIM sources, per capita exposure to air pollution, and the toxic impacts of RECLAIM sources.

## CHAPTER 1

### RECLAIM UNIVERSE

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#### Summary

*When RECLAIM was adopted in October 1993, a total of 394 facilities were identified as the initial “universe” of sources subject to the requirements of RECLAIM. From program adoption through June 30, 2018, the overall changes in RECLAIM participants were 134 facilities included into the program, 71 facilities excluded from the program, and 199 facilities ceased operation. Thus, the RECLAIM universe consisted of 258 active facilities at the end of Compliance Year 2017 (December 31, 2017 for Cycle 1 facilities and June 30, 2018 for Cycle 2 facilities). During Compliance Year 2018 (January 1, 2018 through December 31, 2018 for Cycle 1 facilities and July 1, 2018 through June 30, 2019 for Cycle 2 facilities), no facilities were included into the RECLAIM universe, two facilities were excluded, and three facilities (all in the NOx universe) shut down and are no longer in the active RECLAIM universe. These changes resulted in a net decrease of five facilities in the universe, bringing the total number of active RECLAIM facilities to 253 as of the end of Compliance Year 2018.*

#### Background

The RECLAIM program replaced the traditional “command-and-control” rules for a defined list of facilities participating in the program (the RECLAIM “universe”). The criteria for inclusion in the RECLAIM program are specified in Rule 2001 – Applicability. Facilities were generally subject to RECLAIM if they have NOx or SOx reported emissions greater than or equal to four tons per year in 1990 or any subsequent year. However, certain facilities are categorically excluded from RECLAIM. The categorically excluded facilities include dry cleaners; restaurants; police and fire fighting facilities; construction and operation of landfill gas control, landfill gas processing or landfill gas energy facilities; public transit facilities, potable water delivery operations; facilities that converted all sources to operate on electric power prior to October 1993; and facilities, other than electric generating facilities established on or after January 1, 2001, located in the Riverside County portions of the Mojave Desert Air Basin or the Salton Sea Air Basin.

Other categories of facilities are not automatically included but do have the option to enter the program. These categories include electric utilities (exemption only for the SOx program); equipment rental facilities; facilities possessing solely “various locations” permits; schools or universities; portions of facilities conducting research operations; ski resorts; prisons; hospitals; publicly-owned municipal waste-to-energy facilities; publicly-owned sewage treatment facilities operating consistent with an approved regional growth plan; electrical power generating systems owned and operated by the Cities of Burbank, Glendale, or Pasadena or their successors; facilities on San Clemente Island; agricultural facilities; and electric generating facilities that are new on or after January 1, 2001 and located in the Riverside County portions of the Mojave Desert Air Basin or the Salton Sea Air Basin. An initial universe of 394 RECLAIM facilities was developed using the inclusion criteria initially adopted in the

RECLAIM program based on 1990, 1991, and 1992 facility reported emissions data.

A facility that is not in a category that is specifically excluded from the program may voluntarily join RECLAIM regardless of its emission level. Additionally, a facility may be required to enter the RECLAIM universe if:

- It increases its NO<sub>x</sub> and/or SO<sub>x</sub> emissions from permitted sources above the four ton per year threshold; or
- It ceases to be categorically excluded and its reported NO<sub>x</sub> and/or SO<sub>x</sub> emissions are greater than or equal to four tons per year; or
- It is determined by staff to meet the applicability requirements of RECLAIM but was initially misclassified as not subject to RECLAIM.

At the time of joining RECLAIM, each RECLAIM facility is issued an annually declining allocation of emission credits ("RECLAIM Trading Credits" or "RTCs") based on its historic production level (if the facility existed prior to January 1, 1993), external offsets it previously provided, and any Emission Reduction Credits (ERCs) generated at and held by the facility. Each RECLAIM facility's RTC holdings constitute an annual emissions budget. RTCs may be bought or sold as the facility deems appropriate (see Chapter 2 – RTC Allocations and Trading).

#### **2016 AQMP Control Measure CMB-05**

Up until March 2017, staff has conducted a process of identifying facilities that are to be included in RECLAIM pursuant to Rule 2001(b) – Criteria for Inclusion in RECLAIM. As part of the adoption Resolution of the Final 2016 AQMP in March 2017, staff was directed by the Governing Board to modify Control Measure CMB-05 – Further NO<sub>x</sub> Reductions from RECLAIM Assessment to achieve an additional five tons per day NO<sub>x</sub> emission reductions as soon as feasible but no later than 2025, and to transition the RECLAIM program to a command-and-control regulatory structure requiring Best Available Retrofit Control Technology (BARCT) level controls as soon as practicable. Additionally, California State Assembly Bill (AB) 617, approved in July 2017, required an expedited schedule for implementing BARCT at cap-and-trade facilities, under which many RECLAIM facilities are also subject, and required that the implementation of BARCT be no later than December 31, 2023.

#### **2018 Rule Amendments**

On January 5, 2018, the Governing Board amended two rules, Rule 2001 – Applicability, and Rule 2002 – Allocations for Oxides of Nitrogen (NO<sub>x</sub>) and Oxides of Sulfur (SO<sub>x</sub>), to initiate the transition of the NO<sub>x</sub> and SO<sub>x</sub> RECLAIM program to a command-and-control regulatory structure as soon as practicable. The amendment also precluded new or existing facilities from entering the NO<sub>x</sub> and SO<sub>x</sub> RECLAIM programs. On October 5, 2018, the Governing Board further amended Rule 2001, opening a pathway for a facility to opt out of the RECLAIM program should their equipment qualify. Shortly thereafter, the United States Environmental Protection Agency (USEPA) recommended that facilities be kept in RECLAIM until all the rules associated with the transition to a command-and-control regulatory structure are adopted, so that the full transitioning of the

RECLAIM Program can be evaluated for incorporation into the State Implementation Plan (SIP) as a package with all the accompanying rules in place. In order to address USEPA's concerns, the Governing Board amended Rule 2001 on July 12, 2019 to remove the opt-out provision so that facilities cannot exit RECLAIM.

## Universe Changes

In the early years of the RECLAIM program, some facilities initially identified for inclusion were excluded upon determination that they did not meet the criteria for inclusion (e.g., some facilities that had reported emissions from permitted sources above four tons in a year were determined to have over-reported their emissions and subsequently submitted corrected emissions reports reflecting emissions from permitted sources below four tons per year). Additionally, some facilities that were not part of the original universe were subsequently added to the program based on the original inclusion criteria mentioned above. On the other hand, RECLAIM facilities that permanently go out of business are removed from the active emitting RECLAIM universe.

The overall changes to the RECLAIM universe from the date of adoption (October 15, 1993) through June 30, 2018 (the last day of Compliance Year 2017 for Cycle 2 facilities) were: the inclusion of 134 facilities (including 34 facilities created by partial change of operator of existing RECLAIM facilities), the exclusion of 71 facilities, and the shutdown of 199 facilities. Thus, the net change in the RECLAIM universe from October 15, 1993 through June 30, 2017 was a decrease of 136 facilities from 394 to 258 facilities. In Compliance Year 2018 (January 1, 2018 through December 31, 2018 for Cycle 1 facilities and July 1, 2018 through June 30, 2019 for Cycle 2 facilities), no facilities were included, two facilities were excluded, and three facilities shut down. These changes brought the total number of facilities in the RECLAIM universe to 253 facilities. The Compliance Year 2018 RECLAIM universe includes 223 NO<sub>x</sub>-only, no SO<sub>x</sub>-only, and 30 both NO<sub>x</sub> and SO<sub>x</sub> RECLAIM facilities. The list of active facilities in the RECLAIM universe as of the end of Compliance Year 2018 is provided in Appendix A.

## Facility Inclusions and Exclusions

During Compliance Year 2018 there were no facility inclusions. Amended Rule 2001 commenced the initial steps of transitioning the program to a command-and-control regulatory structure by ceasing any future inclusions of facilities into NO<sub>x</sub> and SO<sub>x</sub> RECLAIM as of January 5, 2018, whereas amended Rule 2002 established notification procedures and addressed the RTC holdings for RECLAIM facilities transitioning out of the program. Staff identified an initial group of 38 facilities that were potentially qualified to exit the NO<sub>x</sub> RECLAIM program. No final determination was issued pending resolution of New Source Review provisions for facilities transitioning out of RECLAIM (see further discussion in Chapter 3).

Two NO<sub>x</sub> RECLAIM facilities were excluded from the RECLAIM universe during Compliance Year 2018 when they exercised their option to opt out of the RECLAIM program. No other facilities exercised this option prior to the July 12, 2019 Rule 2001 amendment.



### Facilities Permanently Ceasing Operations

Three NO<sub>x</sub> RECLAIM facilities permanently ceased operations in Compliance Year 2018. Two of these facilities shut down due to changing market conditions with decreased demand for its product. The last facility shut down due to financial issues. Appendix C lists these facilities and provides brief descriptions of the reported reasons for their closures.

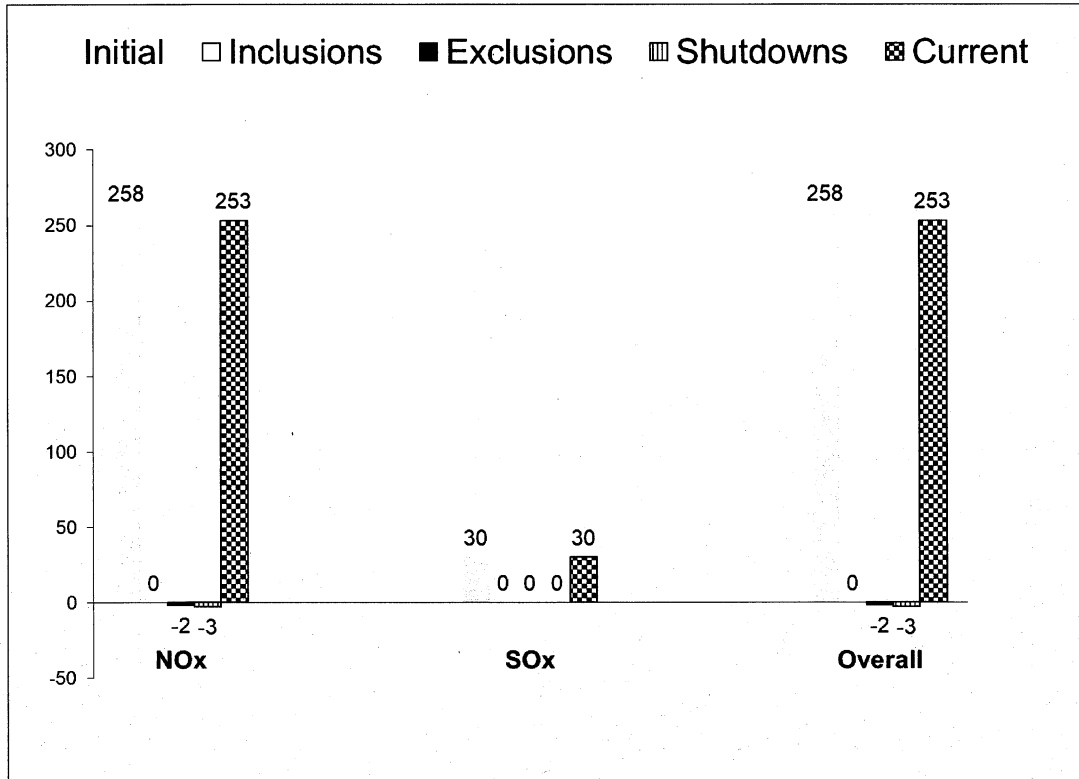
The above-mentioned changes to the RECLAIM universe resulted in a net decrease of five facilities in the RECLAIM universe during Compliance Year 2018. Table 1-1 summarizes overall changes in the RECLAIM universe between the start of the program and end of Compliance Year 2018 (December 31, 2018 for Cycle 1 facilities and June 30, 2019 for Cycle 2 facilities). Changes to the RECLAIM universe that occurred in Compliance Year 2018 are illustrated in Figure 1-1.

**Table 1-1**  
**RECLAIM Universe Changes**

	<b>NO<sub>x</sub> Facilities</b>	<b>SO<sub>x</sub> Facilities</b>	<b>Total* Facilities</b>
<b>Universe – October 15, 1993 (Start of Program)</b>	392	41	394
Inclusions – October 15, 1993 through Compliance Year 2017	134	13	134
Exclusions – October 15, 1993 through Compliance Year 2017	-70	-4	-71
Shutdowns – October 15, 1993 through Compliance Year 2017	-198	-20	-199
<b>Universe – June 30, 2018</b>	258	30	258
Inclusions – Compliance Year 2018	0	0	0
Exclusions – Compliance Year 2018	-2	0	-2
Shutdowns – Compliance Year 2018	-3	0	-3
<b>Universe – End of Compliance Year 2018</b>	253	30	253

\* "Total Facilities" is not the sum of NO<sub>x</sub> and SO<sub>x</sub> facilities due to the overlap of some facilities being in both the NO<sub>x</sub> and SO<sub>x</sub> universes.

**Figure 1-1  
Universe Changes in Compliance Year 2018**



## CHAPTER 2

### RTC ALLOCATIONS AND TRADING

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#### Summary

*On November 5, 2010, the Governing Board adopted amendments to SOx RECLAIM to phase in SOx reductions beginning in Compliance Year 2013 and full implementation in Compliance Year 2019 and beyond. The amendments will result in an overall reduction of 48.4% (or 5.7 tons/day) in SOx allocations when fully implemented (Compliance Year 2019 and beyond). For Compliance Year 2018, the sixth year of implementation, the SOx allocation supply was reduced by 43% (or 5.0 tons/day) to 2,474 tons. On December 4, 2015, the Governing Board adopted amendments to NOx RECLAIM to phase in additional NOx reductions which began in Compliance Year 2016 and continue through Compliance Year 2022. The amendment will result in an overall NOx reduction of 45% (or 12 tons/day) when fully implemented for Compliance Year 2022 and beyond. For Compliance Year 2018, the third year of implementation, the NOx allocation supply was reduced by 11.3 % (or 3 tons/day). The only remaining change in RTCs supply during Compliance Year 2018 was due to allocation adjustments for clean fuel production pursuant to Rule 2002(c)(12) which increased overall NOx RTC supply by 7.9 tons and SOx RTC supply by 0.1 tons.*

*Since the inception of the RECLAIM program in 1994, a total value of \$1.52 billion dollars has been traded in the RTC trading market, excluding swap trades. During calendar year 2019, there were 304 RTC trade registrations, including swap trades. There were 296 RTC trade registrations with a total value of \$34.2 million traded, excluding swap trades. RTC trades are reported to South Coast AQMD as either discrete-year RTC trades or infinite-year block (IYB) trades (trades that involve blocks of RTCs with a specified start year and continuing into perpetuity).*

*Excluding swap trades, in calendar year 2019 a total of 1,796 tons of discrete-year NOx RTCs, 666 tons of discrete-year SOx RTCs, 526 tons of IYB NOx RTCs and 55 tons of IYB SOx RTCs were traded. The RTC trading market activity increased during calendar year 2019 compared to calendar year 2018, in terms of number of trades (by 8.6%), in volume for IYB RTCs (by 147.8%), in total value (by 769.0%). The volume traded of discrete-year RTCs decreased slightly by 1.5%. The majority of IYB NOx RTCs were bought by two petroleum refining companies.*

*Discrete-year RTC trades with price (i.e., price >\$0.00) registered during calendar year 2019 include trades for Compliance Years 2018, 2019, 2020, and 2021 NOx RTCs, and Compliance Years 2018 and 2019 SOx RTCs, excluding swap trades. The annual average prices of discrete-year NOx RTCs traded during calendar year 2019 were \$2,261, \$5,410, \$12,190, and \$8,678 per ton for Compliance Years 2018, 2019, 2020, and 2021 RTCs, respectively. The annual average prices for discrete-year SOx RTCs traded during the same period were \$1,764, and \$7,985 per ton for Compliance Years 2018 and 2019 RTCs, respectively.*

Prices for discrete-year NOx and SOx RTCs for all compliance years are still well below the \$46,657 per ton of NOx and \$33,593 per ton of SOx discrete-year RTCs pre-determined overall program review thresholds established by the Governing Board pursuant to Health and Safety Code §39616(f), as well as the \$15,000 per ton threshold pursuant to Rule 2015(b)(6). Although the annual average price for Compliance Year 2020 discrete-year NOx RTCs was \$12,190 per ton, two trades in December 2019 were for \$19,000 per ton, which is above the \$15,000 per ton threshold.

The annual average price during calendar year 2019 for IYB NOx RTCs was \$94,183 per ton and the annual average price for IYB SOx RTCs was \$13,213 per ton. Therefore, annual average IYB RTC prices did not exceed the \$699,852 per ton of IYB NOx RTCs or the \$503,893 per ton of IYB SOx RTCs pre-determined overall program review thresholds established by the Governing Board pursuant to Health and Safety Code §39616(f). IYB NOx RTC trade activities were concentrated towards the latter half of calendar year 2019, during which two petroleum refining companies acquired from investors 246 tons of IYB NOx RTCs.

Investors were again active in the RTC market during calendar year 2019. They were involved in 122 of the 178 discrete-year NOx trade registrations and 9 of the 17 discrete-year SOx trade registrations with price. Investors were also involved in 21 of the 33 IYB NOx and three of the six IYB SOx trades with price. Investors were involved in 64% of total value and 55% of total volume for discrete-year NOx trades, and 75% of the total value and 47% of the total volume for discrete-year SOx trades. At the end of calendar year 2019, investors' holdings of IYB NOx RTCs decreased to 1.3% of total NOx RECLAIM RTCs, while investors' holdings of IYB SOx RTCs stayed the same at 4.7% of the total SOx RECLAIM RTCs, compared to that of calendar year 2018.

## Background

South Coast AQMD issues each RECLAIM facility at the time of inclusion into RECLAIM emissions allocations for each compliance year, according to the methodology specified in Rule 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx). For facilities that existed prior to January 1, 1993, the allocation is calculated based on each facility's historic production levels as reported to South Coast AQMD in its annual emission reports (AERs), NOx emission factors listed in Tables 1, 3, and 6 of Rule 2002 or SOx emission factors in Tables 2 and 4 of Rule 2002 for the appropriate equipment category, any qualified<sup>1</sup> external offsets previously provided by the facility, and any unused ERCs generated at and held by the facility. Facilities entering RECLAIM after 1994 are issued allocations, if eligible, for the compliance year of entry and all years after, and Compliance Year 1994 allocations (also known as the facility's "Starting Allocation") for the sole purpose of establishing New Source Review trigger level.

These allocations are issued as RTCs, denominated in pounds of NOx or SOx with a specified 12-month term. Each RTC may only be used for emissions occurring within the term of that RTC. The RECLAIM program has two

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<sup>1</sup> Only external offsets provided at a one-to-one offset ratio after the base year was used as the basis for allocation quantification purposes.

staggered compliance cycles—Cycle 1 with a compliance period of January 1 through December 31 of each year, and Cycle 2 with a compliance period of July 1 of each year through June 30 of the following year. Each RECLAIM facility is assigned to either Cycle 1 or Cycle 2 and the RTCs it is issued (if any) have corresponding periods of validity.

The issuance of allocations for future years provides RECLAIM facilities guidance regarding their future emission reduction requirements. Facilities can plan their compliance strategies by reducing actual emissions or securing needed RTCs through trade registrations (or a combination of the two), based on their operational needs.

RECLAIM facilities may acquire RTCs issued for either cycle through trading and apply them to emissions, provided that the RTCs are used for emissions occurring within the RTCs' period of validity and the trades are made during the appropriate time period. RECLAIM facilities have until 30 days after the end of each of the first three quarters of each compliance year to reconcile their quarterly and year-to-date emissions, and until 60 days after the end of each compliance year to reconcile their last quarter and total annual emissions by securing adequate RTCs. Please note that, although other chapters in this report present and discuss Compliance Year 2018 data, RTC trading and price data discussed in this chapter are for calendar year 2019.

## **RTC Allocations and Supply**

The methodology for determining RTC allocations is established by Rule 2002. According to this rule, allocations may change when the universe of RECLAIM facilities changes, emissions associated with the production of re-formulated gasoline increase or decrease, reported historical activity levels are updated, or emission factors used to determine allocations are changed. In addition to these RTCs allocated by South Coast AQMD, RTCs may have been generated by conversion of emissions reduction credits from mobile and area sources pursuant to approved protocols. The total RTC supply in RECLAIM is made up of all RECLAIM facilities' allocations, conversions of ERCs owned by RECLAIM and non-RECLAIM facilities<sup>2</sup>, emissions associated with the production of re-formulated gasoline, and conversion of emission reduction credits from mobile sources and area sources pursuant to approved protocols. The South Coast AQMD Governing Board may adopt additional rules that affect RTC supply. Changes in the RTC supply during Compliance Year 2018 are discussed below.

### **Allocations Adjustments Due to Inclusion and Exclusion of Facilities**

Facilities existing prior to October 1993 and entering RECLAIM after 1994 may receive allocations just like facilities that were included at the beginning of the program. However, allocations issued for these facilities are only applicable for the compliance year of entry and forward. In addition, these facilities are issued allocations and Non-tradable/Non-usable Credits for Compliance Year 1994 for the sole purpose of establishing their starting allocation to ensure compliance with offset requirements under Rule 2005 - New Source Review for RECLAIM and the trading zone restriction to ensure net ambient air quality improvement

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<sup>2</sup> Per Rule 2002(c)(4), the window of opportunity for non-RECLAIM facilities to convert ERCs to RTCs other than during the process of a non-RECLAIM facility entering the program closed June 30, 1994.

within the sensitive zone established by Health and Safety Code §40410.5. These Compliance Year 1994 credits are not allowed to be used to offset current emissions because they have expired. Similarly, if an existing facility that was previously included in RECLAIM is subsequently excluded because it is determined to be categorically excluded or exempt pursuant to Rule 2001(i) or to not have emitted four tons or more of NOx or SOx in a year, any RTCs it was issued upon entering RECLAIM are removed from the market upon its exclusion.

As discussed in Chapter 1, the South Coast AQMD Governing Board amended Rule 2001 on October 5, 2018 to allow qualifying facilities to opt-out of the RECLAIM program. Pursuant to this provision, two facilities subsequently applied to opt-out in Compliance Year 2018. Based on continuing conversations with USEPA, the Governing Board subsequently amended Rule 2001 on July 12, 2019 to remove the opt-out provision so that facilities can no longer exit RECLAIM. Facilities that were excluded by means of this opt-out provision, as opposed to the normal exclusion criteria described in the preceding paragraph, retained their initially-allocated RTCs<sup>3</sup>. No additional facilities were excluded during Compliance Year 2018. Therefore, there were no changes to the NOx or SOx supplies in Compliance Year 2018 due to facility exclusions from RECLAIM.

On January 5, 2018, the South Coast AQMD Governing Board amended Rule 2001 – Applicability to discontinue facility inclusions into RECLAIM. The Executive Officer could only include a facility into RECLAIM up until January 5, 2018, and no facility can elect to enter RECLAIM after January 5, 2018. No facilities were included in the RECLAIM program in Compliance Year 2018. Therefore, there are no changes to the NOx or SOx RTC supplies in Compliance Year 2018 due to facility inclusions into RECLAIM.

### **Allocations Adjustments Due to Facility Shutdowns**

Prior to an October 7, 2016 amendment of Rule 2002, shutdown facilities were allowed to retain all of their RTC holdings and participate in the trading market. For NOx RECLAIM facilities listed in Tables 7 and 8 that shut down on or after October 7, 2016, the Rule 2002 amendment established a BARCT-based RTC discounting methodology that is more closely aligned to the ERC discounting methodology under command-and-control rules. A shutdown facility may trade future year RTCs that remain after the RTC adjustment is completed, if any. If the calculated reduction amount exceeds a facility's holdings for any future compliance year, the facility must purchase and surrender sufficient RTCs to fulfill the entire reduction requirement. This situation may result if the facility previously sold its future year allocations.

Three RECLAIM facilities shut down during Compliance Year 2018, one of which is listed in Table 8 of Rule 2002. No adjustment of this facility's NOx RTC Allocations was required pursuant to Rule 2002(i)(3) because all of the facility's NOx sources were permitted with BARCT-equivalent emission limits. Therefore, there were no changes to the NOx RTC supplies in Compliance Year 2018 due to facility shutdowns.

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<sup>3</sup> Except for shutdown facilities that are subject to Rule 2002(i); see discussion in the next section.

### **Allocations Adjustments Due to Clean Fuel Production**

Rule 2002(c)(12) – Clean Fuel Adjustment to Starting Allocation, provides refineries with RTCs to compensate for their actual emissions increases caused by the production of California Air Resources Board (CARB) Phase II reformulated gasoline. The amount of these RTCs is based on actual emissions for the subject compliance year and historical production data. The quantities of such clean fuels RTCs needed were projected based on the historical production data submitted, and qualifying refineries were issued in 2000 an aggregate baseline of 86.5 tons of NO<sub>x</sub> and 42.3 tons of SO<sub>x</sub> for Compliance Year 1999, 101.8 tons of NO<sub>x</sub> and 41.4 tons of SO<sub>x</sub> for Compliance Year 2000, and 98.4 tons of NO<sub>x</sub> and 40.2 tons of SO<sub>x</sub> for each subsequent Compliance Year on the basis of those projections. These refineries are required to submit, at the end of each compliance year in their Annual Permit Emissions Program (APEP) report, records to substantiate actual emission increases due solely to the production of reformulated gasoline. If actual emission increases for a subject year are different than the projected amount, the RTCs issued are adjusted accordingly (*i.e.*, excess RTCs issued are deducted if emissions were less than projected; conversely, additional RTCs are issued if emissions were higher than projected).

As a result of the amendment to Rule 2002 in January 2005 to further reduce RECLAIM NO<sub>x</sub> allocations, the NO<sub>x</sub> historical baseline Clean Fuel Adjustments for Compliance Year 2007 and subsequent years held by the facility were also reduced by the appropriate factors as stated in Rule 2002(f)(1)(A). On the other hand, Rule 2002(c)(12) provides refineries a Clean Fuels adjustment based on actual emissions. Therefore, each refinery is subject to an adjustment at the end of each compliance year equal to the difference between the amount of actual emission increases due solely to production of reformulated gasoline at each refinery and the amount of credits it was issued in 2000 after discounting by the factors for the corresponding compliance year. For Compliance Year 2018, 7.9 tons of NO<sub>x</sub> RTCs (0.09% of total NO<sub>x</sub> allocation for Compliance Year 2018) and 0.06 tons of SO<sub>x</sub> RTCs (0.002% of total SO<sub>x</sub> allocation for Compliance Year 2018) were added to refineries' Compliance Year 2018 RTC holdings at the end of the compliance year.

### **Changes in RTC Allocations Due to Activity Corrections**

RECLAIM facilities' allocations are determined by their reported historical activity levels (*e.g.*, fuel usage, material usage, or production) in their AERs. In the case where a facility's AER reported activity levels are updated within five years of the AER due date, its allocation is adjusted accordingly<sup>4</sup>. There were no changes in RTC allocations due to activity corrections in Compliance Year 2018.

### **Conversions of Other Types of Emission Reduction Credits**

Conversions of Mobile Source Emission Reduction Credits (MSERCs) and other types of emission reduction credits, other than regular stationary source ERCs issued under Regulation XIII – New Source Review, to RTCs are allowed under Rule 2008 – Mobile Source Credits, and several programs under Regulation XVI

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<sup>4</sup> Pursuant to Rule 2002(b)(5) as amended on December 4, 2015, any AERs (including corrections) submitted more than five years after the original due date are not considered in the RTC quantification process.

– Mobile Source Offset Programs and Regulation XXV – Intercredit Trading. Conversion of these credits to RTCs is allowed based on the respective approved protocol specified in each rule. Currently, Rules 1610 – Old-Vehicle Scrapping and 1612 – Credits for Clean On-Road Vehicles allow the creation of MSERCs. However, there are no State Implementation Plan (SIP) approved protocols for conversion of MSERCs to RTCs. No new RTCs were issued by conversion of other types of emission reduction credits in Compliance Year 2018.

**Net Changes in RTC Supplies**

The changes to RTC supplies described in the above sections resulted in a net increase of 7.9 tons of NOx RTCs (0.09% of the total) and an increase of 0.06 tons of SOx RTCs (0.002% of the total) for Compliance Year 2018. Table 2-1 summarizes the changes in NOx and SOx RTC supplies that occurred in Compliance Year 2018 pursuant to Rule 2002.

**Table 2-1  
Changes in NOx and SOx RTC Supplies during Compliance Year 2018 (tons/year)**

Source	NOx	SOx
Universe changes	0	0
Clean Fuel/Reformulated Gasoline	7.9	0.06
Activity corrections	0	0
MSERCs	0	0
<b>Net change</b>	<b>7.9</b>	<b>0.06</b>

Note: The data in this table represents the changes that occurred over the course of Compliance Year 2018 to the Compliance Year 2018 aggregate NOx and SOx RTC supplies originally issued pursuant to Rule 2002, not the difference between 2018 aggregate RTC supply and that for any other compliance year.

**Allocation Reduction Resulting from BARCT Review**

Pursuant to California Health and Safety Code §40440, South Coast AQMD is required to monitor the advancement in BARCT and periodically re-assess the RECLAIM program to ensure that RECLAIM achieves equivalent emission reductions to the command-and-control BARCT rules it subsumes. This assessment is done periodically as part of AQMP development. This process resulted in 2003 AQMP Control Measure #2003 CMB-10 – Additional NOx Reductions for RECLAIM (NOx) calling for additional NOx reductions from RECLAIM sources. South Coast AQMD staff started the rule amendment process in 2003, including a detailed analysis of control technologies that qualified as BARCT for NOx, and held lengthy discussions with stakeholders, including regulated industry, environmental groups, CARB, and USEPA. On January 7, 2005, the Governing Board implemented CMB-10 by adopting changes to the RECLAIM program that resulted in a 22.5% reduction of NOx allocations from all RECLAIM facilities. The reductions were phased in commencing in Compliance Year 2007 and have been fully implemented since Compliance Year 2011.

On November 5, 2010, the Governing Board adopted changes to the RECLAIM program implementing the 2007 AQMP Control Measure CMB-02 – Further SOx Reductions for RECLAIM (SOx). These amendments resulted in a

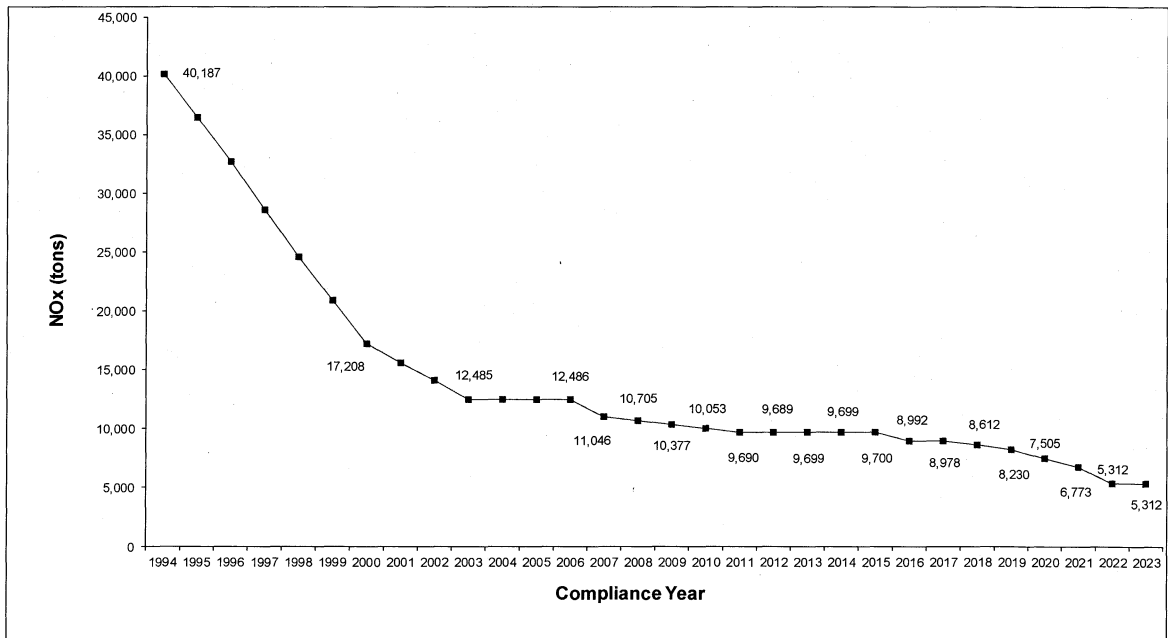


BARCT-based overall reduction of 5.7 tons SOx per day when fully implemented in Compliance Year 2019 (the reductions are being phased in from Compliance Year 2013 through Compliance Year 2019: 3.0 tons per day in 2013; 4.0 tons per day in years 2014, 2015, and 2016; 5.0 tons per day in 2017 and 2018; and 5.7 tons per day starting in 2019 and continuing thereafter). This reduction in SOx is an essential part of the South Coast Air Basin's effort in attaining the federal 24-hour average PM2.5 standard by the year 2020.

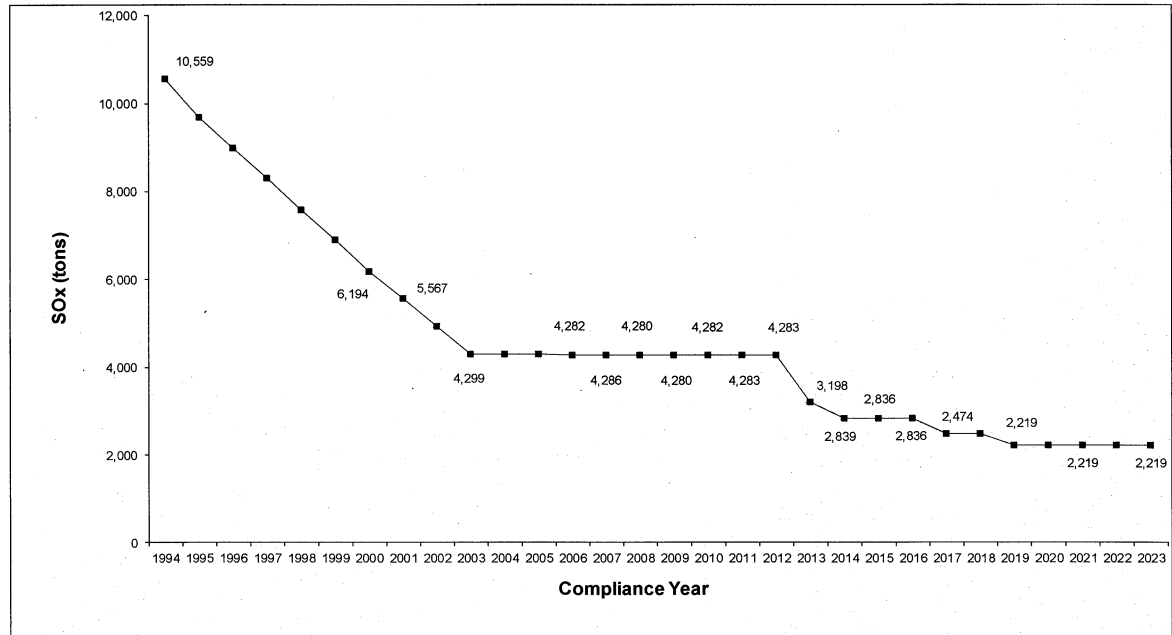
Similarly, the 2012 AQMP adopted by the Governing Board in 2012, included Control Measure CMB-01- Further NOx Reductions for RECLAIM that identified a new group of RECLAIM NOx emitting equipment that should be reviewed for new BARCT. The rulemaking process for the amendment to the NOx RECLAIM program implementing CMB-01 started in 2012. On December 4, 2015, the Governing Board adopted amendments to the RECLAIM rules that resulted in an additional reduction of 12 tons of NOx per day (45% reduction) when fully implemented in Compliance Year 2022. The reductions are being phased-in with 2 tons per day in Compliance Year 2016 and 2017, 3 tons per day in Compliance Year 2018, 4 tons per day in Compliance Year 2019, 6 tons per day in Compliance Year 2020, 8 tons per day in Compliance Year 2021 and 12 tons per day in Compliance Year 2022 and thereafter.

Figures 2-1 and 2-2 illustrate the total NOx and SOx RTC supplies, respectively, through the end of Compliance Year 2023, incorporating all the changes discussed above.

**Figure 2-1  
NOx RTC Supply**



**Figure 2-2  
SOx RTC Supply**



## RTC Trades

### RTC Price Reporting Methodology

RTC trades are reported to South Coast AQMD as one of two types: discrete-year RTC transactions or infinite-year block (IYB) transactions (trades that involve blocks of RTCs with a specified start year and continuing into perpetuity). Prices for discrete-year trades are reported in terms of dollars per pound and prices for IYB trades are reported as total dollar value for total amount of IYB RTCs traded. In addition, the trading partners are required to identify any swap trades. Swap trades occur when trading partners exchange different types of RTCs. These trades may be of equal value or different values, in which case some amount of money or credits are also included in swap trades (additional details on swap trades are discussed later in this chapter). Prices reported for swap trades are based on the agreed upon value of the trade by the participants, and do not involve exchange of funds for the total value agreed upon. As such, the reported prices for swap trades can be somewhat arbitrary, and are therefore excluded from the calculation of annual average prices. Annual average prices for discrete-year RTCs are determined by averaging prices of RTCs for each compliance year, while the annual average price for IYB RTCs are determined based on the amount of IYB RTCs (*i.e.*, the amount of RTCs in the infinite stream) regardless of the start year.

### RTC Price Thresholds for Program Review

Rule 2015(b)(6) specifies that, if the annual average price of discrete-year NOx or SOx RTCs exceeds \$15,000 per ton, the Executive Officer will conduct an evaluation and review of the compliance and enforcement aspects of RECLAIM.

The Governing Board has also established average RTC price overall program review thresholds pursuant to Health and Safety Code §39616(f). Unlike the \$15,000 per ton threshold for review of the compliance and enforcement aspects of RECLAIM, these overall program review thresholds are adjusted by CPI each year. In addition, according to Rule 2002(f)(1)(R), if the annual average price of discrete-year SOx RTCs for any compliance year from 2017 through 2019 exceeds \$50,000 per ton, the Governing Board has the discretion to convert facilities' Non-tradable/Non-usable RTCs to Tradable/Usable RTCs. Similarly, Rule 2002(f)(1)(H) specifies that in the event that the NOx RTC prices exceed \$22,500 per ton (current compliance year credits) based on the 12-month rolling average, or exceed \$35,000 per ton (current compliance year credits) based on the 3-month rolling average calculated pursuant to subparagraph (f)(1)(E), the Executive Officer will report the determination to the Governing Board. If the Governing Board finds that the 12-month rolling average RTC price exceeds \$22,500 per ton or the 3-month rolling average RTC price exceeds \$35,000 per ton, then the Non-tradable/Non-usable NOx RTCs, as specified in subparagraphs (f)(1)(B) and (f)(1)(C) valid for the period in which the RTC price is found to have exceeded the applicable threshold, shall be converted to Tradable/Usable NOx RTCs upon Governing Board concurrence. For RTC trades occurring in calendar year 2019, the overall program review thresholds<sup>5</sup> in 2019 dollars, pursuant to Health and Safety Code §39616(f), are \$46,657 per ton of discrete-year NOx RTCs, \$33,593 per ton of discrete-year SOx RTCs, \$699,852 per ton of IYB NOx RTCs, and \$503,893 per ton of IYB SOx RTCs.

**RTC Trading Activity Excluding Swaps**

***Overall Trading Activity***

RTC trades include discrete-year and IYB RTCs traded with prices, discrete-year and IYB RTC trades with zero price, and discrete-year and IYB RTC swap trades. The RTC market activity in calendar year 2019 was slightly higher compared to the market activity in calendar year 2018 in terms of the number of trades. Table 2-2 compares NOx and SOx trade registrations for calendar years 2019 and 2018.

**Table 2-2  
Trade Registrations in Calendar Years 2019 and 2018, Including Swaps**

RTC	2019	2018
NOx	273	254
SOx	31	26
Total	304	280

The \$34.24 million traded in calendar year 2019 was significantly higher compared to calendar year 2018, excluding swap trades. Table 2-3 compares the value of NOx and SOx RTCs traded in calendar years 2019 and 2018.

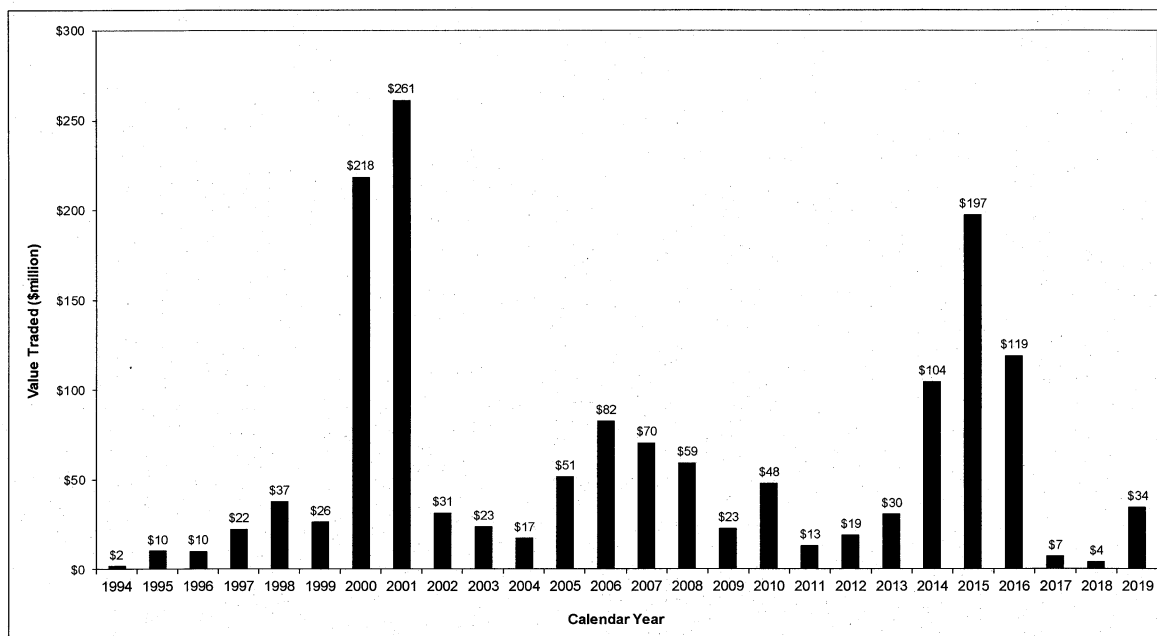
<sup>5</sup> These program review thresholds were adjusted using the August 2019 Consumer Price Index (CPI), due to the unavailability of the December 2019 CPI by the end of January 2020 when this report was compiled.

Figure 2-3 illustrates the annual value of RTCs traded in RECLAIM since the inception of the program.

**Table 2-3**  
**Value Traded in Calendar Years 2019 and 2018, Excluding Swaps (millions of dollars)**

RTC	2019	2018
NOx	\$32.33	\$3.59
SOx	\$1.91	\$0.35
Total	\$34.24	\$3.94

**Figure 2-3**  
**Annual Trading Values for NOx and SOx (Excluding Swaps)**



With respect to total volume traded (excluding swap trades), trades of discrete-year RTCs were slightly lower in calendar year 2019 than in calendar year 2018, while trades of IYB RTCs in calendar year 2019 were significantly higher than the trading volume in 2018. Tables 2-4 and 2-5 compare 2019 and 2018 for NOx and SOx trade volume for discrete-year and IYB trades, respectively. Figure 2-4 summarizes overall trading activity (excluding swaps) in calendar year 2019 by pollutant. Additional information on the discrete-year and IYB trading activities, value, and volume are discussed later in this chapter.

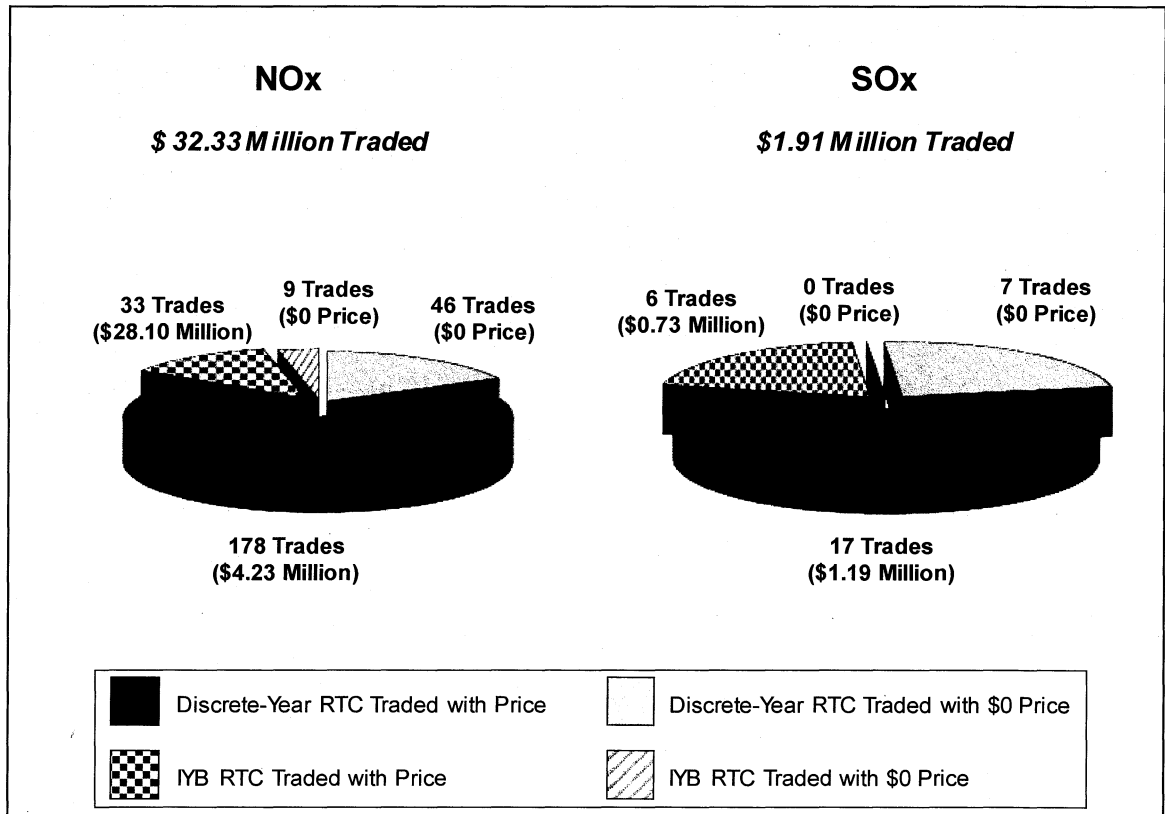
**Table 2-4**  
**Volume of Discrete-Year RTCs Traded in Calendar Years 2019 and 2018, Excluding Swaps (tons)**

RTC	2019	2018
NOx	1,796	1,982
SOx	666	517
Total	2,462	2,499

**Table 2-5**  
**Volume of IYB RTCs Traded in Calendar Years 2019 and 2018, Excluding Swaps (tons)**

RTC	2019	2018
NOx	526	208
SOx	55	26
Total	581	234

**Figure 2-4**  
**Calendar Year 2019 Overall Trading Activity (Excluding Swaps)**



There were 62 trades with zero price in calendar year 2019. RTC transfers with zero price generally occur when a seller transfers or escrows RTCs to a broker pending transfer to the purchaser with price, when there is a transfer between

facilities under common operator, when a facility is retiring RTCs for a settlement agreement or pursuant to variance conditions, or when there is a transfer between facilities that have gone through a change of operator. Trades with zero price also occur when the trading parties have mutual agreements where one party provides a specific service (e.g., providing steam or other process components) for the second party. In return, the second party will transfer the RTCs necessary to offset emissions generated from the service. In calendar year 2019, the majority of trades with zero price were transfers between facilities under common ownership and facilities that underwent a change of operator.

**Discrete-Year RTC Trading Activity**

In calendar year 2019, there were a total of 224 discrete-year NOx RTC trades and 24 discrete-year SOx RTC trades, excluding swap trades. The trading of discrete-year NOx RTCs included RTCs for Compliance Years 2018 through 2021 (see Table 2-14). The trading of discrete-year SOx RTCs included RTCs for Compliance Years 2018 and 2019 (see Table 2-15). Table 2-6 compares the number of trade registrations in 2019 and 2018, both with price and with zero price.

**Table 2-6  
Discrete-Year Trade Registrations in Calendar Years 2019 and 2018 by Price, Excluding Swaps**

Year	RTC	With Price	With \$0 Price	Total
2019	NOx	178	46	224
	SOx	17	7	24
	Total	195	53	248
2018	NOx	186	46	232
	SOx	17	6	23
	Total	203	52	255

Total discrete-year RTC trading values increased in calendar year 2019 compared to calendar year 2018. Table 2-7 compares the total value of the discrete-year RTC trades in 2019 and 2018.

**Table 2-7  
Discrete-Year RTC Value Traded in 2019 and 2018, Excluding Swaps (millions of dollars)**

RTC	2019	2018
NOx	\$4.23	\$3.06
SOx	\$1.19	\$0.25
Total	\$5.41	\$3.31

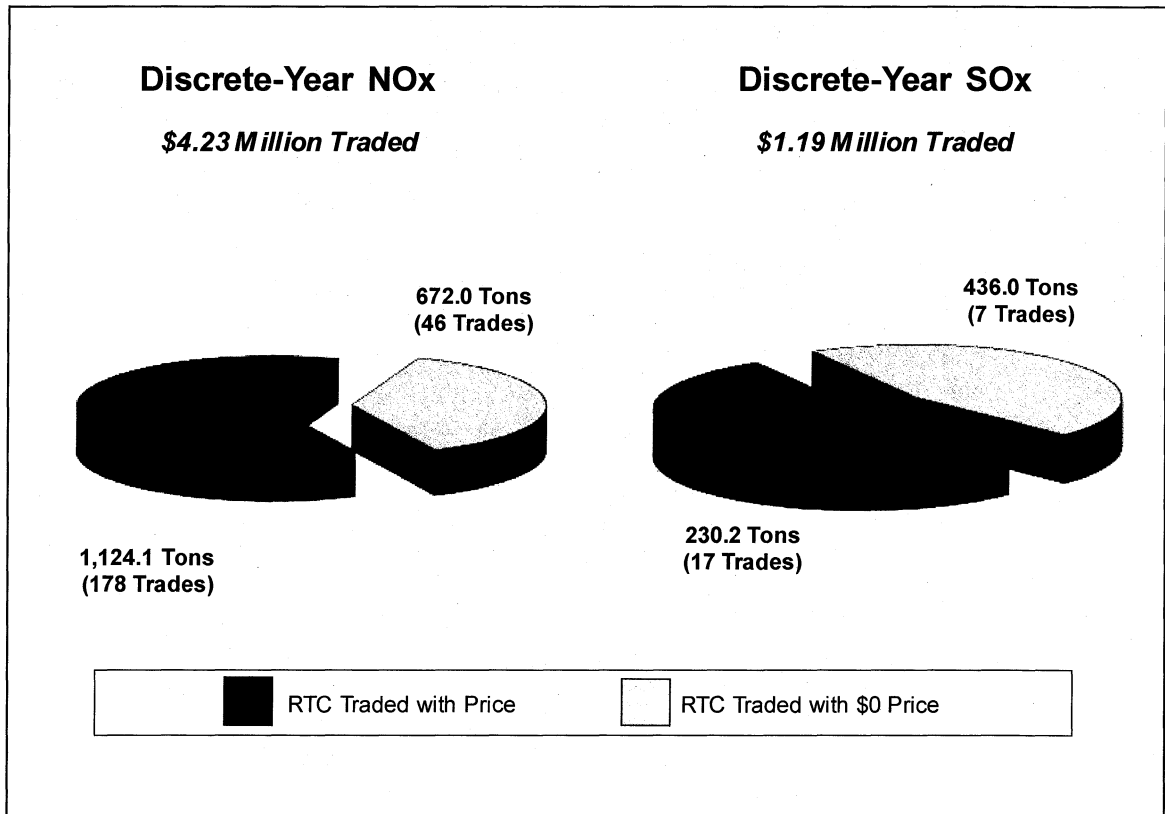
In calendar year 2019, the overall quantities of discrete-year NOx RTCs traded decreased compared to calendar year 2018, while the quantities of discrete-year SOx RTCs traded increased. Table 2-8 compares the volume of NOx and SOx RTCs traded in calendar years 2019 and 2018, excluding swap trades. Figure

2-5 illustrates the trading activity of discrete-year RTCs (excluding swaps) for calendar year 2019.

**Table 2-8**  
**Discrete-Year RTC Volume Traded in Calendar Years 2019 and 2018 by Price, Excluding Swaps (tons)**

Year	RTC	With Price	With \$0 Price	Total
2019	NOx	1,124	672	1,796
	SOx	230	436	666
	Total	1,354	1,108	2,462
2018	NOx	1,299	684	1,982
	SOx	281	236	517
	Total	1,580	919	2,499

**Figure 2-5**  
**Calendar Year 2019 Trading Activity for Discrete-Year RTCs (Excluding Swaps)**



***IYB RTC Trading Activity***

In calendar year 2019, there were 42 IYB NOx trades and six IYB SOx trades, excluding swaps. The IYB NOx trades included RTCs with Compliance Years 2019 through 2023 as start years, while the IYB SOx trades had RTCs with

Compliance Years 2019 and 2020 as start years. Table 2-9 compares the number of RTC trade registrations from 2019 to 2018.

**Table 2-9**  
**IYB Trade Registrations in Calendar Years 2018 and 2017 by Price**

Year	RTC	With Price	With \$0 Price	Total
2019	NOx	33	9	42
	SOx	6	0	6
	Total	39	9	48
2018	NOx	5	13	18
	SOx	2	1	3
	Total	7	14	21

Total IYB RTC trade values significantly increased in calendar year 2019 compared to calendar year 2018. Table 2-10 compares the NOx and SOx IYB RTC trade values in calendar years 2019 and 2018.

**Table 2-10**  
**IYB RTC Value Traded in 2019 and 2018, Excluding Swaps (millions of dollars)**

RTC	2019	2018
NOx	\$28.10	\$0.52
SOx	\$0.73	\$0.09
Total	\$28.83	\$0.62

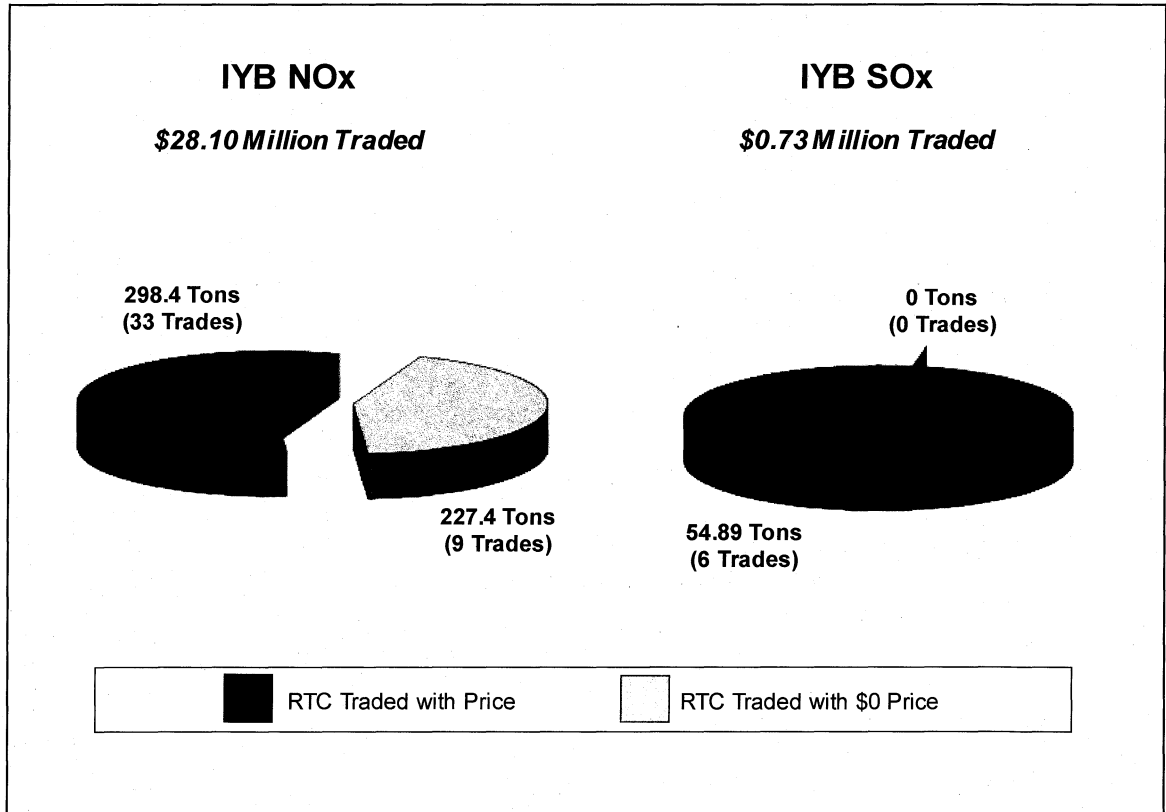
In calendar year 2019, the total volume of IYB RTCs traded (excluding swap trades) increased significantly compared to calendar year 2018. The amount traded is consistent with past years such as calendar year 2016. Table 2-11 compares the NOx and SOx IYB RTCs trade volumes in calendar years 2019 and 2018. As described earlier, the majority of trades with zero price were between facilities under common ownership and facilities that had a change of operator. There were no SOx IYB RTCs trade with 0 price. Figure 2-6 illustrates the calendar year 2019 IYB RTC trading activity excluding swap trades.

**Table 2-11**  
**IYB RTC Volume Traded in Calendar Years 2019 and 2018 by Price, Excluding Swaps (tons)**

Year	RTC	With Price	With \$0 Price	Total
2019	NOx	298	227	526
	SOx	55	0	55
	Total	353	227	581
2018	NOx	40	168	208
	SOx	3	23	26
	Total	43	192	234



**Figure 2-6**  
**Calendar Year 2019 Trading Activity for IYB RTCs (Excluding Swaps)**



Prior to the amendment of Rule 2007 – Trading Requirements in May 2001, swap information and details of discrete-year and IYB trades were not required to be provided by trade participants. In compiling data for calendar years 1994 through part of 2001, any trade registration involving IYB RTCs was considered as a single IYB trade and swap trades were assumed to be nonexistent. Trading activity since inception of the RECLAIM program is illustrated in Figures 2-7 through 2-10 (discrete-year NOx trades, discrete-year SOx trades, IYB NOx trades, and IYB SOx trades, respectively) based on the trade reporting methodology described earlier in this chapter.

Figure 2-7  
Discrete-Year NOx RTC Trades (Excluding Swaps)

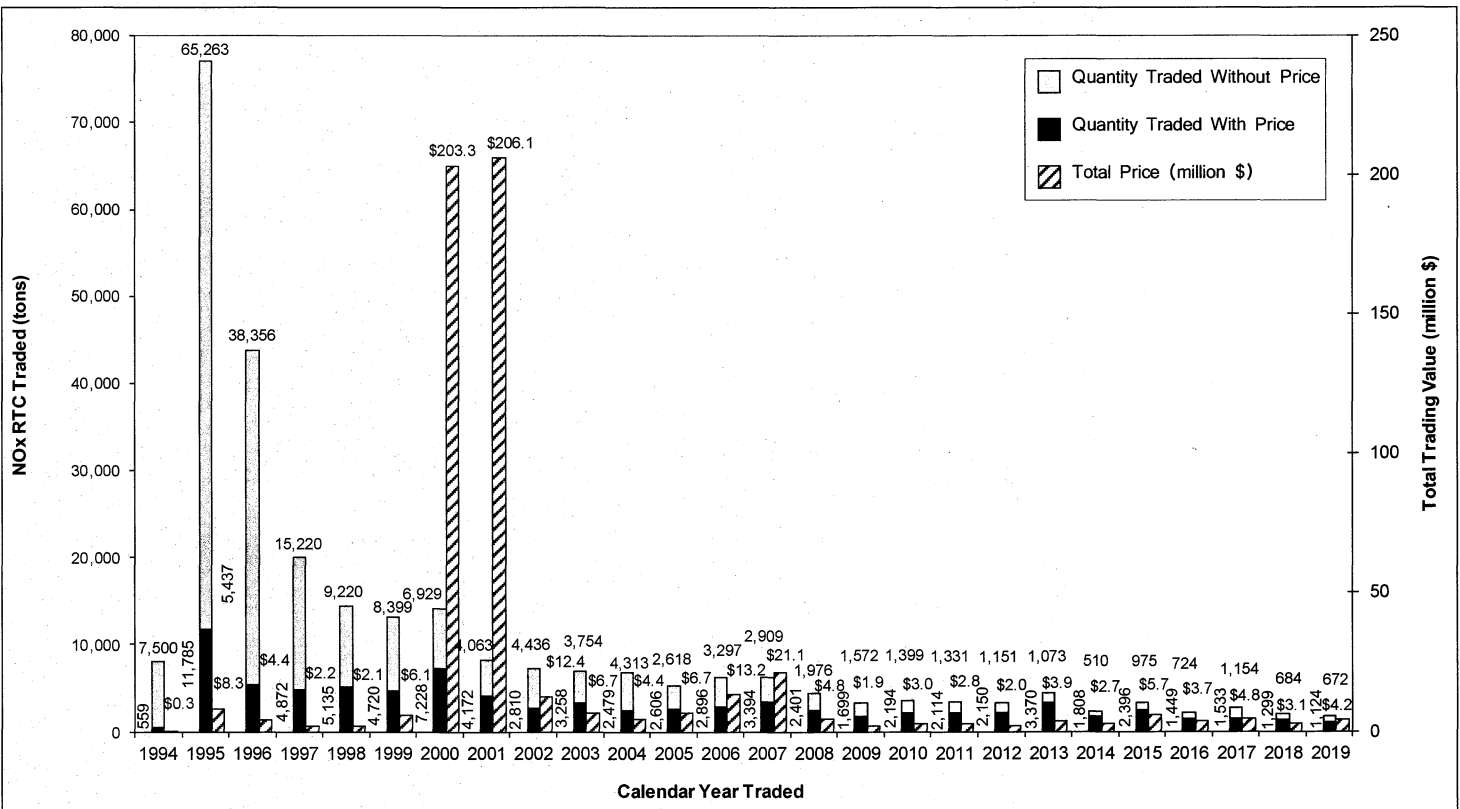


Figure 2-8  
Discrete-Year SOx RTC Trades (Excluding Swaps)

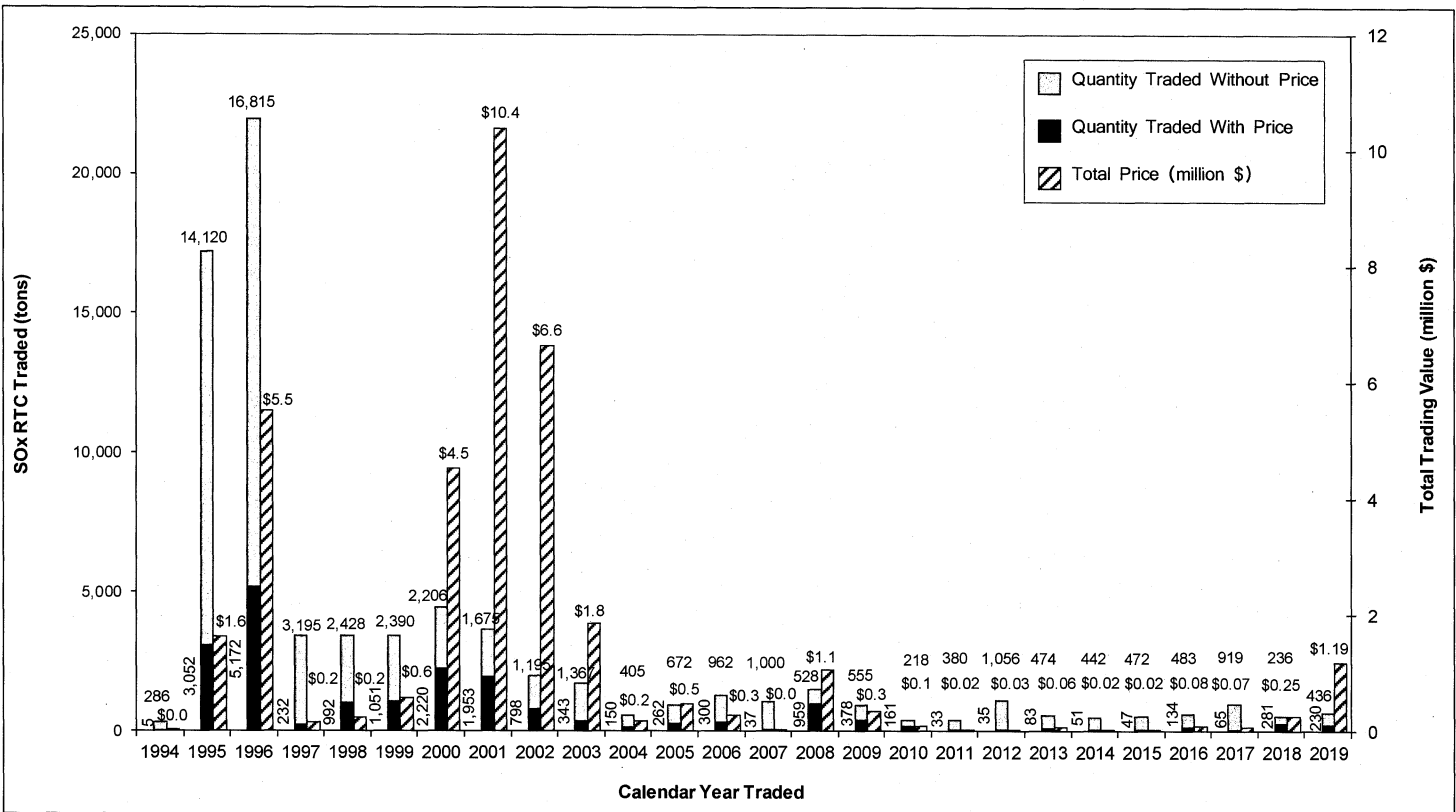


Figure 2-9  
 IYB NOx RTC Trades (Excluding Swaps)

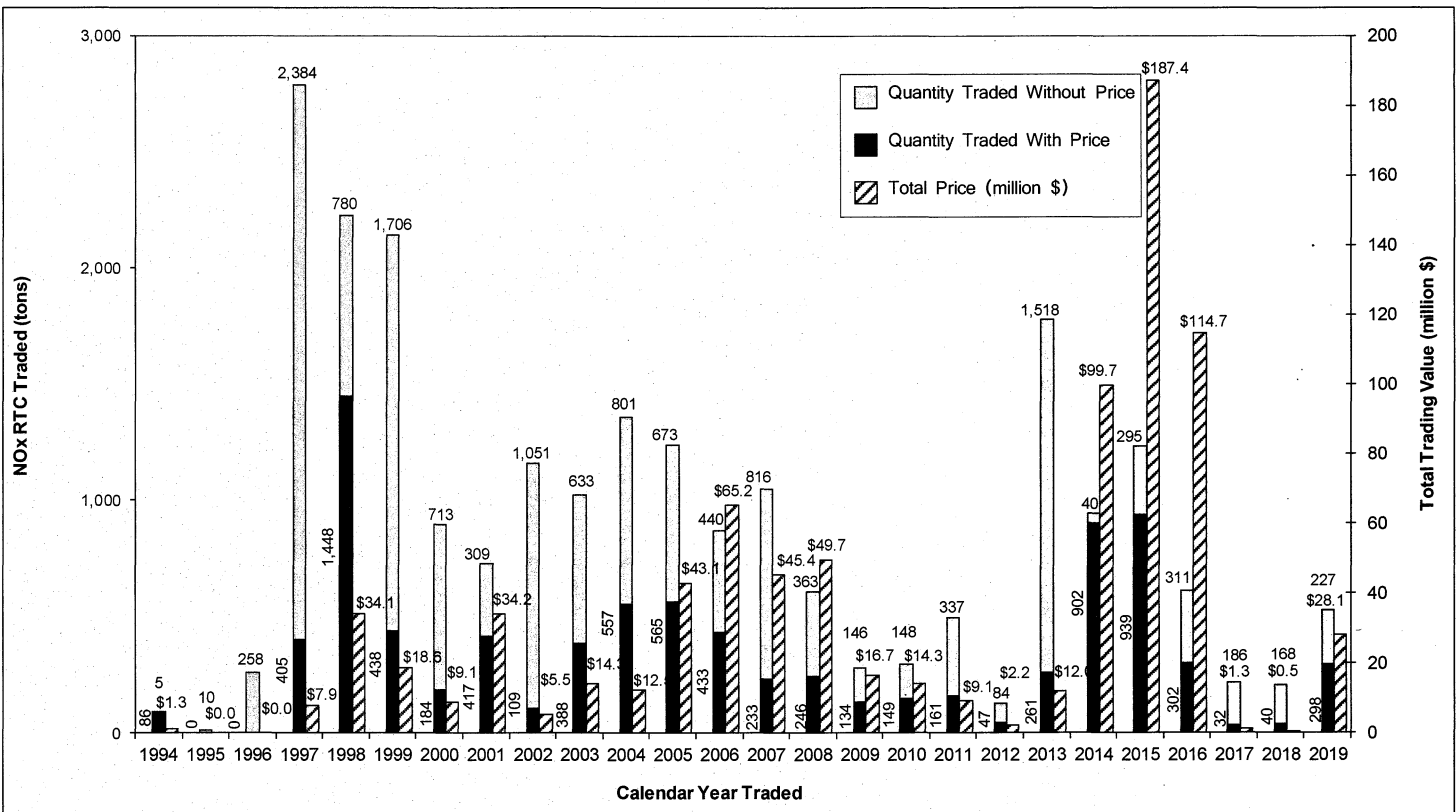
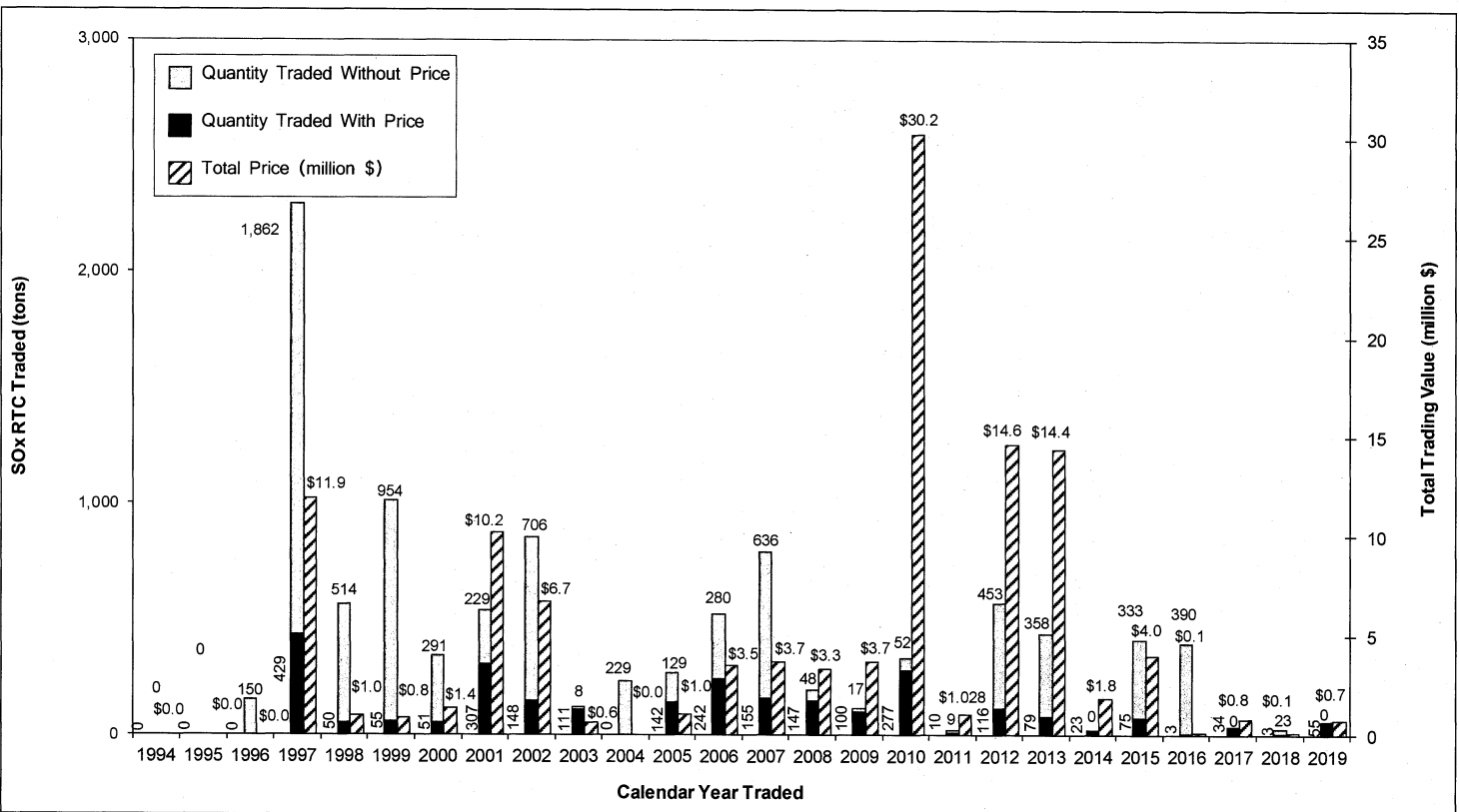


Figure 2-10  
IYB SOX RTC Trades (Excluding Swaps)



**Swap Trades**

In addition to traditional trades of RTCs for a price, RTC swaps also occurred between trading partners. Most of the swap trades were exchanges of RTCs

with different zones, cycles, expiration years, and/or pollutants. Some swaps involved a combination of RTCs and cash payment as a premium. There were also swaps of RTCs for ERCs. Trading parties swapping RTCs were required to report the agreed upon price of RTCs for each trade even though, with the exception of the above-described premiums, no money was actually exchanged. About \$0.4 million in total value was reported from RTCs that were swapped under eight trade registrations in calendar year 2019. Four of the eight trades involved swapping a larger quantity of discrete-year NOx RTCs for a smaller quantity of discrete-year NOx RTCs with a later expiration date. These four trades were collectively valued at \$0.27 million. Two of the swap trades involved a forward contract, in which the parties have agreed to trade RTCs at a future time in the same contract. These two trades totaled \$0.1 million. The total value of the remaining two trades was about \$20,000. One of these two remaining trades was between a RECLAIM facility and its wholly-owned subsidiary and the other was between two facilities under common ownership. Upon further investigation, staff concluded that these two transactions were not at arms-length, and that the prices reported for the transfer of RTCs for these two trades should not be regarded as market prices but "swap trades." The swap values are based on the prices reported on the RTC trade registrations. Since RTC swap trades occur when two trading partners exchange RTCs, values reported on both trades involved in the exchange are included in the calculation of the total value reported. However, in cases where commodities other than RTCs are involved in the swap, these commodity values are not included in the above reported total value (*e.g.*, in the case of a swap of NOx RTCs valued at \$10,000 for another set of RTCs valued at \$8,000 together with a premium of \$2,000, the value of such a swap would have been reported at \$18,000 in Table 2-2).

For calendar years that have swap trades with large values (*e.g.*, 2009), the inclusion of swap trades in the average trade price calculations would have resulted in calculated annual average prices dominated by swap trades, and therefore, potentially not representative of market prices actually paid for RTCs. Prices of swap trades are excluded from analysis of average trade prices because the values of the swap trades are solely based upon prices agreed upon between trading partners and do not reflect actual funds transferred. Tables 2-12 and 2-13 present the calendar years' 2001 through 2019 RTC swaps for NOx and SOx, respectively.

**Table 2-12**  
**NOx Registrations Involving Swaps\***

Year	Total Value (\$ millions)	IYB RTC Swapped with Price (tons)	Discrete-Year RTC Swapped with Price (tons)	Number of Swap Registrations with Price	Total Number of Swap Registrations
2001	\$24.29	6.0	612.2	71	78
2002	\$14.31	64.3	1,701.7	94	94
2003	\$7.70	69.9	1,198.1	64	64
2004	\$3.74	0	1,730.5	90	90
2005	\$3.89	18.7	885.3	53	53
2006	\$7.29	14.8	1,105.9	49	49
2007	\$4.14	0	820.0	43	49
2008	\$8.41	4.5	1,945.8	48	50
2009	\$55.76	394.2	1,188.4	37	42
2010	\$3.73	18.2	928.5	25	31
2011	\$2.00	0	775.5	25	32
2012	\$1.29	0	928.1	36	36
2013	\$2.41	11.6	1,273.5	44	44
2014	\$3.24	28.5	489.6	25	25
2015	\$6.77	31.0	317.0	15	15
2016	\$2.18	1.8	622.8	22	22
2017	\$0.87	3.6	31.0	9	9
2018	\$0.51	0	178.5	4	4
2019	\$0.37	0	128.8	7	7

\* Swaps without price are strictly transfers of RTCs between trading partners and their respective brokers. Information regarding swap trades was not required prior to May 9, 2001.

**Table 2-13**  
**SOx Registrations Involving Swaps\***

Year	Total Value (\$ millions)	IYB RTC Swapped with Price (tons)	Discrete-Year RTC Swapped with Price (tons)	Number of Swap Registrations with Price	Total Number of Swap Registrations
2001	\$1.53	18.0	240.0	3	4
2002	\$6.11	26.6	408.4	30	30
2003	\$5.88	20.9	656.0	32	32
2004	\$0.39	0	161.8	13	13
2005	\$2.16	43.5	227.8	13	14
2006	\$0.02	0	24.4	2	2
2007	\$0.00	0	0	0	0
2008	\$0.40	0	197.0	5	8
2009	\$3.63	55.3	401.3	9	10
2010	\$6.89	79.4	417.0	16	18
2011	\$0.25	0	228.5	3	4
2012	\$27.01	100.0	7.5	4	4
2013	\$0.33	3.1	5.5	2	2
2014	\$0.01	0.0	14.8	1	1
2015	\$0	0.0	0	0	0
2016	\$3.68	39.6	44.2	3	3
2017	\$0.73	5.0	5.9	4	4
2018	\$0	0	0	0	0
2019	\$0.02	0	1.4	1	1

\* Swaps without price are strictly transfers of RTCs between trading partners and their respective brokers. Information regarding swap trades was not required prior to May 9, 2001.

### RTC Trade Prices (Excluding Swaps)

#### *Discrete-Year RTC Prices*

Tables 2-14 and 2-15 list the annual average prices for discrete-year NOx and SOx RTCs traded from calendar years 2014 through 2019. The table shows that all annual average prices for discrete-year NOx and SOx RTCs were well below the \$46,657 per ton of NOx and \$33,593 per ton of SOx discrete-year RTCs pre-determined overall program review thresholds established by the Governing Board pursuant to Health and Safety Code §39616(f), and the \$15,000 threshold specified under Rule 2015(b)(6) for reviews of the compliance aspects of the program.



**Table 2-14**  
**Annual Average Prices for Discrete-Year NOx RTCs during Calendar Years 2014 through 2019 (price per ton)**

RTC Compliance Year	Calendar Year during which RTCs Traded					
	2014	2015	2016	2017	2018	2019
2011						
2012						
2013	1,064.97					
2014	1,909.69	1,038.82				
2015	3,779.00	1,642.05	1,625.75			
2016		2,833.39	2,926.90	2,202.90		
2017		4,019.76	6,606.21	4,181.75	1,871.76	
2018		6,006.11		10,639.19	3,788.31	2,261.39
2019		8,066.67			5,645.67	5,409.79
2020					5,673.91	12,189.81
2021						8,677.54

**Table 2-15**  
**Annual Average Prices for Discrete-Year SOx RTCs during Calendar Years 2014 through 2019 (price per ton)**

RTC Compliance Year	Calendar Year during which RTCs Traded					
	2014	2015	2016	2017	2018	2019
2011						
2012						
2013	377.75					
2014	400.00	483.40				
2015		380.00	540.29			
2016			1,254.55	635.83		
2017				1,385.71	785.56	
2018					954.61	1,764.20
2019				4,800.00		7,984.79
2020				4,800.00		

### ***Rolling Average NOx and SOx RTCs Price Report***

On December 4, 2015, the Governing Board amended Rule 2002 to change the 12-month rolling average price of NOx RTCs for all trades for the current compliance year, excluding RTC trades reported at no price and swap transactions, to a \$22,500 per ton threshold. It also established a new \$35,000 per ton threshold for the three-month rolling average price of current compliance year NOx RTCs and a \$200,000 per ton "price-floor" threshold for the twelve-month rolling average price of IYB NOx RTCs that would have become effective in 2019. The price floor in 2002(f)(1)(l) was subsequently removed by the Governing Board on October 5, 2018. The reporting of the three-month rolling average prices for current compliance year's NOx RTCs and the twelve-month rolling average prices of IYB NOx RTCs started on May 1, 2016.

The December 2015 amendments directed the Executive Officer to report to the Governing Board if (a) the cost of current compliance year NOx RTCs exceeds \$22,500 per ton based on the twelve-month rolling average price, or (b) \$35,000

per ton based on the three-month rolling average price. If either (a) or (b) above occurs, the Governing Board may convert the Non-tradable/Non-usable NOx RTCs valid for the period in which the RTC price(s) exceeded an applicable threshold to Tradable/Usable NOx RTCs pursuant to Rule 2002(f)(1)(H). Additionally, the Executive Officer's report to the Governing Board will include a "commitment and schedule to conduct a more rigorous control technology implementation, emission reduction, cost-effectiveness, market analysis, and socioeconomic impact assessment of the RECLAIM program."

Starting January 2017, the Executive Officer is calculating and reporting the twelve-month rolling average prices for current compliance year SOx RTCs as required by the November 5, 2010 amendment to Rule 2002, which established the \$50,000 per ton of SOx RTC threshold. In the event that the SOx RTC price threshold is exceeded, the Governing Board will decide whether or not to convert any portion of the Non-tradable/Non-usable SOx RTCs to Tradable/Usable SOx RTCs. Tables 2-16 through 2-18 list the various rolling average prices described above. The average NOx and SOx discrete-year RTC prices have all remained well below the applicable reporting thresholds.

**Table 2-16**  
**Twelve-Month Rolling Average Prices of Compliance Year 2019 Discrete-Year NOx RTCs**

Reporting Month	12-Month Period	Average Price (\$/ton)
January 2019	January 2018 through December 2018	\$5,646
February 2019	February 2018 through January 2019	\$5,682
March 2019	March 2018 through February 2019	\$5,682
April 2019	April 2018 through March 2019	\$6,153
May 2019	May 2018 through April 2019	\$6,182
June 2019	June 2018 through May 2019	\$6,256
July 2019	July 2018 through June 2019	\$6,288
August 2019	August 2018 through July 2019	\$6,200
September 2019	September 2018 through August 2019	\$6,184
October 2019	October 2018 through September 2019	\$5,348
November 2019	November 2018 through October 2019	\$5,171
December 2019	December 2018 through November 2019	\$5,153
January 2020	January 2019 through December 2019	\$5,410

**Table 2-17**  
**Three-Month Rolling Average Prices of Compliance Year 2019 Discrete-Year NOx RTCs**

Reporting Month	12-Month Period	Average Price (\$/ton)
January 2019	October 2018 through December 2018	\$5,621
February 2019	November 2018 through January 2019	\$5,658
March 2019	December 2018 through February 2019	\$5,714
April 2019	January 2019 through March 2019	\$6,969
May 2019	February 2019 through April 2019	\$7,034
June 2019	March 2019 through May 2019	\$7,154
July 2019	April 2019 through June 2019	\$6,560
August 2019	May 2019 through July 2019	\$6,241
September 2019	June 2019 through August 2019	\$6,113
October 2019	July 2019 through September 2019	\$4,812
November 2019	August 2019 through October 2019	\$4,842
December 2019	September 2019 through November 2019	\$4,852
January 2020	October 2019 through December 2019	\$5,485

**Twelve-Month Rolling Average Prices of IYB NOx RTCs**

The October 5, 2018 amendment to Rule 2002 eliminated the requirement to calculate IYB NOx RTC prices. The October 2018 report to the South Coast AQMD Stationary Source Committee was the last time the twelve-month rolling average prices of IYB NOx RTCs report was generated.

**Table 2-18**  
**Twelve-Month Rolling Average Prices of Compliance Year 2019 Discrete-Year SOx RTCs**

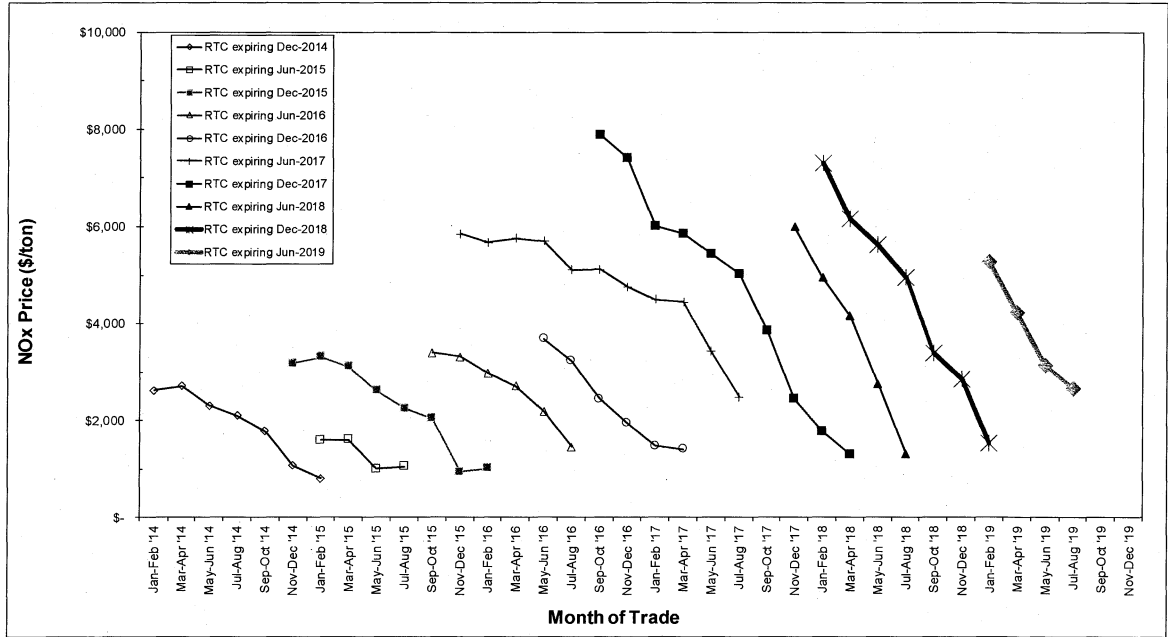
Reporting Month	12-Month Period	Average Price (\$/ton)
January 2019	January 2018 through December 2018	-
February 2019	February 2018 through January 2019	-
March 2019	March 2018 through February 2019	\$2,000
April 2019	April 2018 through March 2019	\$2,000
May 2019	May 2018 through April 2019	\$2,000
June 2019	June 2018 through May 2019	\$2,021
July 2019	July 2018 through June 2019	\$2,021
August 2019	August 2018 through July 2019	\$3,338
September 2019	September 2018 through August 2019	\$3,544
October 2019	October 2018 through September 2019	\$3,544
November 2019	November 2018 through October 2019	\$7,985
December 2019	December 2018 through November 2019	\$7,985
January 2020	January 2019 through December 2019	\$7,985

***Average Price for NOx RTCs Nearing Expiration***

Generally, RTC prices decrease as their expiration dates approach, and are usually lowest during the 60 day-period following their expiration date during which facilities are allowed to trade and obtain RTCs to cover their emissions. This general trend has been repeated every year since 1994 except for Compliance Years 2000 and 2001 (during the California energy crisis), when NOx RTC prices increased as the expiration dates approached because the power plants' NOx emissions increased significantly, causing a shortage of NOx RTCs. Prices for NOx RTCs that expired in calendar year 2019 followed the general trend of RTC prices declining over the course of the compliance year and the sixty-day trading period thereafter.

The bi-monthly average prices for these near-expiration NOx RTCs are shown in Figure 2-11 to illustrate the general price trend for these RTCs. The general declining trend of RTC prices nearing and just past expiration indicates that there was an adequate supply to meet RTC demand during the final reconciliation period following the end of each compliance year. A similar analysis is not performed for the price of SOx RTCs nearing expiration because there are not enough SOx trades over the course of the year to yield meaningful data. For calendar year 2019, there were only 17 discrete-year SOx trades with price for Compliance Years' 2018 and 2019 RTCs. These prices ranged from \$1,764 per ton to \$7,985 per ton throughout the year.

**Figure 2-11**  
**Bi-Monthly Average Prices for NOx RTCs near Expiration**



Note: Data is presented for a limited number of RTC expiration dates for graphical clarity.

**IYB RTC Prices**

The annual average price for IYB NOx RTCs traded in calendar year 2019 was \$94,183 per ton, which is significantly higher than the annual average price of \$13,223 per ton traded in calendar year 2018. The annual average price for IYB SOx RTCs traded in calendar year 2019 was \$13,213 per ton, which is much lower than the \$30,000 per ton traded in calendar year 2018. Data regarding IYB RTCs traded with price (excluding swap trades) for NOx and SOx RTCs and their annual average prices since 1994 are summarized in Tables 2-19 and 2-20, respectively. In calendar year 2019, the annual average IYB RTC prices did not exceed the \$699,852 per ton of NOx RTCs or the \$503,893 per ton of SOx RTCs program review thresholds established by the Governing Board for IYB RTCs pursuant to California Health and Safety Code §39616(f).

**Table 2-19**  
**IYB NOx Pricing (Excluding Swaps)**

Calendar Year	Total Reported Value (\$ millions)	IYB RTC Traded with Price (tons)	Number of IYB Registrations with Price	Average Price (\$/ton)
1994*	\$1.3	85.7	1	\$15,623
1995*	\$0.0	0	0	N/A
1996*	\$0.0	0	0	N/A
1997*	\$7.9	404.6	9	\$19,602
1998*	\$34.1	1,447.6	23	\$23,534
1999*	\$18.6	438.3	19	\$42,437
2000*	\$9.1	184.2	15	\$49,340
2001*	\$34.2	416.9	25	\$82,013
2002	\$5.5	109.5	31	\$50,686
2003	\$14.3	388.3	28	\$36,797
2004	\$12.5	557.0	52	\$22,481
2005	\$43.1	565.3	71	\$76,197
2006	\$65.2	432.9	50	\$150,665
2007	\$45.4	233.5	25	\$194,369
2008	\$49.7	245.6	27	\$202,402
2009	\$16.7	134.2	14	\$124,576
2010	\$14.3	149.0	13	\$95,761
2011	\$9.1	160.7	29	\$56,708
2012	\$2.2	46.6	13	\$48,146
2013	\$12.0	260.9	17	\$45,914
2014	\$99.7	902.2	49	\$110,509
2015	\$187.4	938.5	47	\$199,685
2016	\$114.7	301.9	20	\$380,057
2017	\$1.26	31.8	6	\$39,673
2018	\$0.52	39.6	5	\$13,223
2019	\$28.1	298.4	33	\$94,183

\* No information regarding swap trades was reported until May 9, 2001.

**Table 2-20**  
**IYB SOx Pricing (Excluding Swaps)**

Calendar Year	Total Reported Value (\$ millions)	IYB RTC Traded with Price (tons)	Number of IYB Registrations with Price	Average Price (\$/ton)
1994*	\$0.0	0	0	N/A
1995*	\$0.0	0	0	N/A
1996*	\$0.0	0	0	N/A
1997*	\$11.9	429.2	7	\$27,738
1998*	\$1.0	50.0	1	\$19,360
1999*	\$0.8	55.0	3	\$14,946
2000*	\$1.4	50.6	5	\$27,028
2001*	\$10.2	306.8	8	\$33,288
2002	\$6.7	147.5	5	\$45,343
2003	\$0.6	110.9	1	\$5,680
2004	\$0.0	0.0	0	N/A
2005	\$1.0	141.5	3	\$7,409
2006	\$3.5	241.7	12	\$14,585
2007	\$3.7	155.2	5	\$23,848
2008	\$3.3	146.8	5	\$22,479
2009	\$3.7	100.0	4	\$36,550
2010	\$30.2	277.0	10	\$109,219
2011	\$1.03	10.0	2	\$102,366
2012	\$14.6	116.2	4	\$125,860
2013	\$14.4	79.2	4	\$181,653
2014	\$1.8	22.5	4	\$80,444
2015	\$4.0	74.8	4	\$53,665
2016	\$0.13	2.5	1	\$50,000
2017	\$0.77	33.92	4	\$22,820
2018	\$0.09	3.16	2	\$30,000
2019	\$0.73	54.9	6	\$13,213

\* No information regarding swap trades was reported until May 9, 2001.

### Recent Program Amendments' Effect on Trading Trend

As discussed earlier, on October 5, 2018, the South Coast AQMD Governing Board amended Rule 2001 to allow facilities to opt out of the NOx RECLAIM program. With the planned transition to a command-and-control regulatory structure, the longevity and utility of IYB NOx RTCs would be expected to diminish. Therefore, it is reasonable for values of IYB NOx RTCs to decrease, and in fact, such trade activities, volume traded, and total values traded experienced significant decreases in calendar years 2017 and 2018.

In subsequent working group meetings and discussion with USEPA, several issues were found in transitioning the New Source Review component of the program. Recent developments (see discussion on Program Amendments in Chapter 3) on RECLAIM transition have led to postponing the final transition of facilities out of RECLAIM until all necessary rules have been adopted and approved into the SIP. This delay has apparently reversed the trend of RTC

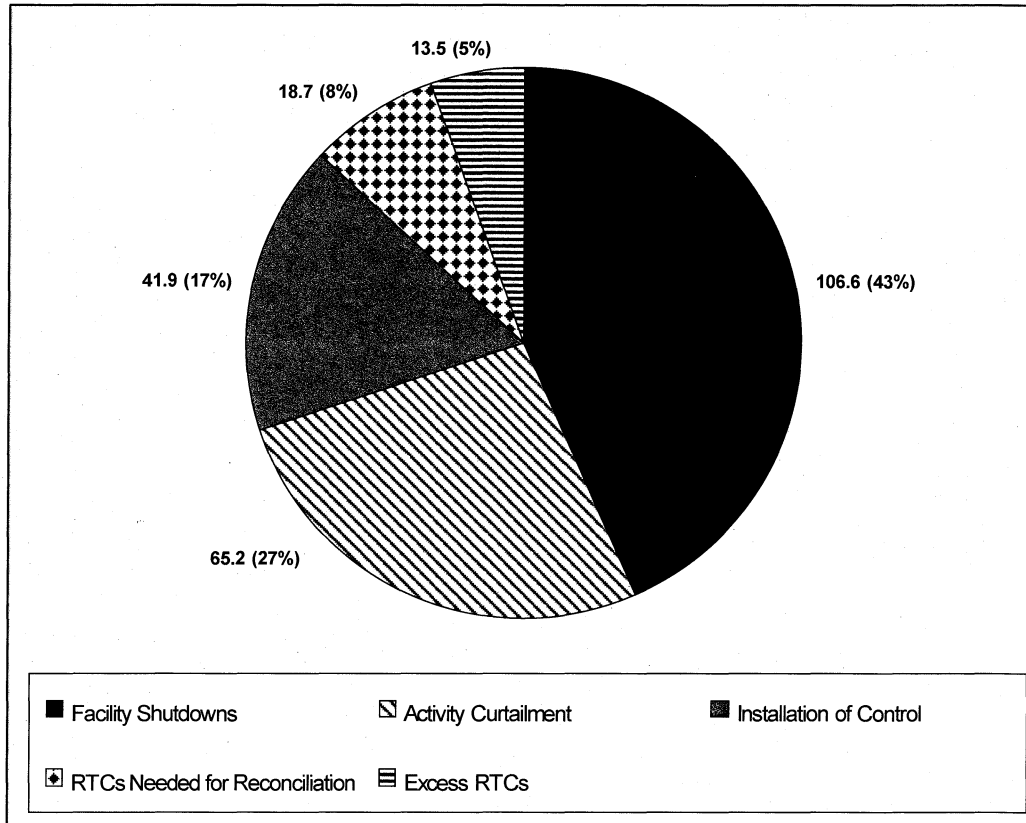
trades. As presented earlier in this chapter, the RTC trading activity and prices in calendar year 2019 returned to levels seen prior to calendar year 2017.

In calendar year 2019, the values of IYB NOx RTCs significantly increased when compared to 2017 and 2018. The latter half of 2019 saw a surge in IYB NOx trading activity. The volume traded, the total value traded, and the price per ton of IYB NOx RTCs increased significantly. As of compilation of data for this report, this trend continued. Of these trades, 98.6% of the IYB NOx RTCs were bought by two petroleum refining companies and the remainder were bought and held by two investors. Compared to an average price during calendar year 2018 of \$13,223 per ton, the RTCs purchased by these refineries during the latter half of 2019 were bought for an average price of \$106,713 per ton. This latest IYB NOx price per ton is more comparable to annual average prices in years prior to calendar year 2017. In total, 246 tons of IYB NOx RTCs were bought by these refineries. In general, refineries tend not to sell RTCs, and instead tend to use the credits solely to reconcile their annual emissions. These recent purchases effectively removed 246 tons of IYB NOx RTCs from the market and reduced liquidity.

The IYB NOx RTCs transferred to refineries originated from a variety of facilities. The primary reasons these RTCs were available are summarized in Figure 2-12 below. The principal reason was facility shutdowns, which accounted for 43% of the IYB NOx RTC volume purchased by the refineries. RTCs were also made available due to curtailment of activity at facilities (27%) and the installation of additional NOx control equipment (17%). Several facilities sold their IYB NOx holdings that are in excess of their historical annual emissions (5%). Two facilities sold IYB NOx RTCs (8%) that would be necessary to reconcile their historical annual emissions. If these two facilities continue to emit NOx at the same level, they will need to buy discrete-year RTCs on the market each quarter to reconcile emissions.



**Figure 2-12**  
**Origin of Available IYB NOx RTCs Transferred to Refineries (tons)**



Compliance Year 2018 was the third year of implementation of the current NOx allocation shave, reducing the NOx allocation by 11.3%. The volume traded is comparable to the last few years. The average prices in calendar year 2019 for each compliance year RTCs were all higher compared to calendar year 2018<sup>6</sup>. Of particular note were two trades in December 2019 of Compliance Year 2020 discrete-year NOx RTCs, each valued at \$19,000 per ton. While these prices are above \$15,000 per ton, the annual average price of Compliance Year 2020 discrete-year NOx RTCs traded in calendar year 2019 was \$12,190 per ton, less than the actionable threshold of \$15,000 per ton in Rule 2015(b)(6). These purchases were by a facility that is required to hold RTCs for emission increases subject to New Source Review requirements. In the future, facilities in a similar situation may face higher prices if the supply of IYB RTCs continues to shrink due to purchases by facilities that intend to hold for the long term, as discussed above.

As with discrete-year NOx RTCs, discrete-year SOx RTCs increased in price during calendar year 2019, with further reduction in SOx RTC supply in Compliance Year 2018. The SOx RTC supply was shaved starting with

<sup>6</sup> The comparison of annual average prices is made between the current compliance year RTCs for each calendar year traded. The same comparisons are made for the previous and the following compliance year RTCs.

Compliance Year 2013 and continued to full implementation in Compliance Years 2019 and after. The price of IYB SOx RTCs decreased, unlike the significant increase in IYB NOx RTCs prices as discussed above. Despite the reduced RTC supply, prices for IYB SOx RTC decreased in price with an increase in volume traded.

### **Other Types of RTC Transactions and Uses**

Another type of RTC trade, besides traditional trading and swapping activities, is a trade involving the contingent right (option) to purchase RTCs. In those trades, one party pays a premium for the contingent right (option) to purchase RTCs owned by the other party at a pre-determined price within a certain time period. Until RTCs are transferred from seller to buyer, prices for options are not reported, because the seller has not paid for the actual RTCs, but only for the right to purchase the RTCs at a future date. These rights may or may not actually be exercised. RTC traders are obligated to report options to South Coast AQMD within five business days of reaching an agreement. These reports are posted on South Coast AQMD's website. There were two reports submitted in calendar year 2019 identifying an agreed upon contingent right to buy or sell RTCs. Neither of these reported rights were exercised in calendar year 2019.

In addition to reconciling emissions at RECLAIM facilities, RTCs are also used by RTC holders to satisfy variance conditions and offset other projects. During calendar year 2019, one non-RECLAIM facility retired a total of 13.1 tons of NOx RTCs to comply with a Supplemental Environmental Impact Report mandated Mitigation Monitoring Program. These consisted of discrete-year NOx RTCs for Compliance Years 2018 and 2019.

## **Market Participants**

RECLAIM market participants have traditionally included RECLAIM facilities, brokers, commodity traders, and private investors. Starting in calendar year 2004, mutual funds joined the traditional participants in RTC trades. Market participation expanded further in 2006, when foreign investors started participating in RTC trades. However, foreign investors have not participated in any RTC trades since calendar year 2008 and foreign investors do not hold any current or future RTCs at this time.

RECLAIM facilities are the primary users of RTCs and they hold the majority of RTCs as allocations. They usually sell their surplus RTCs by the end of the compliance year or when they have a long-term decrease in emissions. Brokers match buyers and sellers, and usually do not purchase or own RTCs. Commodity traders and private investors actually invest in and own RTCs in order to seek profits by trading them. They do not need RTCs to offset or reconcile any emissions. For purposes of discussion in this report, "investors" include all parties who hold RTCs other than RECLAIM facility permit holders and brokers. Brokers typically do not actually purchase RTCs, but only facilitate trades.

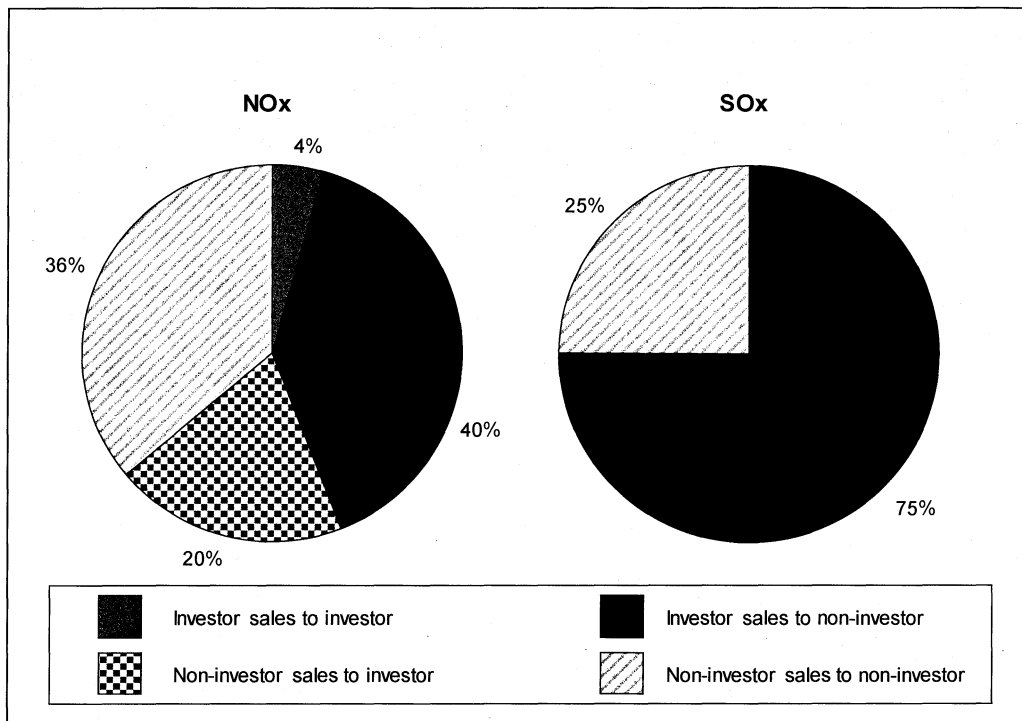
### **Investor Participation**

In 2019, investors were actively involved in 122 of the 178 discrete-year NOx RTC trades with price and 9 of the 17 discrete-year SOx RTC trades with price.

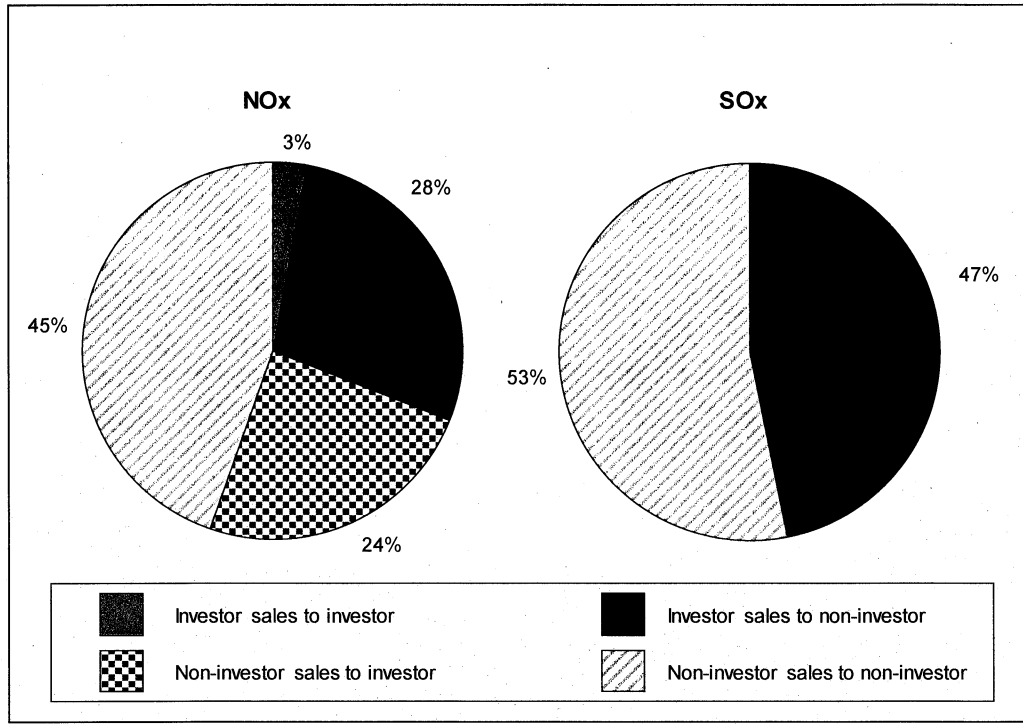
Investors were involved in 21 of the 33 IYB NOx trades with price, and three of the six IYB SOx trades with price.

Investors' involvement in discrete-year NOx and SOx trades registered with price in calendar year 2019 is illustrated in Figures 2-13 and 2-14. Figure 2-13 is based on total value of discrete-year NOx and SOx RTCs traded, and shows that investors were involved in 64% and 75%, respectively, of the discrete-year NOx and SOx trades reported by value. Figure 2-14 is based on volume of discrete-year RTCs traded with price and shows that investors were involved in 55% and 47% of the discrete-year NOx and SOx trades by volume, respectively. Figures 2-15 and 2-16 provide similar data for IYB NOx and SOx trades. Investors were involved in 74% and 43% of IYB NOx and SOx trades by value, and in 71% and 45% of IYB NOx and SOx trades by volume, respectively.

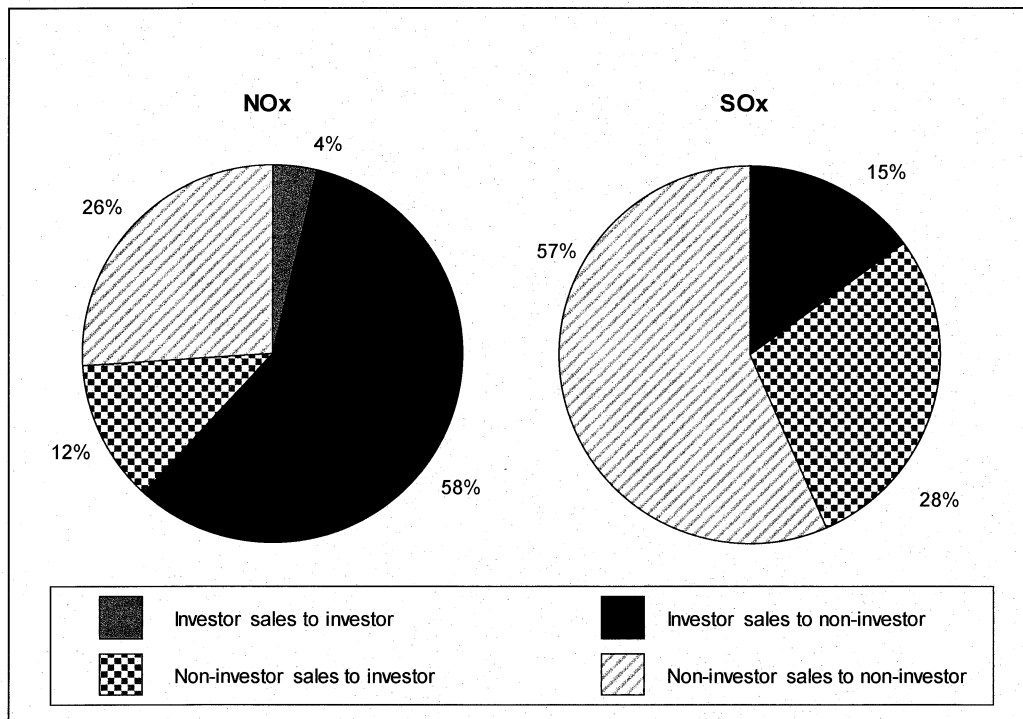
**Figure 2-13**  
**Calendar Year 2019 Investor-Involved Discrete-Year NOx and SOx Trades Based on Value Traded**



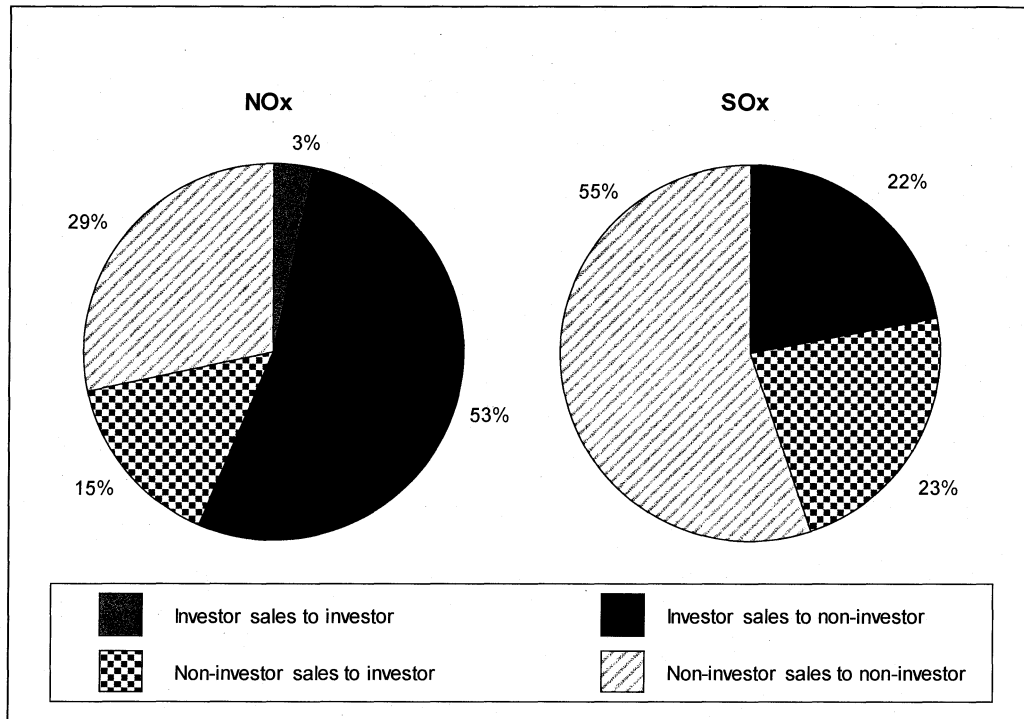
**Figure 2-14**  
**Calendar Year 2019 Investor-Involved Discrete-Year NOx and SOx Trades Based on Volume Traded with Price**



**Figure 2-15**  
**Calendar Year 2019 Investor-Involved IYB NOx and SOx Trades Based on Value Traded**



**Figure 2-16  
Calendar Year 2019 Investor-Involved IYB NOx and SOx Trades Based on Volume Traded with Price**



As of the end of calendar year 2019, investors' holding of IYB NOx RTCs had decreased to 1.3% compared to 3.8% at the end of calendar year 2018. Mutual fund investors are no longer holders of IYB NOx RTCs, down from highs of 3.3% at the end of calendar year 2011 and 1.4% at the end of calendar year 2014. Investors' holding of IYB SOx RTCs stayed the same compared to the end of calendar year 2018 at 4.7%. No IYB SOx RTCs are currently held by mutual fund investors.

The available supply of IYB RTCs are generally from facilities that have permanently reduced emissions through the installation of control equipment, the modification or replacement of old equipment, or equipment and/or facility shutdowns. There were five RECLAIM facilities that shut down or were excluded during Compliance Year 2018. These five facilities all participated in the NOx RECLAIM program only and four of the facilities held a total of 35.9 tons of IYB NOx RTCs. One facility transferred 19.0 tons IYB NOx RTCs to another facility under common ownership. Two facilities sold a total of 15.9 tons IYB NOx RTCs at market price. The remaining facility did not sell IYB RTCs prior to or after leaving RECLAIM.

Theoretically, the role of investors in this market is to provide capital for installing air pollution control equipment that costs less than the market value of credits. In addition, investors can also improve price competitiveness. This market theory may not fully apply to RECLAIM due to the uniqueness of the program, because RECLAIM facility operators have no substitute for RTCs, and short of curtailing operations, pollution controls cannot be implemented within a short time period.

That is, they do not have the option to switch to another source of credits when RTCs become expensive because there is no alternative source of credits available to RECLAIM facilities. Therefore, RECLAIM facility operators may be at the mercy of owners of surplus or investor-owned RTCs in the short term, particularly during times of rapid price increases, as evidenced in 2000 and 2001 during the California energy crisis.

Generally, RECLAIM facilities hold back additional RTCs for each year as a compliance margin to ensure that they do not inadvertently find themselves exceeding their allocations (failing to reconcile by securing sufficient RTCs to cover their emissions) if their reported emissions increase as the result of any problems or errors discovered by South Coast AQMD staff during annual facility audits. Facilities have indicated to staff in the past that this compliance margin is approximately 10% of their emissions. For Compliance Year 2018, the total RECLAIM NOx emissions were 6,740 tons, while the total NOx RTC allocation was 8,612 tons. This NOx RTC surplus of 1,872 tons (22% of allocation, and 28% of emissions) is well above the 10% compliance margin reportedly held by RECLAIM facilities. If the future total NOx emissions stay constant, the difference between the NOx RTC allocation and NOx emissions would not decrease below 10% until Compliance Year 2021.

During calendar year 2019 and early calendar year 2020, 246 tons of IYB NOx RTCs were purchased by two petroleum refining companies. Based on the industry's historical practice of holding and not selling RTCs, this could result in less RTC availability. As shown in Table 3-1, there was an excess of 1,872 tons of RTCs at the end of Compliance Year 2018. Taking into account the purchase of 246 tons by these refineries and the scheduled reductions in allocations (7,505 tons remaining in Compliance Year 2020; see Figure 2-1), and assuming emissions remain at the Compliance Year 2018 level, the effective RTC surplus in Compliance Year 2020 could be as low as 519 tons ( $7,505 - 246 - 6740$ ), or less than 8% of the total emissions.

In past annual audit reports, staff made comparisons between emissions and future available RTC supplies to highlight the potential of a seller's market for NOx RTCs if adequate emissions controls were not implemented in a timely manner. Despite the small percentage of RTCs (1.3% at the end of calendar year 2019) held by investors, their impact on RTC availability and prices can be significant because of their participation in most of the trades, and they may be in a strong position to influence prices. As evidenced in the trade of Compliance Year 2020 NOx RTCs, facilities that needed to comply with NSR requirements at the end of calendar year 2019 paid a premium relative to prior years.

## CHAPTER 3

### EMISSION REDUCTIONS ACHIEVED

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#### Summary

*For Compliance Year 2018, aggregate NOx emissions were below total allocations by 22% and aggregate SOx emissions were below total allocations by 14%. No emissions associated with breakdowns were excluded from reconciliation with facility allocations in Compliance Year 2018. Accordingly, no mitigation is necessary to offset excluded emissions due to approved Breakdown Emission Reports. Therefore, based on audited emissions, RECLAIM achieved its targeted emission reductions for Compliance Year 2018. With respect to the Rule 2015 backstop provisions, Compliance Year 2018 aggregate NOx and SOx emissions were both well below aggregate allocations and, as such, did not trigger the requirement to review the RECLAIM program.*

#### Background

One of the primary objectives of the annual RECLAIM program audits is to assess whether RECLAIM is achieving its targeted emission reductions. Those targeted emission reductions are embodied in the annual allocations issued to RECLAIM facilities. In particular, the annual allocations reflect required emission reductions initially from the subsumed command-and-control rules and control measures, as well as from subsequent reductions in allocations as a result of BARCT implementation.

In January 2005 and December 2015, the Board adopted amendments to Rule 2002 to further reduce aggregate RECLAIM NOx allocations through implementation of the latest BARCT. The 2005 amendments resulted in cumulative NOx allocation reductions of 22.5% (2,811 tons/year, or 7.7 tons/day) from all RECLAIM facilities by Compliance Year 2011, with the biggest single-year reduction of 11.7% in Compliance Year 2007. The 2015 amendments will reduce NOx allocations by 45.2% (4,380 tons/year, or 12.0 tons/day) by Compliance Year 2022. The reductions are phased-in from Compliance Year 2016 through Compliance Year 2022 with 3 tons/day of the NOx Allocation reduction occurring through Compliance Year 2018.

The Board also amended Rule 2002 in November 2010 to implement BARCT for SOx. Specifically, the November 2010 amendments called for certain facilities' RECLAIM SOx allocations to be adjusted to achieve a 48.4% (2,081 tons/year, or 5.7 tons/day) overall reduction, with the reductions phased-in from Compliance Year 2013 through Compliance Year 2019. For Compliance Year 2018, 1,825 tons/year, or 5.0 tons/day (approximately 88% of the scheduled reduction), of SOx allocations were reduced. The final 255.5 tons/year (0.7 tons/day) reduction will occur in Compliance Year 2019.

#### Emissions Audit Process

Since the inception of the RECLAIM program, South Coast AQMD staff has conducted annual program audits of the emissions data submitted by RECLAIM facilities to ensure the integrity and reliability of RECLAIM emission data. The

process includes reviews of APEP reports submitted by RECLAIM facilities and audits of field records and emission calculations. The audit process is described in further detail in Chapter 5 – Compliance.

South Coast AQMD staff adjusts the APEP-reported emissions based on audit results, as necessary. Whenever South Coast AQMD staff finds discrepancies, they discuss the findings with the facility operators and provide the operators an opportunity to review changes resulting from facility audits and to present additional data or information in support of the data stated in their APEP reports.

This rigorous audit process, although resource intensive, reinforces RECLAIM's emissions monitoring and reporting requirements and enhances the validity and reliability of the final emissions data. The audited emissions are used to determine if a facility complied with its allocations. The most recent five compliance years' audited NOx emissions for each facility are posted on South Coast AQMD's web page after the audits are completed. All emissions data presented in this annual RECLAIM audit report are compiled from audited facility emissions.

## Emission Trends and Analysis

RECLAIM achieves its emission reduction goals on an aggregate basis by ensuring that annual emissions are below total RTCs. It is important to understand that the RECLAIM program is successful at achieving these emission reduction goals even when some individual RECLAIM facilities exceed their RTC account balances, provided aggregate RECLAIM emissions do not exceed aggregate RTCs issued. Therefore, aggregate audited NOx or SOx emissions from all RECLAIM sources are the basis for determining whether the programmatic emission reduction goals for that pollutant are met each year.

Table 3-1 and Figure 3-1 show aggregate audited NOx emissions and the aggregate annual NOx RTC supply for Compliance Years 1994 through 2018. No facility audits for Compliance Years 1994 through 2017 were reopened during the past year, so the aggregate audited NOx and SOx emissions for these years are unchanged from the previous annual report. Programmatically, there were excess NOx RTCs remaining after accounting for audited NOx emissions for every compliance year since 1994, except for Compliance Year 2000 when NOx emissions exceeded the total allocations due to the California energy crisis. Aggregate NOx allocations for Compliance Year 2018 were reduced by 1,095 tons from Compliance Year 2015 levels due to the 2015 BARCT-related amendment of Rule 2002.

Annual NOx emissions remained within a narrow range (7,246 tons to 7,691 tons annually) between Compliance Years 2011 and 2017. For Compliance Year 2018, NOx emissions were more than 500 tons below this range at 6,740 tons. Compliance Year 2018 NOx emissions were below total allocations by 22%. Staff determined the reduction in NOx emissions are due to various contributing factors, including year-to-year fluctuations in facility operating schedules (e.g., refinery turnarounds), the installation of NOx emission control equipment (one facility completed a NOx control project with a NOx reduction of approximately 75 tons/year), and reductions in emissions determined using MDP during South Coast AQMD audits for certain facilities in Compliance Year 2018 when compared to Compliance Year 2017.



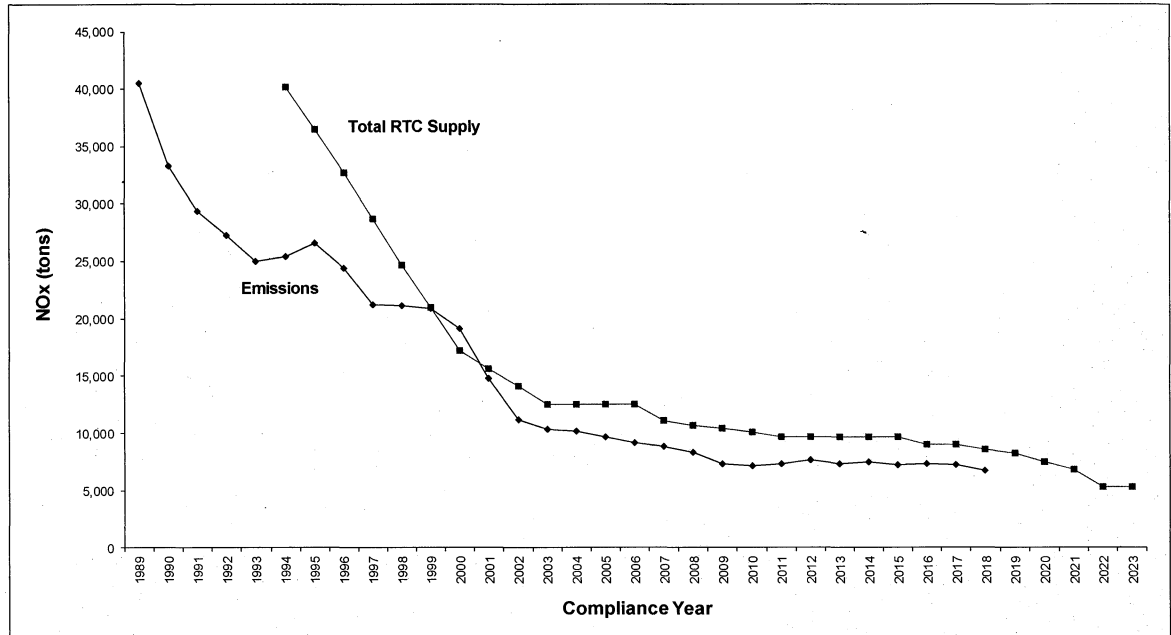
**Table 3-1  
Annual NOx Emissions for Compliance Years 1994 through 2018**

Compliance Year	Audited Annual NOx Emissions <sup>1</sup> (tons)	Audited Annual NOx Emissions Change from 1994 (%)	Total NOx RTCs <sup>2</sup> (tons)	Unused NOx RTCs (tons)	Unused NOx RTCs (%)
1994	25,420	0%	40,187	14,767	37%
1995	26,632	4.8%	36,484	9,852	27%
1996	24,414	-4.0%	32,742	8,328	25%
1997	21,258	-16%	28,657	7,399	26%
1998	21,158	-17%	24,651	3,493	14%
1999	20,889	-18%	20,968	79	0.38%
2000	19,148	-25%	17,208	-1,940	-11%
2001	14,779	-42%	15,617	838	5.4%
2002	11,201	-56%	14,111	2,910	21%
2003	10,342	-59%	12,485	2,143	17%
2004	10,134	-60%	12,477	2,343	19%
2005	9,642	-62%	12,484	2,842	23%
2006	9,152	-64%	12,486	3,334	27%
2007	8,796	-65%	11,046	2,250	20%
2008	8,349	-67%	10,705	2,356	22%
2009	7,306	-71%	10,377	3,071	30%
2010	7,121	-72%	10,053	2,932	29%
2011	7,302	-71%	9,690	2,388	25%
2012	7,691	-70%	9,689	1,998	21%
2013	7,326	-71%	9,699	2,373	24%
2014	7,447	-71%	9,699	2,252	23%
2015	7,246	-71%	9,700	2,454	25%
2016	7,328	-71%	8,992	1,664	19%
2017	7,246	-71%	8,978	1,732	19%
2018	6,740	-73%	8,612	1,872	22%

<sup>1</sup> The RECLAIM universe is divided into two cycles with compliance schedules staggered by six months. Compliance years for Cycle 1 facilities run from January 1 through December 31 and Cycle 2 compliance years are from July 1 through June 30.

<sup>2</sup> Total RTCs = Allocated RTCs + RTCs from ERC conversion.

**Figure 3-1  
NOx Emissions and Available RTCs**



Similar to Table 3-1 and Figure 3-1 for NOx, Table 3-2 presents aggregate annual SOx emissions data for each compliance year based on audited emissions, and Figure 3-2 compares these audited aggregate annual SOx emissions with the aggregate annual SOx RTC supply. As shown in Table 3-2 and Figure 3-2, RECLAIM facilities have not exceeded their SOx allocations on an aggregate basis in any compliance year since program inception. Aggregate SOx allocations from Compliance Year 2003 through Compliance Year 2012, prior to the 2010 BARCT-related amendment to Rule 2002, were relatively constant. At that time, the amount of unused RTCs peaked at 40%. Since then, Compliance Year 2018 SOx allocations were reduced by about 1,825 tons. On the other hand, annual SOx emissions steadily declined between Compliance Years 2007 and 2013, but have remained within a narrow range (between 2,024 tons and 2,176 tons) since Compliance Year 2013. For Compliance Year 2018, SOx emissions increased by 91 tons compared to those in Compliance Year 2017 (from 2,043 tons to 2,134 tons). SOx emissions in Compliance Year 2018 were below total allocations by 14%, compared to 17% for Compliance Year 2017. The data indicates that RECLAIM met its programmatic SOx emission reduction goals and demonstrated equivalency in SOx emission reductions compared to the subsumed command-and-control rules and control measures.

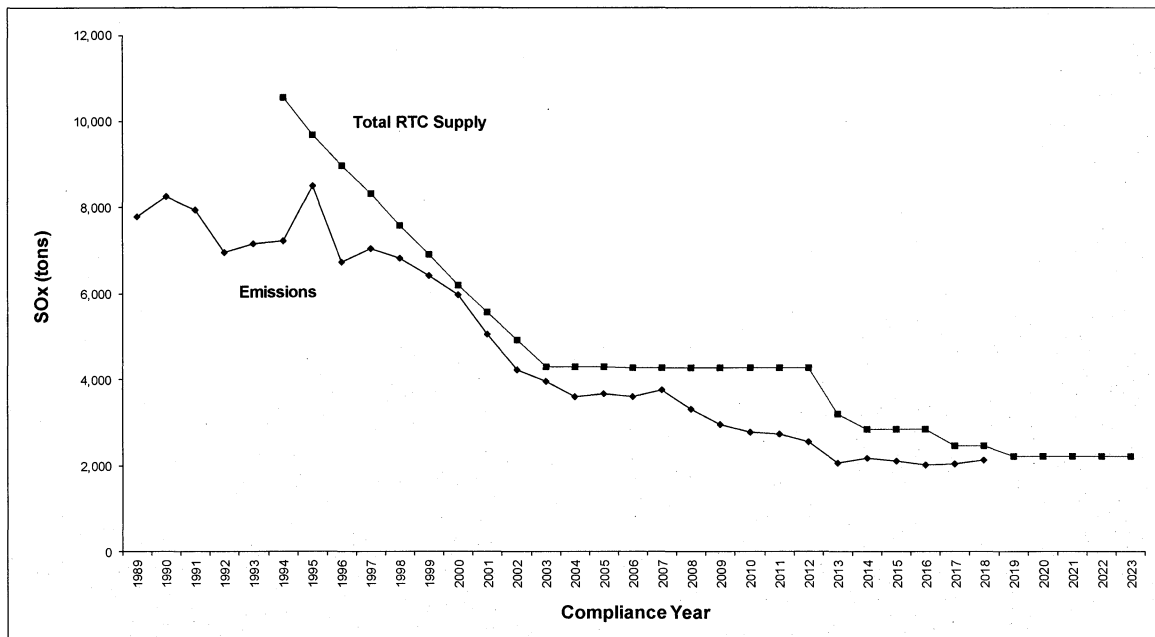
**Table 3-2**  
**Annual SOx Emissions for Compliance Years 1994 through 2018**

Compliance Year	Audited Annual SOx Emissions <sup>1</sup> (tons)	Audited Annual SOx Emissions Change from 1994 (%)	Total SOx RTCs <sup>2</sup> (tons)	Unused SOx RTCs (tons)	Unused SOx RTCs (%)
1994	7,230	0%	10,559	3,329	32%
1995	8,508	18%	9,685	1,177	12%
1996	6,731	-6.9%	8,976	2,245	25%
1997	7,048	-2.5%	8,317	1,269	15%
1998	6,829	-5.5%	7,592	763	10%
1999	6,420	-11%	6,911	491	7.1%
2000	5,966	-17%	6,194	228	3.7%
2001	5,056	-30%	5,567	511	9.2%
2002	4,223	-42%	4,932	709	14%
2003	3,968	-45%	4,299	331	7.7%
2004	3,597	-50%	4,299	702	16%
2005	3,663	-49%	4,300	637	15%
2006	3,610	-50%	4,282	672	16%
2007	3,759	-48%	4,286	527	12%
2008	3,319	-54%	4,280	961	22%
2009	2,946	-59%	4,280	1,334	31%
2010	2,775	-62%	4,282	1,507	35%
2011	2,727	-62%	4,283	1,556	36%
2012	2,552	-65%	4,283	1,731	40%
2013	2,066	-71%	3,198	1,132	35%
2014	2,176	-70%	2,839	663	23%
2015	2,096	-71%	2,836	740	26%
2016	2,024	-72%	2,836	812	29%
2017	2,043	-72%	2,474	431	17%
2018	2,134	-70%	2,474	340	14%

<sup>1</sup> The RECLAIM universe is divided into two cycles with compliance schedules staggered by six months. Compliance years for Cycle 1 facilities run from January 1 through December 31 and Cycle 2 compliance years are from July 1 through June 30.

<sup>2</sup> Total RTCs = Allocated RTCs + RTCs from ERC conversion.

**Figure 3-2  
SOx Emissions and Available RTCs**



**Comparison to Command-and-Control Rules**

RECLAIM subsumed a number of command-and-control rules<sup>1</sup> and sought to achieve reductions equivalent to these subsumed rules that continue to apply to non-RECLAIM facilities. RECLAIM facilities were exempt from the subsumed rules' requirements that apply to SOx or NOx emissions once the facilities comply with the applicable monitoring requirements of Rules 2011 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions or 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions, respectively. However, as part of the effort to transition<sup>2</sup> the RECLAIM program from a market incentive-based program to a command -and-control regulatory structure requiring BARCT level controls as soon as practicable, the Governing Board, on October 5, 2018, amended Rule 2001 specifying that RECLAIM facilities are required to comply with the rules contained in Table 1 of Rule 2001 that are adopted or amended on or after October 5, 2018. As rules are amended after this date, the requirements of these and prospective amended or adopted rules, apply equally to both RECLAIM and non-RECLAIM facilities (see “Landing Rules” paragraph under “Program Amendments”).

Additionally, the Governing Board amended two subsumed Regulation XIII rules during Compliance Year 2018: Rule 1310 – Analysis and Reporting, amended on March 1, 2019, and Rule 1325 – Federal PM2.5 New Source Review Program amended on January 4, 2019. Amended Rule 1310 – Analysis and Reporting

<sup>1</sup> See Tables 1 and 2 of Rule 2001.

<sup>2</sup> Pursuant to both the March 3, 2017 Governing Board adopted resolution during the adoption of the 2016 AQMP, and California State Assembly Bill (AB) 617 approved in July 2017.

was one of a series of 18 rules<sup>3</sup> amended by the Governing Board that expanded noticing options to include email and web page display for public notices for Clean Air Act permit programs and rulemaking activities. California Senate Bill 1502, drafted in response to SCAQMD's initiative to modernize communication methods, and amendments to the USEPA Code of Federal Regulations enabled these changes. The option to deliver invoices to permit holders by email was also included.

Rule 1325 was amended on November 4, 2016 to expand the definition of "precursors" to include volatile organic compounds (VOCs) and ammonia (NH<sub>3</sub>), as required under USEPA's 2016 implementation rule for PM<sub>2.5</sub> State Implementation Plans and a court decision requiring states to regulate PM<sub>2.5</sub> under the same part of the Federal Clean Air Act as PM<sub>10</sub>. The 2016 amendment expanded the definition of "precursors," however, it did not expand the definition of "regulated NSR pollutant" to explicitly reference the PM<sub>2.5</sub> precursors VOC and NH<sub>3</sub>. The January 4, 2019 amendments to Rule 1325 addressed this deficiency by referencing "precursors" in the definition of "regulated NSR pollutant." In addition, other revisions were made to improve clarity.

With respect to the Regulation XIII amendments, subsumed Rules 1310 and 1325, which are administrative in nature, were intended to facilitate SIP approval of the regulations and do not result in any limitations on NO<sub>x</sub> or SO<sub>x</sub> sources at non-RECLAIM facilities. Since Rule 2001 only exempts those provisions in identified rules applicable to NO<sub>x</sub> and SO<sub>x</sub> emission at RECLAIM facilities, these amendments apply equally to RECLAIM and non-RECLAIM sources and do not result in disproportionate impacts.

On July 12, 2019, two rules not subsumed by RECLAIM, Regulation IX – Standards of Performance for New Stationary Sources (NSPS) and Regulation X National Emission Standards for Hazardous Air Pollutants (NESHAPS), were amended by the Governing Board to incorporate new or amended federal standards that had been enacted by USEPA for stationary sources. Historically, the Governing Board adopted NSPS (40 CFR 60) and NESHAP (40 CFR 61) actions into Regulations IX and X by reference, to provide stationary sources with a single source of information for determining which federal and local requirements apply to their specific operations. Regulations IX and X were last amended October 7, 2016, and April 3, 2015, respectively. The amendments to Regulation IX and X incorporate new or revised NSPS and NESHAP actions that have since occurred. In 2016, USEPA promulgated one new NSPS for municipal solid waste landfills that commence construction, reconstruction, or modification after July 17, 2014. In addition, USEPA also amended existing provisions of six NSPS standards, two NSPS appendices, one NESHAP standard, and one NESHAP appendix. The amendments to Regulation IX and X incorporated these USEPA NSPS and NESHAP actions into SCAQMD's regulations.

Additionally, one other rule not subsumed by RECLAIM, Rule 1111 – Reduction of NO<sub>x</sub> Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces, was amended by the Governing Board on December 6, 2019, to reduce NO<sub>x</sub> emissions from residential and commercial gas-fired fan-type space heating

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<sup>3</sup> The remaining 17 rules adopted by the Governing Board concurrently were Rules: 110, 212, 301, 303, 306, 307.1, 309, 315, 518.2, 1605, 1610, 1612, 1620, 1623, 1710, 1714 and 3006.

furnaces with a rated heat input capacity of less than 175,000 BTU per hour and applies to manufacturers, distributors, sellers, and installers of such furnaces. Rule 1111 was amended in 2009 to lower the NOx emission limit from 40 to 14 ng/Joule (ng/J), and again amended in 2014 to include a mitigation fee option where manufacturers can pay a per-unit fee in lieu of meeting the Ultra Low-NOx emission limit of 14 ng/J. The mitigation fee option for condensing and non-condensing furnaces ended on September 30, 2019. The latest amendment to Rule 1111 included a limited exemption from the Ultra Low NOx emission limit as it applies to furnaces installed at elevations greater than or equal to 4,200 feet above sea level until October 1, 2020. During this interim exemption, furnaces would be required to meet the Low-NOx (40 ng/J) emission limit, while providing manufacturers time to conduct high altitude testing, develop kits, and guidance for the installation of furnaces in higher elevations.

Since Regulation IX, Regulation X, and Rule 1111 were not subsumed under RECLAIM and contained no exemptions from their applicability to RECLAIM NOx or SOx sources, the requirements of these amended rules apply equally to both RECLAIM and non-RECLAIM facilities. As such, there are no differential impacts in emissions when comparing the applicability of amended rule requirements to NOx and SOx sources under RECLAIM with NOx and SOx sources of non-RECLAIM facilities.

Consequently, during Compliance Year 2018, both rules subsumed by RECLAIM, and rules not subsumed by RECLAIM that were recently amended or adopted, did not result in any disparate impacts between NOx and SOx sources at RECLAIM and NOx and SOx sources at non-RECLAIM facilities.

## **Program Amendments**

On March 3, 2017, the Governing Board adopted a resolution during the adoption of the 2016 AQMP that directed staff to modify Control Measure CMB-05 – Further NOx Reductions from RECLAIM Assessment to achieve an additional five tons per day NOx emission reductions as soon as feasible but no later than 2025, and to transition the RECLAIM program to a command-and-control regulatory structure requiring BARCT level controls as soon as practicable. Additionally, California State Assembly Bill (AB) 617 was approved in July 2017, requiring an expedited schedule for implementing BARCT at RECLAIM facilities that are covered by the Greenhouse Gas (GHG) cap-and-trade program no later than December 31, 2023.

### **Transition Process**

To further this effort, staff organized and held monthly working group meetings (with the first meeting held on June 8, 2017) to discuss the transition of facilities in the RECLAIM program to a command-and-control regulatory structure and to discuss key policy issues. The objective is to provide an open forum for all stakeholders to discuss and guide the transition process. The goal is to develop “Landing Rules” establishing the BARCT emission levels for equipment transitioning out of the NOx RECLAIM program. Rule 2001 – Applicability specifically exempts RECLAIM facilities from a number of existing command-and-control NOx rules (see Table 1 of Rule 2001). As part of the transition process, these command-and-control rules have to be amended and additional new NOx BARCT command-and-control rules have to be adopted (collectively

referred to as “Landing Rules”) to ensure that when a facility transitions out of RECLAIM, its NOx equipment has explicit BARCT emission limits and an appropriate time frame to achieve compliance.

To initiate the transition of NOx sources out of RECLAIM, Rule 2001 – Applicability, and Rule 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx), were amended by the Governing Board on January 5, 2018. Amended Rule 2001 precluded new or existing facilities from entering the NOx and SOx RECLAIM programs as of January 5, 2018. Amended Rule 2002 contained notification procedures for facilities that will be transitioned out of RECLAIM, and addressed the RTC holdings for these facilities that will be transitioned out or that elect to exit RECLAIM. Under amended Rule 2002, the Executive Officer will provide an initial determination notification to a RECLAIM facility for potential exit to a command-and-control regulatory structure with requirements for the facility to identify all NOx-emitting equipment. This initial determination notification serves as a preliminary notice to a facility for which all NOx sources are covered by Landing Rules, and will be issued when South Coast AQMD staff determines every permitted NOx source is covered by Landing Rules. When an initial determination notification is issued to a facility, the RECLAIM facility then has 45 days from the date of the notification to identify all NOx-emitting equipment. Failure to provide this information to South Coast AQMD will result in a freeze on RTC uses, trades, or transfers until the requested information is submitted. If the RECLAIM facility is deemed ready for transition after Executive Officer review, it will receive a final determination notification that will require its exit from RECLAIM and will become subject to command-and-control regulations. If the RECLAIM facility is deemed as not ready for the transition, it will be notified that it will remain in NOx RECLAIM until a later time. Upon exiting RECLAIM, the facility’s future compliance year RTCs cannot be sold or transferred, and only RTCs valid for the then current compliance year can be used or sold.

Staff originally identified an initial group of 38 facilities that could potentially exit the NOx RECLAIM program because they had no facility NOx emissions, or had NOx emissions solely from the combination of equipment exempt from obtaining a written permit pursuant to Rule 219 (unless the equipment would be subject to a command-and-control rule that it could not reasonably comply with), various locations permits, or unpermitted equipment and/or RECLAIM equipment that met current command-and-control BARCT rules. However, these facilities have not been issued final determinations to exit RECLAIM pending resolution with USEPA of New Source Review provisions for facilities that are expected to be transitioned out of RECLAIM.

Rules 2001 and 2002 were again amended by the Governing Board on October 5, 2018. Amended Rule 2001 added a provision to allow facilities to opt out of RECLAIM if certain criteria were met. Additionally, Tables 1 and 2 had previously contained only rules that were not applicable to RECLAIM facilities pertaining to NOx or SOx emissions, respectively. However, in order to facilitate the transition process, the amendments to Rule 2001 specify that RECLAIM facilities are required to comply with the rules contained in Table 1 that are adopted or amended on or after October 5, 2018. Amended Rule 2002 provided an option for facilities that received an initial determination notification to stay in RECLAIM for a limited time, while complying with applicable command-and-

control requirements. Additionally, amended Rule 2002 established a requirement that facilities which are issued a final determination to be transitioned out of the NO<sub>x</sub> RECLAIM program to provide emission reduction credits to offset any NO<sub>x</sub> emissions increases, calculated pursuant to Rule 1306 – Emission Calculations, notwithstanding the exemptions contained in Rule 1304 – Exemptions and the requirements contained in Rule 1309.1 – Priority Reserve, until New Source Review provisions governing NO<sub>x</sub> emission calculations and offsets are amended to address former RECLAIM sources. Finally, Rule 2002 removed the requirement to report IYB NO<sub>x</sub> RTC prices to the Board when the price falls below the minimum threshold.

Rule 2001 was again amended by the Governing Board on July 12, 2019, to remove the opt-out provision provided for in the October 5, 2018 amendments to the rule. This amendment was in response to USEPA's recommendation that facilities remain in RECLAIM until all rules associated with the transition to a command-and-control regulatory structure have been adopted and approved into the SIP.

### **Landing Rules**

As explained earlier, Landing Rules are needed to establish BARCT emission limits, the timing for the implementation of BARCT, and monitoring, reporting, and recordkeeping (MRR) requirements. These Landing Rules also serve to facilitate the transition process for RECLAIM facilities from the requirements of RECLAIM to a command-and-control regulatory structure. Determination of BARCT limits are made through an analytical process that is comprised of assessing South Coast AQMD and other agency regulatory requirements and emission limits, researching control options and effectiveness of the controls, and analyzing the cost-effectiveness of the control options. Emission levels are established based on their achievability, source test results, and vendor guarantees.

Throughout the BARCT determination process, rule-specific working group meetings are held to present staff's findings regarding the feasibility and cost-effectiveness of implementing BARCT. Working group meetings are open to the public and provide an opportunity for stakeholders to participate in the rule development process. During the public process, cost assumptions are discussed through the Working Group to solicit comments. Cost-effectiveness and incremental cost-effectiveness, if applicable, are discussed and presented during the rule working group meetings, presented at the Public Workshop, included in the Draft Staff Report, and included in the Board Letter for the adoption hearing. The socioeconomic analysis uses the cost data to estimate regional and industry-specific socioeconomic impacts from the proposed rule and its proposed controls, while the California Environmental Quality Act (CEQA) analysis provides the environmental impacts that result from implementing a rule.

Staff have identified a number of rules that need amendments and new rules that need to be adopted to support the transitioning of NO<sub>x</sub> sources out of RECLAIM. The following ten Landing Rules were amended or adopted by the Governing Board to facilitate the transition:

- Rule 1100 – Implementation Schedule for NO<sub>x</sub> Facilities,
- Rule 1110.2 – Emissions from Gaseous - and Liquid-Fueled Engines,



- Rule 1118.1 -- Control of Emissions from Non-Refinery Flares,
- Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines,
- Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities,
- Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters, Rule
- 1146.1 – Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters,
- Rule 1146.2 – Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters,
- Rule 2001 – Applicability, and
- Rule 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx).

A summary of the Landing Rules are provided in Table 3-3. Further information, regarding the specifics of each rule, can be found at <http://www.aqmd.gov/home/rules-compliance/rules/scagmd-rule-book/proposed-rules>. Details on past amended or adopted rules can be found by entering the amendment or adoption date of a given rule at <http://www.aqmd.gov/home/news-events/meeting-agendas-minutes> and down-loading the relevant rule board agenda item.

**Table 3-3  
Summary of Landing Rules**

Rule(s)	Focus Area	Description
218 and 218.1	Continuous Emission Monitoring / Continuous Emission Monitoring Performance Specifications  <i>Applicability:</i> equipment that require CEMS at non-RECLAIM facilities.	Revises provisions for continuous emission monitoring systems for facilities exiting RECLAIM.  <i>(In Progress)</i>
1100	Implementation Schedule for NOx Facilities  <i>Applicability:</i> equipment specified in Rules 1146 and 1146.1.	Establishes implementation schedule for RECLAIM and prior RECLAIM sources to meet applicable provisions of Landing Rules: <ul style="list-style-type: none"> <li>• Implementation schedule for equipment meeting applicability under Rules 1146 and 1146.1 <i>(Adopted December 7, 2018)</i></li> <li>• Implementation schedule for equipment meeting applicability under Rule 1110.2 <i>(Amended November 1, 2019)</i></li> </ul> This rule will be amended as necessary as a companion rule to a Landing Rule as it is amended or adopted.

Rule(s)	Focus Area	Description
1109.1	Refinery Equipment  <i>Applicability:</i> equipment emitting NOx at refineries.	Establishes NOx emission limits to reflect BARCT for equipment located at a refinery.  (In Progress)
1110.2	Emissions from Gaseous - and Liquid-Fueled Engines  <i>Applicability:</i> all stationary and portable engines over 50 rated brake horsepower.	<ol style="list-style-type: none"> <li>1. Maintains existing BARCT levels for NOx, VOC, and CO emission limits, and allows:                             <ul style="list-style-type: none"> <li>• Interim alternate emission limits for compressor gas lean-burn engines,</li> <li>• Concentration based limits for linear generator technology, and</li> <li>• Interim VOC based emission limits for certain electricity generating engines.</li> </ul> </li> <li>2. Specifies emission averaging time.</li> <li>3. Includes additional monitoring requirements for engines at former RECLAIM facilities.</li> <li>4. Revises exemptions for:                             <ul style="list-style-type: none"> <li>• Diesel engines operated at remote radio transmission sites,</li> <li>• Tuning of an engine and/or associated emission control equipment,</li> <li>• Replacement of catalytic equipment as a major repair, and</li> <li>• Diesel engines powering cranes located on offshore platforms, provided specific criteria are met.</li> </ul> </li> </ol> <p style="text-align: right;"><i>(Amended November 1, 2019)</i></p> <p><i>[Estimated emission reductions, 0.29 tons of NOx per day.]</i></p>
1117	Emissions of Oxides of Nitrogen from Glass Melting Furnaces  <i>Applicability:</i> glass melting furnaces.	Establishes NOx emission limits to reflect current BARCT  (In Progress)

Rule(s)	Focus Area	Description
1118.1	<p>Control of Emissions from Non-Refinery Flares</p> <p><i>Applicability:</i> flares located at landfills, wastewater treatment plants, oil and gas production facilities, organic liquid loading stations, tank farms, and other locations that are not a refinery.</p>	<ol style="list-style-type: none"> <li>1. Establishes emission limits to reflect current BARCT for NOx, VOC, and CO emission limits for new, replaced, or relocated flares.</li> <li>2. Establishes industry-specific capacity thresholds for existing flares. Flares that exceed the applicable capacity threshold in two consecutive calendar years shall either be modified to comply with the established limit or implement plan to reduce the amount of gas flaring.</li> <li>3. Establishes requirements for source testing, monitoring, reporting, and recordkeeping.</li> <li>4. Provides exemptions for low-use and low-emitting flares.</li> </ol> <p style="text-align: right;"><i>(Adopted January 4, 2019)</i></p> <p><i>[Estimated emission reductions: 0.18 tons of NOx per day, and 0.014 tons of VOC per day.]</i></p>
1134	<p>Emissions of Oxides of Nitrogen from Stationary Gas Turbines</p> <p><i>Applicability:</i> stationary gas turbines, 0.3 MW and larger, except turbines located at electricity generating facilities, refineries or public owned treatment works, or fueled by landfill gas.</p>	<ol style="list-style-type: none"> <li>1. Updates NOx and ammonia emission limits to reflect current BARCT, effective beginning January 1, 2024.</li> <li>2. Provides implementation timeframes to facilitate transition. <ul style="list-style-type: none"> <li>• Alternative compliance date for compressor gas turbines, provided the facility demonstrates 25% or more NOx emission reductions beginning December 31, 2023.</li> <li>• Extension of up to 36 months to comply with ammonia emission limits, provided an ammonia continuous emissions monitoring system is installed and the turbine operates less than one thousand hours per year.</li> </ul> </li> <li>3. Revise monitoring, reporting, and recordkeeping requirements</li> <li>4. Provide exemptions for units that are shown to be not cost effective for retrofit or replacement: <ul style="list-style-type: none"> <li>• Low-use turbines, and</li> <li>• Turbines achieving emissions close to the established limit.</li> </ul> </li> </ol> <p style="text-align: right;"><i>(Amended April 5, 2019)</i></p> <p><i>[Estimated emission reductions: 2.8 tons of NOx per day.]</i></p>

Rule(s)	Focus Area	Description
1135	<p>Emissions of Oxides of Nitrogen from Electricity Generating Facilities</p> <p><i>Applicability:</i> electric generating units at electricity generating facilities.</p>	<ol style="list-style-type: none"> <li>1. Updates emission limits to reflect current BARCT:                             <ul style="list-style-type: none"> <li>• NOx and ammonia emission limits for boilers and gas turbines, and</li> <li>• NOx, ammonia, carbon monoxide, volatile organic compounds, and particulate matter for internal combustion engines.</li> </ul> </li> <li>2. Revise monitoring, reporting, and recordkeeping requirements.</li> <li>3. Provide exemptions for units that are shown to be not cost effective for retrofit:                             <ul style="list-style-type: none"> <li>• Low-use units,</li> <li>• Units achieving emissions close to the established limits, and</li> <li>• Units required to be shut down in the near term.</li> </ul> </li> </ol> <p style="text-align: right;"><i>(Amended November 2, 2018)</i></p> <p><i>[Estimated emission reductions: 1.7 tons of NOx per day.]</i></p>

Rule(s)	Focus Area	Description
<p>1146, 1146.1, and 1146.2</p>	<p>Emissions of Oxides of Nitrogen from:</p> <p>Rule 1146 - Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters</p> <p><i>Applicability:</i> boilers, process heaters, and steam generators that are greater than or equal to 5 MMBtu/hr.</p> <p>Rule 1146.1 - Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters</p> <p><i>Applicability:</i> boilers, process heaters, and steam generators that are greater than 2 MMBtu/hr or and less than 5 MMBtu/hr.</p> <p>Rule 1146.2 - Large Water Heaters and Small Boilers and Process Heaters</p> <p><i>Applicability:</i> boilers, process heaters, and steam generators that are greater than 400,000 and less than or equal to 2 MMBtu/hr.</p>	<p>1. For Rule 1146 and 1146.1 facilities:</p> <ul style="list-style-type: none"> <li>• Updates emission limits to reflect current BARCT. <ul style="list-style-type: none"> <li>➤ NOx and ammonia emission limits for boilers, steam generators, and heaters</li> </ul> </li> <li>• Specifies compliance schedule in Rule 1100.</li> </ul> <p>2. For Rule 1146.2 units:</p> <ul style="list-style-type: none"> <li>• Comply with the 30 ppm limit by December 31, 2023, if a technology assessment (to be completed by January 1, 2022) determines that the NOx emission limits specified in Rule 1146.2 still represent BARCT.</li> </ul> <p style="text-align: right;"><i>(Amended December 7, 2018)</i></p> <p><i>[Estimated emission reductions: 0.31 tons of NOx per day.]</i></p>
<p>1147</p>	<p>NOx Reductions from Miscellaneous Sources</p> <p><i>Applicability:</i> miscellaneous equipment that require a District permit but not regulated by other Regulation XI rules.</p>	<p>1. Removes equipment that will be regulated under Proposed Rules 1147.1, 1147.2, and 1147.3.</p> <p>2. Evaluates existing NOx emission limits.</p> <p style="text-align: right;"><i>(In Progress)</i></p>

Rule(s)	Focus Area	Description
1147.1	NOx Reductions from Large Miscellaneous Combustion  <i>Applicability: large miscellaneous equipment</i>	Establishes NOx emission limits to reflect current BARCT.  <i>(In Progress)</i>
1147.2	NOx Reductions from Metal Processing Equipment  <i>Applicability: metal melting and heat-treating furnaces.</i>	Establishes NOx emission limits to reflect current BARCT.  <i>(In Progress)</i>
1147.3	Aggregate Facilities  <i>Applicability: aggregate facilities.</i>	Establishes NOx emission limits to reflect current BARCT.  <i>(In Progress)</i>
1153.1	Emissions of Oxides of Nitrogen from Commercial Food Ovens  <i>Applicability: commercial food ovens.</i>	Establishes NOx emission limits to reflect current BARCT.  <i>(In Progress)</i>
2001	Applicability  <i>Applicability: facilities operating under the RECLAIM program</i>	<ol style="list-style-type: none"> <li>1. Prevents new NOx RECLAIM facility inclusions as of January 5, 2018. <i>(Amended January 5, 2018)</i></li> <li>2. Allows facilities to opt-out of RECLAIM, if certain conditions are met. <i>(Amended October 5, 2018)</i></li> <li>3. Removes the opt-out provision for RECLAIM facilities until all rules associated with the transition to a command-and-control regulatory structure have been adopted and approved into the SIP. <i>(Amended July 12, 2019)</i></li> </ol>

Rule(s)	Focus Area	Description
2002	<p>Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx)</p> <p><i>Applicability:</i> facilities operating under the RECLAIM program.</p>	<ol style="list-style-type: none"> <li>1. Establishes NOx RECLAIM facility exit notification requirements.</li> <li>2. Requires exited facilities to provide emission reduction credits to offset any NOx emissions increases, until New Source Review provisions governing NOx emission calculations and offsets are amended.</li> <li>3. Prohibits exited facilities from selling or transferring future compliance year RECLAIM Trading Credits.</li> </ol> <p style="text-align: right;"><i>(Amended January 5, 2018)</i></p> <ol style="list-style-type: none"> <li>1. Provides option for facilities that received an initial determination notification to stay in RECLAIM for a limited time.</li> <li>2. Establishes requirement for facilities issued a final determination to be transitioned out of the NOx RECLAIM program to provide emission reduction credits to offset any NOx emissions increases, calculated pursuant to Rule 1306, notwithstanding the exemptions contained in Rule 1304 and requirements in Rule 1309.1 until New Source Review provisions governing NOx emission calculations and offsets are amended to address former RECLAIM sources.</li> </ol> <p style="text-align: right;"><i>(Amended October 5, 2018)</i></p>
2005	<p>New Source Review for RECLAIM</p> <p><i>Applicability:</i> facilities operating under the RECLAIM program</p>	<ol style="list-style-type: none"> <li>1. Allows for New Source Review provisions to address facilities that are transitioning from RECLAIM to command-and-control.</li> <li>2. Amendments to Regulation XIII may be needed to address New Source Review provisions for facilities that transition out of RECLAIM.</li> </ol> <p style="text-align: right;"><i>(In Progress)</i></p>

Monthly working group meetings continue to be held, as necessary, to further discuss steps for transitioning the remaining RECLAIM facilities to a command-and-control structure, and to develop necessary rule amendments to implement BARCT for the exiting RECLAIM facilities. Since the RECLAIM universe includes many different industries, separate working groups have been formed to address and develop these different BARCT Landing Rules. Completion of the development efforts for the remaining Landing Rules is now targeted for the first quarter in 2021. The current plan is to transition NOx RECLAIM sources after the New Source Review provisions are addressed by a rule amendment and all NOx Landing Rules have been adopted and approved by EPA into the SIP.

### Breakdowns

Pursuant to Rule 2004(i) – Breakdown Provisions, a facility may request that emission increases due to a breakdown not be counted towards the facility’s

allocations. In order to qualify for such exclusion, the facility must demonstrate that the excess emissions were the result of a fire or a mechanical or electrical failure caused by circumstances beyond the facility's reasonable control. The facility must also take steps to minimize emissions resulting from the breakdown, and mitigate the excess emissions to the maximum extent feasible. Applications for exclusion of unmitigated breakdown emissions from a facility's total reported annual RECLAIM emissions must be approved or denied in writing by South Coast AQMD. In addition, facilities are required to quantify unmitigated breakdown emissions for which an exclusion request has been approved in their APEP report.

As part of the annual program audit report, Rule 2015(d)(3) requires South Coast AQMD to determine whether excess emissions approved to be excluded from RTC reconciliation have been programmatically offset by unused RTCs within the RECLAIM program. If the breakdown emissions exceed the total unused RTCs within the program, any excess breakdown emissions must be offset by either: (1) deducting the amount of emissions not programmatically offset from the RTC holdings for the subsequent compliance year from facilities that had unmitigated breakdown emissions, proportional to each facility's contribution to the total amount of unmitigated breakdown emissions; and/or (2) RTCs obtained by the Executive Officer for the compliance year following the completion of the annual program audit report in an amount sufficient to offset the unmitigated breakdown emissions.

As shown in Table 3-4, a review of APEP reports for Compliance Year 2018 found that no facilities requested to exclude breakdown emissions from being counted against their allocations. Thus, for Compliance Year 2018, no additional RTCs are required to offset breakdown emissions pursuant to Rule 2015(d)(3).

**Table 3-4  
Breakdown Emission Comparison for Compliance Year 2018**

<b>Pollutant</b>	<b>Compliance Year 2018 Unused RTCs (tons)</b>	<b>Unmitigated Breakdown Emissions<sup>1</sup> (tons)</b>	<b>Remaining Compliance Year 2018 RTCs (tons)</b>
NOx	1,872	0	1,872
SOx	340	0	340

<sup>1</sup> Data for unmitigated breakdown emissions (not counted against Allocation) as reported under APEP reports.

### Impact of Changing Universe

In general, changes to the universe of RECLAIM facilities have the potential to impact emissions and the supply and demand of RTCs, and, therefore, may impact RECLAIM emission reduction goals. Facilities exiting the RECLAIM program result in their emissions not being accounted and therefore diminish the



demand of RTCs while the facility operator may retain their RTCs<sup>4</sup>. On the other hand, facilities entering the program add to the accounting of emissions and increase the demand of RTCs while they may or may not be issued Allocations to account for their historical activities<sup>5</sup>. However, the Governing Board amended Rule 2001 on January 5, 2018 to preclude any facility from entering the RECLAIM program.

As discussed in Chapter 1, during Compliance Year 2018, no facilities were included and two facilities opted out<sup>6</sup> of (*i.e.*, excluded from) the NOx universe, three facilities (three NOx only facilities and no NOx and SOx facility) shut down, and no facilities were included or excluded from the SOx universe. The two facilities opting out have the same impact on RECLAIM emission reduction goals as facility shutdowns with the overall demand for RTCs being reduced while the supply remains constant.

Compliance Year 2018 NOx and SOx audited emissions and initial Compliance Year 2018 allocations for facilities that were shut down, excluded, or included into the program during Compliance Year 2018 are summarized in Tables 3-5 and 3-6.

**Table 3-5**  
**NOx Emissions Impact from the Changes in Universe (Tons)**

Category	Compliance Year 2018 NOx Emissions (tons)	Initial Compliance Year 2018 NOx Allocations (tons)
Shutdown Facilities	2.52	58.2
Excluded Facilities	0.57	20.0
Included Facilities	Not applicable	Not applicable
RECLAIM Universe	6,740	8,612

**Table 3-6**  
**SOx Emissions Impact from the Changes in Universe (Tons)**

Category	Compliance Year 2018 SOx Emissions (tons)	Initial Compliance Year 2018 SOx Allocations (tons)
Shutdown Facilities	Not applicable	Not applicable
Excluded Facilities	Not applicable	Not applicable
Included Facilities	Not applicable	Not applicable
RECLAIM Universe	2,134	2,474

<sup>4</sup> Rule 2002(i) as amended in October 2016, requires the reduction of the RTC holdings of a shutdown facility that is listed in Tables 7 or 8 of Rule 2002 by an amount equivalent to the emissions above the most stringent BARCT level (see discussion in Chapter 2).

<sup>5</sup> When an existing facility enters the program, it is issued RTC allocations based on its operational history pursuant to the methodology prescribed in Rule 2002.

<sup>6</sup> In July 2019, the Governing Board also amended Rule 2001 to remove the possibility of a RECLAIM facility opting out of the program.

## **Backstop Provisions**

Rule 2015 requires that South Coast AQMD review the RECLAIM program and implement necessary measures to amend it whenever aggregate emissions exceed the aggregate allocations by five percent or more. Compliance Year 2018 aggregate NOx and SOx emissions were both below aggregate allocations as shown in Figures 3-1 and 3-2. Therefore, there is no need to initiate a program review due to emissions exceeding aggregate allocation in Compliance Year 2018.

## CHAPTER 4

### NEW SOURCE REVIEW ACTIVITY

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#### Summary

*The annual program audit assesses New Source Review (NSR) activity from RECLAIM facilities in order to ensure that RECLAIM is complying with federal NSR requirements and state no net increase (NNI) in emissions requirements while providing flexibility to facilities in managing their operations and allowing new sources into the program. In Compliance Year 2018, a total of three NO<sub>x</sub> RECLAIM facilities had NSR NO<sub>x</sub> emission increases, and no SO<sub>x</sub> RECLAIM facilities had an NSR SO<sub>x</sub> emission increase due to expansion or modification. Consistent with all prior compliance years, there were sufficient NO<sub>x</sub> and SO<sub>x</sub> RTCs available to allow for expansion, modification, and modernization by RECLAIM facilities.*

*RECLAIM is required to comply with federal NSR emissions offset requirements at a 1.2-to-1 offset ratio programmatically for NO<sub>x</sub> emission increases and a 1-to-1 offset ratio for SO<sub>x</sub> emission increases on a programmatic basis. In Compliance Year 2018, RECLAIM demonstrated federal equivalency with a programmatic NO<sub>x</sub> offset ratio of 1,466-to-1 based on the compliance year's total unused allocations and total NSR emission increases for NO<sub>x</sub>. There were no SO<sub>x</sub> NSR emission increases that resulted from starting operations of new or modified permitted sources during the compliance year. RECLAIM inherently complies with the federally-required 1-to-1 SO<sub>x</sub> offset ratio for any compliance year, provided aggregate SO<sub>x</sub> emissions under RECLAIM are lower than or equal to aggregate SO<sub>x</sub> allocations for that compliance year. As shown in Chapter 3 (Table 3-2 and Figure 3-2), there was a surplus of SO<sub>x</sub> RTCs during Compliance Year 2018. Therefore, RECLAIM more than complied with the federally-required SO<sub>x</sub> offset ratio and further quantification of the SO<sub>x</sub> offset ratio is unnecessary. Also, the NNI is satisfied by the program's 1-to-1 offset ratio. In addition, RECLAIM requires application of, at a minimum, California Best Available Control Technology (BACT), which is at least as stringent as federal Lowest Achievable Emission Rate (LAER) for major sources. The same BACT guidelines are used to determine BACT applicable to RECLAIM and non-RECLAIM facilities.*

#### Background

Emissions increases from the construction of new or modified stationary sources in non-attainment areas are regulated by both federal NSR and state NNI requirements to ensure that progress toward attainment of ambient air quality standards is not hampered. RECLAIM is designed to comply with federal NSR

and state NNI requirements without hindering facilities' ability to expand or modify their operations<sup>1</sup>.

Title 42, United States Code §7511a, paragraph (e), requires major sources in extreme non-attainment areas to offset emission increases of extreme non-attainment pollutants and their precursors at a 1.5-to-1 ratio based on potential to emit. However, if all major sources in the extreme non-attainment area are required to implement federal BACT, a 1.2-to-1 offset ratio may be used. Federal BACT is comparable to California's BARCT. South Coast AQMD requires all major sources to employ federal BACT/California BARCT at a minimum and, therefore, is eligible for a 1.2-to-1 offset ratio for ozone precursors (*i.e.*, NO<sub>x</sub> and VOC).

The federal offset requirement for major SO<sub>2</sub> sources is at least a 1-to-1 ratio, which is lower than the aforementioned 1.2-to-1 ratio. Even though the Basin is in attainment with SO<sub>2</sub> standards, SO<sub>x</sub> is a precursor to PM<sub>2.5</sub>. The Basin is in Serious Non-attainment with 2006 Federal 24-hours standard and 2012 Federal annual standard for PM<sub>2.5</sub>. The applicable offset ratio for PM<sub>2.5</sub> is at least 1-to-1, thus, the applicable offset ratio for SO<sub>x</sub> is 1-to-1. Health and Safety Code §40920.5 requires "no net increase in emissions from new or modified stationary sources of nonattainment pollutants or their precursors" (*i.e.*, a 1-to-1 offset ratio on an actual emissions basis). All actual RECLAIM emissions are offset at a 1-to-1 ratio provided there is not a programmatic exceedance of aggregate allocations, thus satisfying the federal offset ratio for SO<sub>x</sub> and state NNI requirements for both SO<sub>x</sub> and NO<sub>x</sub>. Annual RTC allocations follow a programmatic reduction to reflect changes in federal BACT/California BARCT and thereby comply with federal and state offset requirements.

RECLAIM requires, at a minimum, California BACT for all new or modified sources with increases in hourly potential to emit of RECLAIM pollutants. South Coast AQMD uses the same BACT guidelines in applying BACT to both RECLAIM and non-RECLAIM facilities. Furthermore, BACT for major sources is at least as stringent as LAER (LAER is not applicable to minor facilities as defined in Rule 1302(t)). Thus, RECLAIM complies with both state and federal requirements regarding control technologies for new or modified sources. In addition to offset and BACT requirements, RECLAIM subjects RTC trades that are conducted to mitigate emissions increases over the sum of the facility's starting allocation and non-tradable/non-usable credits to trading zone restrictions to ensure net ambient air quality improvement within the sensitive zone established by Health and Safety Code §40410.5. Furthermore, facilities with actual RECLAIM emissions that exceed their initial allocation by 40 tons per year or more are required to analyze the potential impact of their emissions increases through air quality modeling.

Rule 2005 – New Source Review for RECLAIM requires RECLAIM facilities to provide (hold), prior to the start of operation, sufficient RTCs to offset the annual increase in potential emissions for the first year of operation at a 1-to-1 ratio.

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<sup>1</sup> Federal NSR applies to federal major sources (sources with the potential to emit at least 10 tons of NO<sub>x</sub> or 70 tons of SO<sub>x</sub> per year for the South Coast Air Basin) and state NNI requirements apply to all NO<sub>x</sub> sources and to SO<sub>x</sub> sources with the potential to emit at least 15 tons per year in the South Coast Air Basin. RECLAIM's NSR provisions apply to all facilities in the program, including those not subject to federal NSR or state NNI. (Although the threshold for RECLAIM inclusions is four tons per year of NO<sub>x</sub> or SO<sub>x</sub> emissions, some RECLAIM facilities have actual emissions much less than 4 tons per year).

The same rule also requires all new RECLAIM facilities<sup>2</sup> and all other RECLAIM facilities that increase their annual allocations above the level of their starting allocations plus non-tradable/non-usable credits to provide sufficient RTCs to offset the annual potential emissions increase from new or modified source(s) at a 1-to-1 ratio at the commencement of each compliance year after the start of operation of the new or modified source(s). Although RECLAIM allows a 1-to-1 offset ratio for emissions increases, RECLAIM complies with the federal 1.2-to-1 offset requirement for NOx on an aggregate basis as explained. This annual program audit report assesses NSR permitting activities for Compliance Year 2018 to verify that programmatic compliance of RECLAIM with federal and state NSR requirements has been maintained.

## NSR Activity

Evaluation of NSR data for Compliance Year 2018 shows that RECLAIM facilities were able to expand and modify their operations while complying with NSR requirements. During Compliance Year 2018, a total of three NOx RECLAIM facilities (two in Cycle 1 and one in Cycle 2) were issued permits to operate, which resulted in a total of 1.278 tons per year of NOx emission increases from starting operations of new or modified sources. There were no SOx NSR emission increases that resulted from starting operations of new or modified permitted sources. These emission increases were calculated pursuant to Rule 2005(d) – Emission Increase. As in previous years, there were adequate unused RTCs (NOx: 1,872 tons, SOx: 340 tons; see Chapter 3) in the RECLAIM universe available for use to offset emission increases at the appropriate offset ratios.

## NSR Compliance Demonstration

RECLAIM is designed to programmaticly comply with the federal NSR offset requirements. Meeting the NSR requirement (offset ratio of 1.2-to-1 for NOx and at least 1-to-1 for SOx) also demonstrates compliance with the state NNI requirements. Section 173 (c) of the federal Clean Air Act (CAA) states that only emissions reductions beyond the requirements of the CAA, such as federal Reasonably Available Control Technology (RACT), shall be considered creditable as emissions reductions for offset purposes. Since the initial allocations (total RTC supply in Compliance Year 1994) already met federal RACT requirements when the program was initially implemented, any emissions reductions beyond the initial allocations are available for NSR offset purposes until RACT becomes more stringent. The programmatic offset ratio calculations presented in the Annual RECLAIM Audit Reports for Compliance Years 1994 through 2004 relied upon aggregate Compliance Year 1994 allocations as representing RACT. However, staff recognizes that RACT may have become more stringent in the intervening years, so it may no longer be appropriate to calculate the programmatic offset ratio based upon aggregate 1994 allocations.

Aggregate allocations for each compliance year represent federal BACT, which is equivalent to local BARCT. Federal BACT is more stringent than federal RACT (*i.e.*, the best available control technology is more stringent than what is reasonably available), so staff started using current allocations (federal BACT) as

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<sup>2</sup> New facilities are facilities that received all South Coast AQMD Permits to Construct on or after October 15, 1993.

a surrogate for RACT as the basis for calculating programmatic NOx and SOx offset ratios in the annual program audit report for Compliance Year 2005 and is continuing to do so for NOx in this report. This is a more conservative (*i.e.*, more stringent) approach than using actual RACT and is much more conservative than using aggregate Compliance Year 1994 allocations. The advantage of this approach is that, as long as the calculated NOx offset ratio is at least 1.2-to-1, it provides certainty that RECLAIM has complied with federal and state offset requirements without the need to know exactly what RACT is for RECLAIM facilities. However, if this very conservative approach should ever fail to demonstrate that the aggregate NOx offset ratio for any year is at least 1.2-to-1, that will not necessarily mean RECLAIM has not actually complied with the federally required 1.2-to-1 NOx offset ratio. Rather it will indicate that further analysis is required to accurately identify RACT so that the actual offset ratio can be calculated, and a compliance determination made.

Provided aggregate RECLAIM emissions do not exceed aggregate allocations, all RECLAIM emissions are offset at a ratio of 1-to-1. This leaves all unused allocations available to provide offsets beyond the 1-to-1 ratio for NSR emission increases. Unused allocations are based on all Cycle 1 and Cycle 2 RTCs of a given compliance year and the aggregate RECLAIM emissions for the selected time period. The NSR emission increase is the sum of emission increases due to permit activities at all RECLAIM facilities during the same compliance year. The aggregate potential RECLAIM offset ratios are expressed by the following formula:

$$\text{Offset Ratio} = \left( 1 + \frac{\text{compliance year's total unused allocations}}{\text{total NSR emission increases}} \right)\text{-to-1}$$

As stated in the previous section under the title of "NSR Activity", permits to operate issued to three RECLAIM facilities resulted in 1,278 tons of NOx emission increase pursuant to Rule 2005(d). Additionally, as identified in Table 3-1 (Annual NOx Emissions for Compliance Years 1994 through 2018), 1,872 tons of Compliance Year 2018 NOx RTCs remained unused. Therefore, the Compliance Year 2018 NOx programmatic offset ratio calculated from this methodology is 1,466-to-1 as shown below:

$$\begin{aligned} \text{NOx Offset Ratio} &= \left( 1 + \frac{1,872 \text{ tons}}{1,278 \text{ tons}} \right)\text{-to-1} \\ &= 1,466\text{-to-1} \end{aligned}$$

RECLAIM continues to generate sufficient excess emission reductions to provide a NOx offset ratio greater than the 1.2-to-1 required by federal law. Since RECLAIM does not dedicate all unused RTCs to NSR uses in any given year, it does not actually provide a 1,466-to-1 offset ratio; but this analysis does demonstrate that RECLAIM provides more than enough unused RTCs to account for the 1.2-to-1 required offset ratio. This compliance with the federal offset requirements is built into the RECLAIM program through annual reductions of the

allocations assigned to RECLAIM facilities and the subsequent allocation adjustments adopted by the Governing Board to implement BARCT. The required offset ratio for SOx is 1-to-1. Since RECLAIM facilities are required to secure, at a minimum, adequate RTCs to cover their actual emissions, the SOx 1-to-1 offset ratio is met automatically provided there is no programmatic exceedance of aggregate SOx allocations for that compliance year. As stated earlier in Chapter 3, there were 340 tons of excess (unused) SOx RTCs for Compliance Year 2018. Since there were no SOx emission increases that resulted from starting operations of new or modified permitted sources during the compliance year, there is certainty that both the federally required SOx offset ratio and the California NNI requirement for SOx were satisfied.

BACT and modeling are also required for any RECLAIM facility that installs new equipment or modifies sources if the installation or modification results in an increase in emissions of RECLAIM pollutants. Furthermore, the RTC trading zone restrictions in Rule 2005 – New Source Review for RECLAIM, limit trades conducted to offset emission increases over the sum of the facility's starting allocation and non-tradable/non-usable credits to ensure net ambient air quality improvement within the sensitive zone, as required by state law.

The result of the review of NSR activity in Compliance Year 2018 shows that RECLAIM is in compliance with both state NNI and federal NSR requirements. South Coast AQMD staff will continue to monitor NSR activity under RECLAIM in order to assure continued progress toward attainment of ambient air quality standards without hampering economic growth in the Basin.

## Modeling Requirements

Rule 2004, as amended in May 2001, requires RECLAIM facilities with actual NOx or SOx emissions exceeding their initial allocation in Compliance Year 1994 by 40 tons per year or more to conduct modeling to analyze the potential impact of the increased emissions. The modeling analysis is required to be submitted within 90 days of the end of the compliance year. For Compliance Year 2018, three RECLAIM facilities were subject to the 40-ton modeling requirement; one facility for NOx emissions, and two for SOx emissions.

This modeling is performed with an USEPA approved air dispersion model to assess the impact of a facilities NOx or SOx emission increase on compliance with all applicable state and federal ambient air quality standards (AAQS). Air dispersion modeling submitted by each facility is reviewed by staff and revised as necessary to comply with South Coast AQMD's air dispersion modeling procedures including use of appropriate meteorological data for the facility location. Per Rule 2004 (q)(3), the modeling submitted by a facility must include source parameters and emissions for every major source located at the facility. For comparison against applicable state and federal AAQS, the predicted modeling impacts due to a facility's NOx or SOx emission increases are added to the highest background NOx or SOx concentration measured at the nearest ambient air monitoring station during the previous three years. Modeling runs are performed with worst-case emissions data for averaging periods that coincide with the averaging period of each applicable AAQS (e.g., 1-hr, 24-hr, annual).

Both SOx facilities, which had initial SOx allocations in 1994 and exceeded their initial allocations by more than 40 tons in Compliance Year 2018, submitted

modeling that demonstrated that SO<sub>x</sub> emissions from their major sources during 2018 will not cause an exceedance of any state or federal SO<sub>2</sub> AAQS. The NO<sub>x</sub> facility had an initial NO<sub>x</sub> allocation in 1994 and exceeded this initial allocation by more than 40 tons in Compliance Year 2018. This facility submitted modeling that demonstrated that NO<sub>x</sub> emissions from their major sources during 2018 will not cause an exceedance of any state or federal NO<sub>2</sub> AAQS.



## CHAPTER 5 COMPLIANCE

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### Summary

*Based on South Coast AQMD Compliance Year 2018 audit results, 254 of the 269 (94%) NO<sub>x</sub> RECLAIM facilities complied with their NO<sub>x</sub> allocations, and 31 of the 32 SO<sub>x</sub> facilities (97%) complied with their SO<sub>x</sub> allocations based on South Coast AQMD audit results. So, sixteen facilities exceeded their allocations (15 facilities exceeded their NO<sub>x</sub> allocations, and one facility exceeded its SO<sub>x</sub> allocation). The 15 facilities that exceeded their NO<sub>x</sub> allocations had aggregate NO<sub>x</sub> emissions of 454.4 tons and did not have adequate allocations to offset 30.4 tons (or 6.7%) of their combined emissions. The facility that exceeded its SO<sub>x</sub> allocations had total SO<sub>x</sub> emissions of 0.50 tons and did not have adequate allocations to offset 0.29 tons (or 58.0%). The NO<sub>x</sub> and SO<sub>x</sub> exceedance amounts are relatively small compared to the overall NO<sub>x</sub> and SO<sub>x</sub> allocations for Compliance Year 2018 (0.35% of total NO<sub>x</sub> allocations and 0.01% of total SO<sub>x</sub> allocations). The exceedances from these facilities did not impact the overall RECLAIM emission reduction goals. The overall RECLAIM NO<sub>x</sub> and SO<sub>x</sub> emission reduction targets and goals were met for Compliance Year 2018 (i.e., aggregate emissions for all RECLAIM facilities were well below aggregate allocations). Pursuant to Rule 2010(b)(1)(A), these facilities had their respective exceedances deducted from their annual allocations for the compliance year subsequent to the date of South Coast AQMD's determination that the facilities exceeded their Compliance Year 2018 allocations.*

### Background

RECLAIM facilities have the flexibility to choose among compliance options to meet their annual allocations by reducing emissions, trading RTCs, or a combination of both. However, this flexibility must be supported by standardized emission MRR requirements to ensure the reported emissions are real, quantifiable, and enforceable. As a result, detailed MRR protocols are specified in the RECLAIM regulation to provide accurate and verifiable emission reports.

The MRR requirements are designed to provide accurate and up-to-date emission reports. Once facilities install and complete certification of the required monitoring and reporting equipment, they are relieved from command-and-control rule limits and requirements subsumed under Rule 2001. Mass emissions from RECLAIM facilities are then determined directly by monitoring and reporting equipment for some sources and from data generated by monitoring equipment for others. If monitoring equipment fails to produce quality-assured data or the facility fails to file timely emissions reports, RECLAIM rules require emissions be determined by a rule-prescribed methodology known as Missing Data Procedures or "MDP." Depending on past performance of the monitoring equipment (i.e., availability of quality-assured data) and the duration of the missing data period, MDP use a tiered approach to calculate emissions. As availability of quality-assured data increases, the MDP-calculated emissions become more representative of the actual emissions, but when the availability of

quality-assured data is low, MDP calculations become more conservative and approach, to some extent, "worst case" assessments.

## Allocation Compliance

### Requirements

At the beginning of the RECLAIM program in 1994 or at the time a facility is included in the RECLAIM program, each RECLAIM facility is issued an annual allocation for each compliance year pursuant to methodology prescribed in Rule 2002. A facility in existence prior to October 1993 is issued allocations by South Coast AQMD based on its historical production rate. A facility without an operating history prior to 1994 receives no allocation and must purchase enough RTCs to cover the emissions for their operations, except facilities that have ERCs to offset emission increases prior to entering RECLAIM are issued RTCs generated by converting the surrendered ERCs to RTCs. Additionally, all facilities entering RECLAIM holding any ERCs generated at and held by the individual facility itself have those ERCs converted to RTCs and added to their allocated RTCs. Knowing their emission goals, RECLAIM facilities have the flexibility to manage their emissions in order to meet their allocations in the most cost-effective manner. Facilities may employ emission control technology or process changes to reduce emissions, buy RTCs, or sell unneeded RTCs.

Facilities may buy RTCs or sell excess RTCs at any time during the year in order to ensure that their emissions are covered. There is a thirty-day reconciliation period commencing at the end of each of the first three quarters of each compliance year. In addition, after the end of each compliance year, there is a 60-day reconciliation period (instead of 30 days as at the end of the first three quarters) during which facilities have a final opportunity to buy or sell RTCs for that compliance year. These reconciliation periods are provided for facilities to review and correct their emission reports as well as securing adequate allocations. Each RECLAIM facility must hold sufficient RTCs in its allocation account to cover (or reconcile with) its quarterly as well as year-to-date emissions for the compliance year at the end of each reconciliation period. By the end of each quarterly and annual reconciliation period, each facility is required to certify the emissions for the preceding quarter and/or compliance year by submitting its Quarterly Certification of Emissions Reports (QCERs) and/or Annual Permit Emissions Program (APEP) report, respectively.

### Compliance Audit

Since the beginning of the program, South Coast AQMD staff has conducted annual audits of each RECLAIM facility's emission reports to ensure their integrity and reliability. All facilities that submitted emission reports during a compliance year are subject to compliance audits, even for those that are shutdown or have a change of operator. This results in additional facility audits over the number of active facilities in the universe at the end of a compliance year. For Compliance Year 2018, a total of 269 facility audits were completed. The audit process includes conducting field inspections to check process equipment, monitoring devices, and operational records. Additionally, emissions calculations are performed in order to verify emissions reported electronically to South Coast AQMD or submitted in QCERs and APEP reports. For Compliance Year 2018, these inspections revealed that some facilities did not obtain or

record valid monitoring data, failed to submit emission reports when due, made errors in quantifying their emissions (e.g., arithmetic errors), used incorrect emission and adjustment factors (e.g., bias adjustment factors), failed to correct fuel usage to standard conditions, used emission calculation methodologies not allowed under the rules, or failed to properly apply MDP. Appropriate compliance actions are taken based on audit findings.

Whenever an audit revealed a facility's emissions to be in excess of its annual allocation, the facility was provided an opportunity to review the audit and to present additional data to further refine audit results. This extensive and rigorous audit process ensures valid and reliable emissions data.

### **Compliance Status**

During this compliance year, a total of 16 RECLAIM facilities failed to reconcile their emissions (15 NOx-only facilities and one NOx-and-SOx facility that exceeded its SOx allocations). Eleven of these 16 facilities (10 NOx-only facilities and one NOx-and-SOx facility) failed to acquire adequate RTCs to offset their reported emissions. The remaining five NOx-only facilities exceeded allocations based on their audited emissions.

Based on audit findings, eight NOx-only facilities and zero NOx-and-SOx facilities were found to have under-reported their emissions and didn't hold sufficient RTCs to reconcile their audited emissions. Among the eight facilities found to have under-reported their emissions, the reasons for the under-reporting include one or more of the following causes:

- mathematical error,
- misread fuel meter,
- use of incorrect emission factor, and
- failure to properly apply missing data procedures.

Overall, the Compliance Year 2018 allocation compliance rates for facilities are 94% (254 out of 269 facilities) for NOx RECLAIM and 97% (31 out of 32 facilities) for SOx RECLAIM<sup>1</sup>. For purposes of comparison, the allocation compliance rates for Compliance Year 2017 were 95% and 90% for NOx and SOx RECLAIM facilities, respectively. In Compliance Year 2018, the 15 facilities that had NOx emissions in excess of their individual NOx allocations had 454.4 tons of NOx emissions and didn't have adequate RTCs to cover 30.4 of those tons (or 6.7% of their total emissions). The SOx facility that exceeded its SOx allocation had total SOx emissions of 0.50 tons and didn't have adequate allocations to offset 0.29 tons (or 58.0% of their total emissions). The NOx and SOx exceedance amounts are relatively small compared to the overall allocations for Compliance Year 2018 (0.35% of aggregate NOx allocations and 0.01% of aggregate SOx allocations). Pursuant to Rule 2010(b)(1)(A), all 16 facilities had their respective NOx or SOx Allocation exceedances deducted from their annual emissions allocations for the compliance year subsequent to South Coast AQMD's

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<sup>1</sup> Compliance rates for both NOx and SOx are based on 269 NOx and 32 SOx completed audits, respectively.

determination that the facilities exceeded their Compliance Year 2018 allocations.

### **Impact of Missing Data Procedures**

MDP was designed to provide a method for determining emissions when an emission monitoring system does not yield valid emissions. For major sources, these occurrences may be caused by failure of the monitoring systems, the data acquisition and handling systems, or by lapses in the Continuous Emissions Monitoring System (CEMS) certification period. Major sources are also required to use MDP for determining emissions whenever daily emissions reports are not submitted by the applicable deadline. When comparing actual emissions with a facility's use of substituted MDP emissions, the range of MDP emissions can vary from "more representative" to being overstated to reflect a "worst case"<sup>2</sup> scenario. For instance, an MDP "worst case" scenario may occur for major sources that fail to have their CEMS certified in a timely manner, and therefore, have no valid CEMS data that can be used for substitution. In other cases, where prior CEMS data is available, MDP is applied in tiers depending on the duration of missing data periods and the historical availability of monitoring systems. As the duration of missing data periods gets shorter and the historical availability of monitoring systems gets higher, the substitute data yielded by MDP becomes more representative of actual emissions<sup>3</sup>.

In addition to MDP for major sources, RECLAIM rules also define MDP for large sources and process units. These procedures are applicable when a process monitoring device fails or when a facility operator fails to record fuel usage or other monitored data (e.g., hours of operation). The resulting MDP emissions reports are reasonably representative of the actual emissions because averaged or maximum emissions from previous operating periods may be used. However, for extended missing data periods (more than two months for large sources or four quarters or more for process units) or when emissions data for the preceding year are unavailable, large source and process unit MDP are also based on maximum operation or worst-case assumptions.

Based on APEP reports, 90 NO<sub>x</sub> facilities and 16 SO<sub>x</sub> facilities used MDP in reporting portions of their annual emissions during Compliance Year 2018. In terms of mass emissions, 3.7% of the total reported NO<sub>x</sub> emissions and 7.0% of the total reported SO<sub>x</sub> emissions in the APEP reports were calculated using MDP for Compliance Year 2018. Table 5-1 compares the impact of MDP on reported annual emissions for the last few compliance years to the second compliance year, 1995 (MDP was not fully implemented during Compliance Year 1994).

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<sup>2</sup> Based on uncontrolled emission factor at maximum rated capacity of the source and 24 hours per day.

<sup>3</sup> Based on averaged emissions during periods before and after the period for which data is not available.

**Table 5-1**  
**MDP Impact on Annual Emissions**

Year	Percent of Reported Emissions Using Substitute Data *	
	NOx	SOx
1995	23.0% (65 ; 6,070)	40.0% (12 ; 3,403)
2010	7.0% (93 ; 488)	6.1% (23 ; 168)
2011	6.2% (94 ; 435)	12.4% (19 ; 328)
2012	7.5% (95 ; 560)	4.5% (13 ; 114)
2013	3.9% (107 ; 287)	5.6% (15 ; 113)
2014	3.3% (97 ; 247)	3.0% (13 ; 66)
2015	6.9% (98 ; 502)	10.9% (14 ; 229)
2016	3.9% (91 ; 288)	6.2% (14 ; 125)
2017	3.8% (92 ; 273)	6.3% (15 ; 126)
2018	3.7% (90 ; 252)	7.0% (16 ; 150)

\* Numbers in parentheses that are separated by a semicolon represent the number of facilities that reported use of MDP in each compliance year and tons of emissions based on MDP.

Most of the issues associated with CEMS certifications were resolved prior to Compliance Year 1999. Since then, very few facilities have had to submit emissions reports based on the worst-case scenario under MDP, which may considerably overstate the actual emissions from major sources. As an example, most facilities that reported emissions using MDP in 1995 did so because they did not have their CEMS certified in time to report actual emissions. Since their CEMS had no prior data, MDP called for an application of the most conservative procedure to calculate substitute data by assuming continuous uncontrolled operation at the maximum rated capacity of the facility's equipment, regardless of the actual operational level during the missing data periods. As a result, the calculations yielded substitute data that may have been much higher than the actual emissions. In comparison to the 65 NOx facilities implementing MDP in Compliance Year 1995, 90 facilities reported NOx emissions using MDP in Compliance Year 2018. Even though the number of facilities is higher than in 1995, the percentage of emissions reported using MDP during Compliance Year 2018 is much lower than it was in 1995 (4% compared to 23%). Additionally, in terms of quantity, NOx emissions determined by the use of MDP in Compliance Year 2018 were about 4% of those in Compliance Year 1995 (252 tons compared to 6,070 tons). Since most CEMS were certified and had been reporting actual emissions by the beginning of Compliance Year 2000, facilities

that had to calculate substitute data were able to apply less conservative methods of calculating MDP for systems with high availability and shorter duration missing data periods. Therefore, the substitute data they calculated for their missing data periods were more likely to be representative of the actual emissions.

It is important to note that portions of annual emissions attributed to MDP include actual emissions from the sources as well as the possibility of overestimated emissions. As shown in Table 5-1, approximately 4% of reported NO<sub>x</sub> annual emissions were calculated using MDP in Compliance Year 2018. MDP may significantly overestimate emissions from some of the sources that operate intermittently and have low monitoring system availability, and/or lengthy missing data periods. Even though a portion of the 4% may be overestimated emissions due to conservative MDP, a significant portion (or possibly all) of it could have also been actual emissions from the sources. Unfortunately, the portion that represents the actual emissions cannot be readily estimated because the extent of this effect varies widely, depending on source categories and operating parameters, as well as the tier of MDP applied. For Compliance Year 2018, a significant portion of NO<sub>x</sub> MDP emissions data (62%) and majority of SO<sub>x</sub> MDP emissions data (84%) were reported by refineries, which tend to operate near maximum capacity for 24 hours per day and seven days per week, except for scheduled shutdowns for maintenance and barring major breakdowns or other unforeseeable circumstances. Missing data emissions calculated using the lower tiers of MDP (*i.e.*, 1N Procedure or 30-day maximum value) for facilities such as refineries that have relatively constant operation near their maximum operation are generally reflective of actual emissions because peak values are close to average values for these operations.

## Emissions Monitoring

### Overview

The reproducibility of reported RECLAIM facility emissions (and the underlying calculations)—and thereby the enforceability of the RECLAIM program—is assured through a tiered hierarchy of MRR requirements. A facility's equipment falls into an MRR category based on the kind of equipment it is and on the level of emissions produced or potentially produced by the equipment. RECLAIM divides all NO<sub>x</sub> sources into major sources, large sources, process units, and equipment exempt from obtaining a written permit pursuant to Rule 219. All SO<sub>x</sub> sources are divided into major sources, process units, and equipment exempt from obtaining a written permit pursuant to Rule 219. Table 5-2 shows the monitoring requirements applicable to each of these categories.

**Table 5-2**  
**Monitoring Requirements for RECLAIM Sources**

Source Category	Major Sources (NOx and SOx)	Large Sources (NOx only)	Process Units and Rule 219 Equipment (NOx and SOx)
Monitoring Method	Continuous Emissions Monitoring System (CEMS) or Alternative CEMS (ACEMS)	Fuel Meter or Continuous Process Monitoring System (CPMS)	Fuel Meter, Timer, or CPMS
Reporting Frequency	Daily	Monthly	Quarterly

### **Continuous Emissions Monitoring System (CEMS)**

#### ***Requirements***

CEMS represent both the most accurate and the most reliable method of calculating emissions because they continuously monitor all of the parameters necessary to directly determine mass emissions of NOx and SOx. They are also the most costly method. These attributes make CEMS the most appropriate method for the largest emission-potential equipment in the RECLAIM universe, major sources.

Alternative Continuous Emissions Monitoring Systems (ACEMS) are alternatives to CEMS that are allowed under the RECLAIM regulation. These are devices that do not directly monitor NOx or SOx mass emissions; instead, they correlate multiple process parameters to arrive at mass emissions. To be approved for RECLAIM MRR purposes, ACEMS must be determined by South Coast AQMD to be equivalent to CEMS in relative accuracy, reliability, reproducibility, and timeliness.

For Compliance Year 2018, even though the number of major sources monitored by either CEMS or ACEMS represent 19% and 66% of all permitted RECLAIM NOx and SOx sources, respectively, reported emissions revealed that 79% of all RECLAIM NOx emissions and 98% of all RECLAIM SOx emissions were determined by CEMS or ACEMS.

#### ***Compliance Status***

By the end of calendar year 1999, almost all facilities that were required to have CEMS had their CEMS certified or provisionally approved. The only remaining uncertified CEMS are for sources that recently became subject to major source reporting requirements and sources that modified their CEMS. Typically, there will be a few new major sources each year. Therefore, there will continue to be a small number of CEMS in the certification process at any time.

#### ***Semiannual and Annual Assessments of CEMS***

RECLAIM facilities conduct their Relative Accuracy Test Audit (RATA) of certified CEMS using private sector testing laboratories approved under South Coast

AQMD's Laboratory Approval Program (LAP). These tests are conducted either semiannually or annually, depending on the most recent relative accuracy value (the sum of the average differences and the confidence coefficient) for each source. The interval is annual only when all required relative accuracies obtained during an audit are 7.5% or less (*i.e.*, more accurate).

To verify the quality of CEMS, the RATA report compares the CEMS data against data taken simultaneously, according to approved testing methods (also known as reference methods), by a LAP-approved source testing contractor. In order to have a passing RATA, each of the following relative accuracy performance criteria must be met: The relative accuracy of the CEMS results relative to the reference method results must be within  $\pm 20\%$  for pollutant concentration,  $\pm 15\%$  for stack flow rate, and  $\pm 20\%$  for pollutant mass emission rate. In addition, the RATAs reveal whether CEMS data must be adjusted for low readings compared to the reference method (bias adjustment factor), and by how much. The RATA presents two pieces of data: 1) the CEMS bias (how much it differs from the reference method on the average), and 2) the CEMS confidence coefficient (how variable that bias or average difference is).

Tables 5-3 and 5-4 summarize the 2018 and 2019 calendar years' passing rates, respectively, for submitted RATAs of certified CEMS for NOx and SOx concentration, total sulfur in fuel gas concentrations, stack flow rate (in-stack monitors and F-factor based calculations), and NOx and SOx mass emissions. However, the tables do not include SOx mass emissions calculated from total sulfur analyzer systems because such systems serve numerous devices, and therefore are not suitable for mass emissions-based RATA testing. As noted in the footnotes for each table, the calendar year 2018 and 2019 passing rates are calculated from RATA data submitted before January 11, 2019 and January 10, 2020, respectively, and may exclude some RATA data from the fourth quarter of each year.

**Table 5-3  
Passing Rates Based on RATAs of Certified CEMS in 2018<sup>1</sup>**

Concentration						Stack Flow Rate				Mass Emissions			
NOx		SO <sub>2</sub>		Total <sup>2</sup> Sulfur		In-Stack Monitor		F-Factor Based Calc.		NOx		SOx <sup>3</sup>	
No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass
247	100	67	100	15	100	36	100	247	100	246	100	79	100

<sup>1</sup> The calculation of passing rates includes all RATAs submitted by January 11, 2019.

<sup>2</sup> Includes Cylinder Gas Audit (CGA) tests.

<sup>3</sup> Does not include SOx emissions calculated from total sulfur analyzers.



**Table 5-4**  
**Passing Rates Based on RATAs of Certified CEMS in 2019<sup>1</sup>**

Concentration						Stack Flow Rate				Mass Emissions			
NOx		SO <sub>2</sub>		Total <sup>2</sup> Sulfur		In-Stack Monitor		F-Factor Based Calc.		NOx		SOx <sup>3</sup>	
No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass
338	100	91	100	21	100	54	100	306	100	320	100	90	100

<sup>1</sup> The calculation of passing includes all RATAs submitted by January 10, 2020.

<sup>2</sup> Includes Cylinder Gas Audit (CGA) tests.

<sup>3</sup> Does not include SOx emissions calculated from total sulfur analyzers.

As indicated in Tables 5-3 and 5-4, the passing rates for NOx/SO<sub>2</sub> concentration, stack flow rate, and mass emissions were 100%. Since the inception of RECLAIM there have been significant improvements with respect to the availability of reliable calibration gas, the reliability of the reference method, and an understanding of the factors that influence valid total sulfur analyzer data.

#### Electronic Data Reporting of RATA Results

Facilities operating CEMS under RECLAIM are required to submit RATA results to South Coast AQMD. An electronic reporting system, known as Electronic Data Reporting (EDR), allows RATA results to be submitted electronically using a standardized format in lieu of the traditional formal source test reports in paper form. This system minimizes the amount of material the facility must submit to South Coast AQMD and also expedites reviews. In calendar year 2019, 97% of RATA results were submitted via EDR.

#### Non-Major Source Monitoring, Reporting, and Recordkeeping

Emissions quantified for large sources are primarily based on concentration limits or emission rates specified in the Facility Permit. Other variables used in the calculation of large source emissions are dependent on the specific process of the equipment, but generally include fuel usage, applicable dry F-factor, and the higher heating value of the fuel used, which are collectively used to calculate stack flow rate. RECLAIM requires large sources to be source tested within defined three-year windows in order to validate fuel meter accuracy and the equipment's concentration limit or emission rate. Since emissions quantification is fuel-based, the monitoring equipment required to quantify emissions is a non-resettable fuel meter that must be corrected to standard temperature and pressure. Large source emission data must be submitted electronically on a monthly basis.

Process unit emission calculations are similar to those of large sources in that emissions are quantified using the fuel-based calculations for either a concentration limit or an emission factor specified in the Facility Permit. Similar to large sources, variables used in emission calculations for process units are dependent on the equipment's specific process, but generally include fuel usage, applicable dry F-factor, and the higher heating value of the fuel used. Process units that are permitted with concentration limits are also required to be source-tested, but within specified five-year windows rather than three-year windows.

Emissions for equipment exempt from obtaining a written permit pursuant to Rule 219 are quantified using emission factors and fuel usage. No source testing is required for such exempt equipment. Since emissions calculations are fuel-based for both process units and exempt equipment, the monitoring equipment required to quantify emissions is a non-resettable fuel meter, corrected to standard temperature and pressure. Alternately, a timer may be used to record operational time. In such cases, fuel usage is determined based on maximum rated capacity of the source. Process units and exempt equipment must submit emission reports electronically on a quarterly basis.

## Emissions Reporting

### Requirements

RECLAIM uses electronic reporting technology to streamline reporting requirements for both facilities and South Coast AQMD, and to help automate compliance tracking. Under RECLAIM, facilities report their emissions electronically on a per device basis to South Coast AQMD's Central Station computer as follows:

- Major sources must use a Remote Terminal Unit (RTU) to telecommunicate emission data to South Coast AQMD's Central Station. The RTU collects data, performs calculations, generates the appropriate data files, and transmits the data to the Central Station. This entire process is required to be performed by the RTU on a daily basis without human intervention.
- Emission data for all equipment other than major sources may be transmitted via RTU or compiled manually and transmitted to the Central Station via modem. Alternatively, operators of non-major sources may use South Coast AQMD's internet-based application, Web Access To Electronic Reporting System (WATERS) to transmit emission data for non-major sources via internet connection. The data may be transmitted directly by the facility or through a third party.

### Compliance Status

The main concern for emission reporting is the timely submittal of accurate daily emissions reports from major sources. If daily reports are not submitted by the specified deadlines, RECLAIM rules may require that emissions from CEMS be ignored and the emissions be calculated using MDP. Daily emission reports are submitted by the RTU of the CEMS to South Coast AQMD's Central Station via telephone lines. Often communication errors between the two points are not readily detectable by facility operators. Undetected errors can cause facility operators to believe that daily reports were submitted when they were not received by the Central Station. In addition to providing operators a means to confirm the receipt of their reports, the WATERS application can also display electronic reports that were submitted to, and received by, the Central Station. This system helps reduce instances where MDP must be used for late or missing daily reports, because the operators can verify that the Central Station received their daily reports and can resubmit them if there were communication errors.

## Protocol Review

Even though review of MRR protocols was only required by Rule 2015(b)(1) for the first three compliance years of the RECLAIM program, staff continues to review the effectiveness of enforcement and MRR protocols. Based on such review, occasional revisions to the protocols may be needed to achieve improved measurement and enforcement of RECLAIM emission reductions, while minimizing administrative costs to RECLAIM facilities and South Coast AQMD.

Since the RECLAIM program was adopted, staff has produced rule interpretations and implementation guidance documents to clarify and resolve specific concerns about the protocols raised by RECLAIM participants or observed by South Coast AQMD staff. In situations where staff could not interpret existing rule requirements to adequately address the issues at hand, the protocols and/or rules have been amended.

## CHAPTER 6

### REPORTED JOB IMPACTS

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#### Summary

*This chapter compiles data as reported by RECLAIM facilities in their Annual Permit Emissions Program (APEP) reports. The analysis focuses exclusively on job impacts at RECLAIM facilities and determination if those job impacts were directly attributable to RECLAIM as reported by those facilities. Additional benefits to the local economy (e.g., generating jobs for consulting firms, source testing firms and CEMS vendors) attributable to the RECLAIM program, as well as factors outside of RECLAIM (e.g., the prevailing economic climate), impact the job market. However, these factors are not evaluated in this report. Also, job losses and job gains are strictly based on RECLAIM facilities' reported information. South Coast AQMD staff is not able to independently verify the accuracy of the facility reported job impact information.*

*According to the Compliance Year 2018 employment survey data gathered from APEP reports, RECLAIM facilities reported a net gain of 326 jobs, representing 0.32% of their total employment. One RECLAIM facility cited RECLAIM as a factor contributing to the addition of six jobs during Compliance Year 2018. No facility reported job losses due to RECLAIM, during Compliance Year 2018.*

#### Background

The APEP reports submitted by RECLAIM facilities include survey forms that are used to evaluate the socioeconomic impacts of the program. Facilities were asked to indicate the number of jobs at the beginning of Compliance Year 2018 and any changes in the number of jobs that took place during the compliance year in each of three categories: manufacturing, sale of products, and non-manufacturing. The numbers of jobs gained and lost reported by facilities in each category during the compliance year were tabulated.

Additionally, APEP reports ask facilities that shut down during Compliance Year 2018 to provide the reasons for their closure. APEP reports also allow facilities to indicate whether the RECLAIM program led to the creation or elimination of jobs during Compliance Year 2018.

Since data regarding job impacts and facility shutdowns are derived from the APEP reports, the submittal of these reports is essential to assessing the influence that the RECLAIM program has on these issues. The following discussion represents data obtained from APEP reports submitted to South Coast AQMD for Compliance Year 2018 and clarifying information collected by South Coast AQMD staff. South Coast AQMD staff is not able to verify the accuracy of the reported job impact information.

#### Job Impacts

Table 6-1 summarizes job impact data gathered from Compliance Year 2018 APEP reports and follow-up contacts with facilities. A total of 125 facilities reported 8,298 job gains, while 130 facilities reported a total of 7,972 job losses. Net job losses were reported in two of the three categories: sales of products

(43), and non-manufacturing (1,763), whereas net job gains were reported in the remaining category: manufacturing (2,132). Table 6-1 shows a total net gain of 326 jobs, which represents a net increase of 0.32% at RECLAIM facilities during Compliance Year 2018.

**Table 6-1**  
**Job Impacts at RECLAIM Facilities for Compliance Year 2018**

Description	Manufacture	Sales of Products	Non-Manufacture	Total <sup>1</sup>
Initial Jobs	38,242	789	62,588	101,619
Overall Job Gain	4,554	51	3,693	8,298
Overall Job Loss	2,422	94	5,456	7,972
Final Jobs	40,374	746	60,825	101,945
Net Job Change	2,132	-43	-1,763	326
Percent (%) Job Change	5.58%	-5.45%	-2.82%	0.32%
Facilities Reporting Job Gains	89	16	78	125
Facilities Reporting Job Losses	91	24	82	130

<sup>1</sup> The total number of facilities reporting job gains or losses does not equal the sum of the number of facilities reporting job changes in each category (*i.e.*, the manufacture, sales of products, and non-manufacture categories) due to the fact that some facilities may report changes under more than one of these categories.

Data for three RECLAIM facilities that ceased operations and two facilities that were excluded from RECLAIM in Compliance Year 2018, as listed in Appendix C, are included in Table 6-1. Two of the facilities that ceased operations cited a declining demand for their product and the third specified financial difficulties as the reason for the facilities shutdown. According to their APEP reports, the shutdown of these facilities led to a total loss of 140 jobs (123 manufacturing jobs, 1 sales job, and 16 non-manufacturing jobs). Two facilities opted out of RECLAIM based on Rule 2001(g)(2) as amended on 10/5/2018. One of these facilities specified a gain of 600 non-manufacturing jobs in their APEP but did not attribute any of the job gains to the facility's opt-out of RECLAIM. The other facility specified no change in the number of jobs.

One RECLAIM facility attributed job gains or losses to RECLAIM for Compliance Year 2018. The facility operator that listed RECLAIM as a reason for increased jobs at their facility, attributed the gain of six jobs because they would not be able to competitively operate were it not for replacing their catalyst to comply with RECLAIM regulations, (refer to Appendix E). The current owner explained, that last year, the former owner had to lay off six employees because the cost to operate was higher than their competitors'. Operation of their older and higher emitting equipment had a higher financial cost to comply with RECLAIM rules, which led to the facility being idle for some time. Once the current owner upgraded the equipment, he was able to rehire the six employees and resume operations.

The analysis in this report only considers job gains and losses at RECLAIM facilities. It should be noted that this analysis of socioeconomic impacts based on APEP reports and follow-up interviews is focused exclusively on changes in

employment that occurred at RECLAIM facilities. The effect of the program on the local economy outside of RECLAIM facilities, including consulting and source testing jobs, is not considered.

It is not possible to compare the impact of the RECLAIM program on the job market *vis-à-vis* a scenario without RECLAIM. This is because factors other than RECLAIM (e.g., the prevailing economic climate), also impact the job market. Furthermore, there is no way to directly compare job impacts attributed to RECLAIM to job impacts attributed to command-and-control rules that would have been adopted in RECLAIM's absence, because these command-and-control rules do not exist for these facilities. As mentioned previously, the effect of the RECLAIM program on the local economy outside of RECLAIM facilities (e.g., generating jobs for consulting firms, source testing firms and CEMS vendors) is also not considered in this report.

## CHAPTER 7

# AIR QUALITY AND PUBLIC HEALTH IMPACTS

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### Summary

*Audited RECLAIM emissions have been in an overall downward trend since the program's inception. Compliance Year 2018 NOx emissions decreased (7.0%) relative to Compliance Year 2017, but Compliance Year 2018 SOx emissions were 4.5% greater than the previous year. Quarterly calendar year 2018 NOx emissions fluctuated within four percent of the mean NOx emissions for the year. Quarterly calendar year 2018 SOx emissions fluctuated within thirteen percent of the year's mean SOx emissions. There was no significant shift in seasonal emissions from the winter season to the summer season for either pollutant.*

*The California Clean Air Act (CCAA) required a 50% reduction in population exposure to ozone, relative to a baseline averaged over three years (1986 through 1988), by December 31, 2000. The Basin achieved the December 2000 target for ozone well before the deadline. In calendar year 2019, the per capita exposure to ozone (the average length of time each person is exposed) continued to be well below the target set for December 2000.*

*Air toxic health risk is primarily caused by emissions of certain volatile organic compounds (VOCs) and fine particulates, such as metals. RECLAIM facilities are subject to the same air toxic, VOC, and particulate matter regulations as other sources in the Basin. All sources are subject, where applicable, to the NSR rule for toxics (Rule 1401 and/or Rule 1401.1). In addition, new or modified sources with NOx or SOx emission increases are required to be equipped with BACT, which minimizes to the extent feasible the increase of NOx and SOx emissions. RECLAIM and non-RECLAIM facilities that emit toxic air contaminants are required to report those emissions to South Coast AQMD. Those emissions reports are used to identify candidates for the Air Toxics Hot Spots program (AB2588). This program requires emission inventories and, depending on the type and amount of emissions, facilities may be required to do public notice and/or prepare and implement a plan to reduce emissions. There is no evidence that RECLAIM has caused or allowed higher toxic risk in areas adjacent to RECLAIM facilities, than would occur under command-and-control, because RECLAIM facilities must comply with the same toxics rules as non-RECLAIM facilities.*

### Background

RECLAIM is designed to achieve the same, or higher level of, air quality and public health benefits as would have been achieved from implementation of the control measures and command-and-control rules that RECLAIM subsumed. Therefore, as a part of each annual program audit, South Coast AQMD staff evaluates per capita exposure to air pollution, toxic risk reductions, emission trends, and seasonal fluctuations in emissions. South Coast AQMD staff also generates quarterly emissions maps depicting the geographic distribution of RECLAIM emissions. These maps are generated and posted quarterly on South

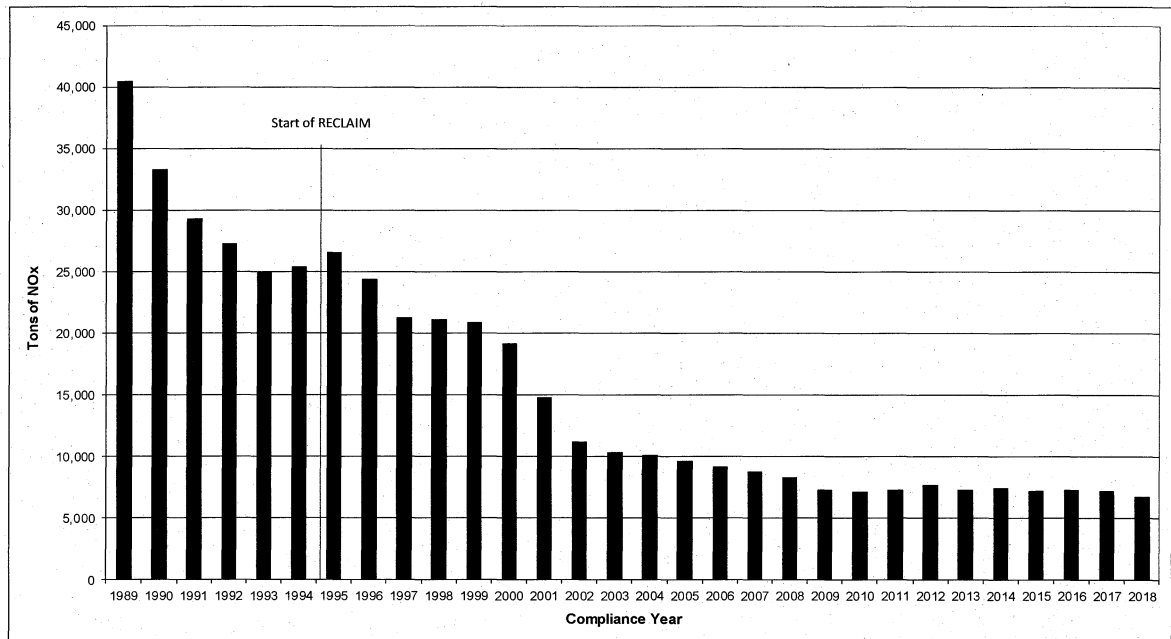
Coast AQMD's website<sup>1</sup>, and include all the quarterly emissions maps presented in previous annual program audit reports. This chapter addresses:

- Emission trends for RECLAIM facilities;
- Seasonal fluctuations in emissions;
- Per capita exposure to air pollution; and
- Toxics impacts.

### Emission Trends for RECLAIM Sources

Concerns were expressed during program development that RECLAIM might cause sources to increase their aggregate emissions during the early years of the program due to perceived over-allocation of emissions. As depicted in Figures 7-1 and 7-2, which show NOx and SOx emissions from RECLAIM sources since 1989, the analysis of emissions from RECLAIM sources indicates that overall, RECLAIM emissions have been in a downward trend since program inception, and the emission increases during early years of RECLAIM that were anticipated by some did not materialize.

**Figure 7-1**  
**NOx Emission Trend for RECLAIM Sources**

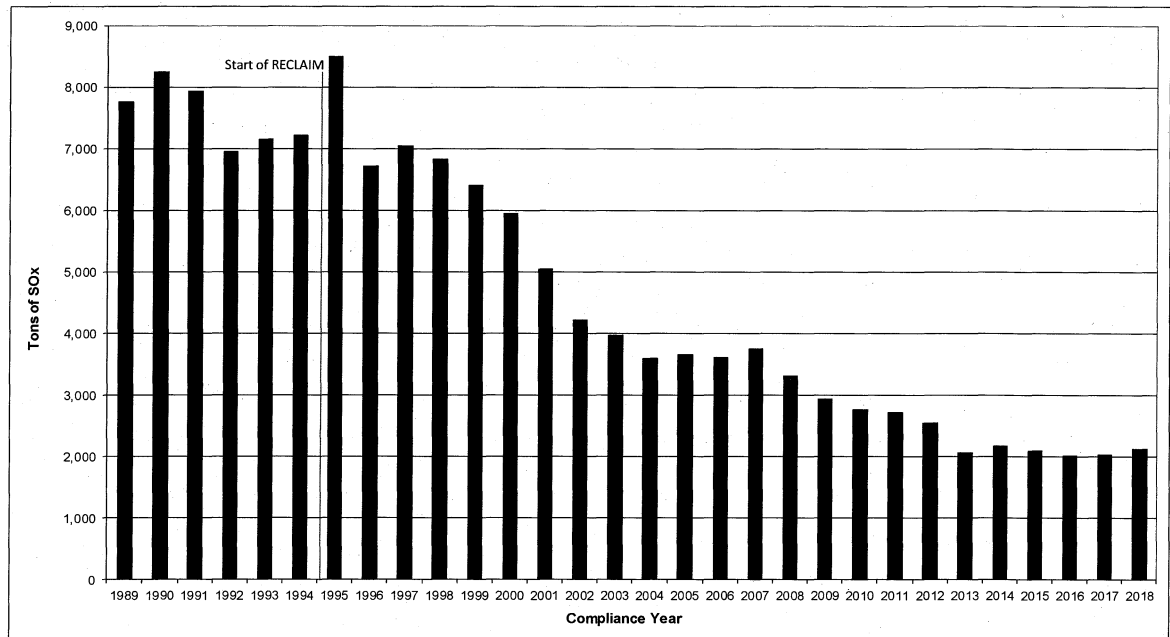


Note: 1989-1993 emissions presented in this figure are the emissions from the facilities in the 1994 NOx universe.

<sup>1</sup> Quarterly emission maps from 1994 to present can be found at:  
<http://www.aqmd.gov/home/programs/business/about-reclaim/quarterly-emission-maps>.



**Figure 7-2**  
**SOx Emission Trend for RECLAIM Sources**



Note: 1989-1993 emissions presented in this figure are the emissions from the facilities in the 1994 SOx universe.

NOx emissions decreased every year from Compliance Year 1995 through Compliance Year 2010. The emissions for Compliance Year 2010 to Compliance Year 2017 fluctuated within a narrow range; all are within 5% of their average of 7,338 tons/year. The NOx emissions for Compliance Year 2018 are at a record low of 6,740 tons/year, representing a 7% decrease from Compliance Year 2017. Since Compliance Year 1995, annual SOx emissions have also followed a general downward trend. There are a few slight increases for a few Compliance Years when compared to each respective previous compliance year, much like this year. Since 2013, SOx emissions have been fluctuating within a narrow range (2,024 – 2,176 tons/year or  $< \pm 3\%$  of the range's mean). As discussed in Chapter 3, NOx and SOx emissions are much lower than the programmatic goals (see Figures 3-1 and 3-2).

The increase in NOx and SOx emissions from Compliance Year 1994 to 1995 can be attributed to the application of MDP at the onset of RECLAIM implementation. RECLAIM provides for emissions from each major source's first year in the program to be quantified using an emission factor and fuel throughput (interim reporting) while they certify their CEMS. However, at the beginning of the program (Compliance Year 1994), many facilities had difficulties certifying their CEMS within this time frame, and consequently reported their Compliance Year 1995 emissions using MDP. As discussed in Chapter 5, since CEMS for these major sources had no prior data, MDP required the application of the most conservative procedure to calculate substitute data. As a result, the application of MDP during this time period yielded substitute data that may have been much higher than the actual emissions. In addition, emissions after Compliance Year 1995 decreased steadily through 2000. Thus, RECLAIM facilities did not increase their actual aggregate emissions during the early years of the program.

## Seasonal Fluctuation in Emissions for RECLAIM Sources

Another concern during program development was that RECLAIM might cause facilities to shift emissions from the winter season into the summer ozone season and exacerbate poor summer air quality since RECLAIM emission goals are structured on an annual basis. To address this concern, “seasonal fluctuations” were added as part of the analysis required by Rule 2015. Accordingly, South Coast AQMD staff performed a two-part analysis of the quarterly variation in RECLAIM emissions:

1. In the first part, staff qualitatively compared the quarterly variation in Compliance Year 2018 RECLAIM emissions to the quarterly variation in emissions from the RECLAIM universe prior to the implementation of RECLAIM.
2. In the second part, staff analyzed quarterly audited emissions during calendar year 2018 and compared them with quarterly audited emissions for prior years to assess if there had been such a shift in emissions. This analysis is reflected in Figures 7-3 through 7-6.<sup>2</sup>

Quarterly emissions data from the facilities in RECLAIM before they were in the program is not available. Therefore, a quantitative comparison of the seasonal variation of emissions from these facilities while operating under RECLAIM with their seasonal emissions variation prior to RECLAIM is not feasible. However, a qualitative comparison has been conducted, as follows:

- NO<sub>x</sub> emissions from RECLAIM facilities are dominated by refineries and power plants.
- SO<sub>x</sub> emissions from RECLAIM facilities are especially dominated by refineries.
- Prior to RECLAIM, refinery production was generally highest in the summer months because more people travel during summer, thus increasing demand for gasoline and other transportation fuels.
- Electricity generation prior to RECLAIM was generally highest in the summer months because of increased demand for electricity to drive air conditioning units.

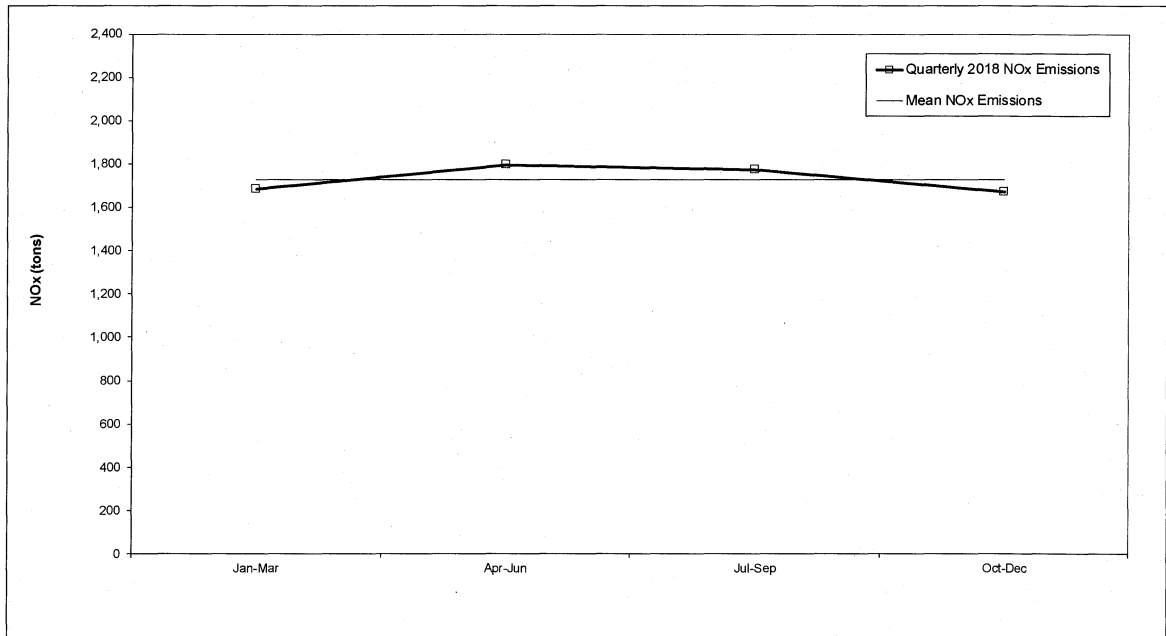
Historically, emissions from refineries (NO<sub>x</sub> and SO<sub>x</sub>) and from power plants (NO<sub>x</sub>) are typically higher in the summer months, which was the trend prior to implementation of RECLAIM for the reasons described above. Therefore, provided a year’s summer quarter RECLAIM emissions do not exceed that year’s quarterly average emissions by a substantial amount, it can be concluded that, for that year, RECLAIM has not resulted in a shift of emissions to the summer months relative to the pre-RECLAIM emission pattern.

Figure 7-3 shows the 2018 mean quarterly NO<sub>x</sub> emission level, which is the average of the aggregate audited emissions for each of the four quarters, and the 2018 audited quarterly emissions. Figure 7-4 compares the 2018 quarterly NO<sub>x</sub> emissions with the quarterly emissions from 2007 through 2017. During calendar year 2018, quarterly NO<sub>x</sub> emissions varied from three percent below the mean in

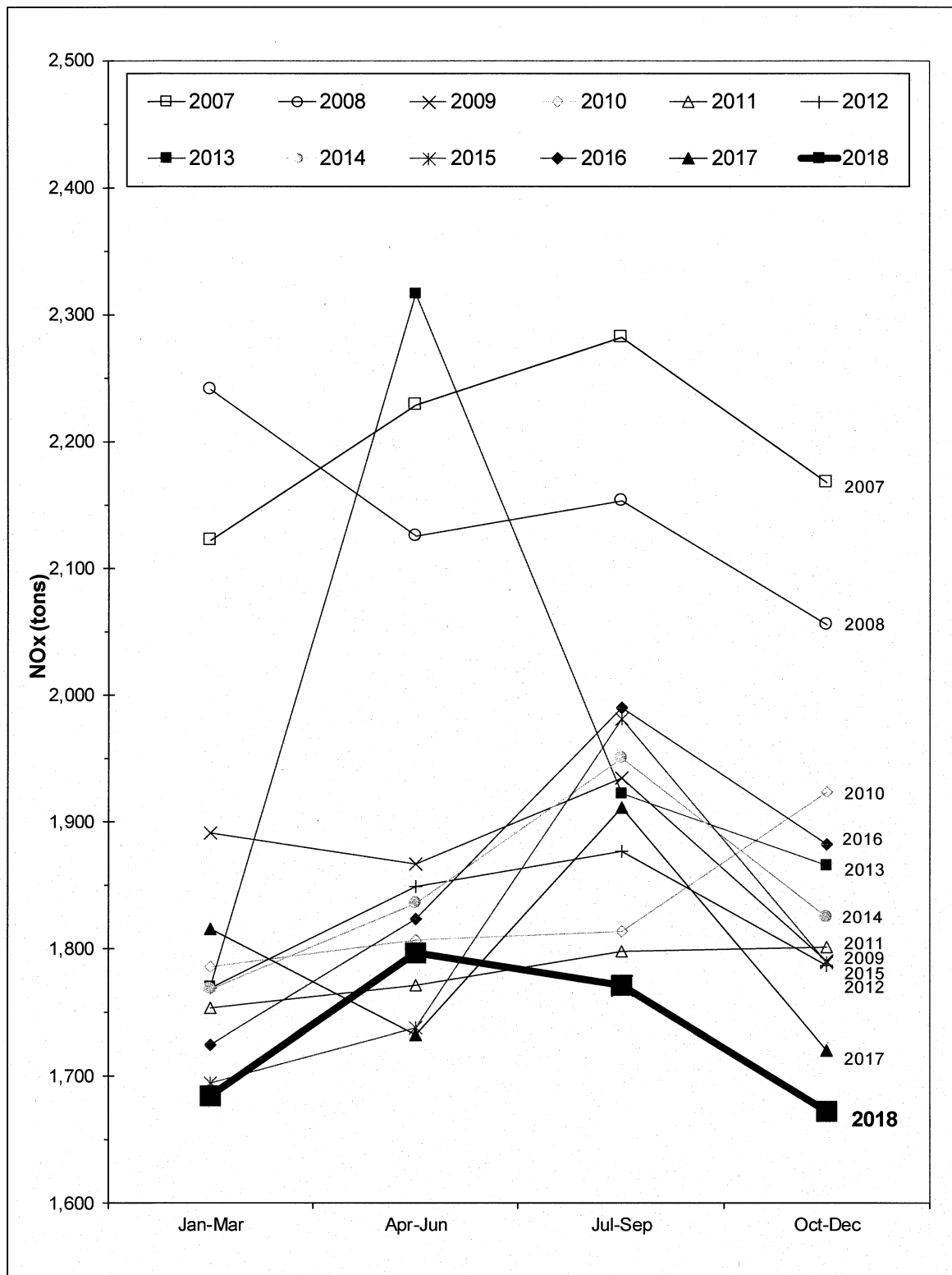
<sup>2</sup> Data used to generate these figures were derived from audited data. Similar figures for calendar years 1994 through 2007 in previous annual reports were generated from a combination of audited and reported data available at the time the reports were written.

the fourth quarter (October through December) to about four percent above the mean in the second quarter (April through June). Figure 7-4 shows that the calendar year 2018 quarterly emissions profile is consistent with previous years under RECLAIM, with calendar year 2013 being the only notable exception. Figures 7-3 and 7-4, along with the qualitative analysis performed above, show that in calendar year 2018 there has not been a significant shift in NOx emissions from the winter months to the summer months.

**Figure 7-3**  
**Calendar Year 2018 NOx Quarterly Emissions**

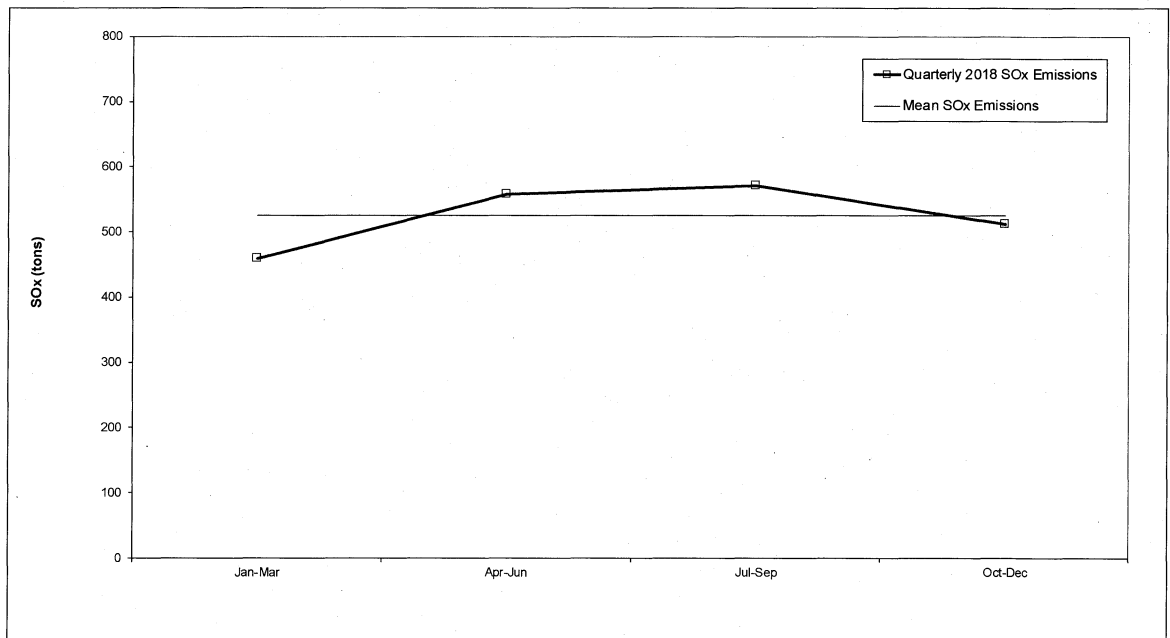


**Figure 7-4**  
**Quarterly NOx Emissions from Calendar Years 2007 through 2018**

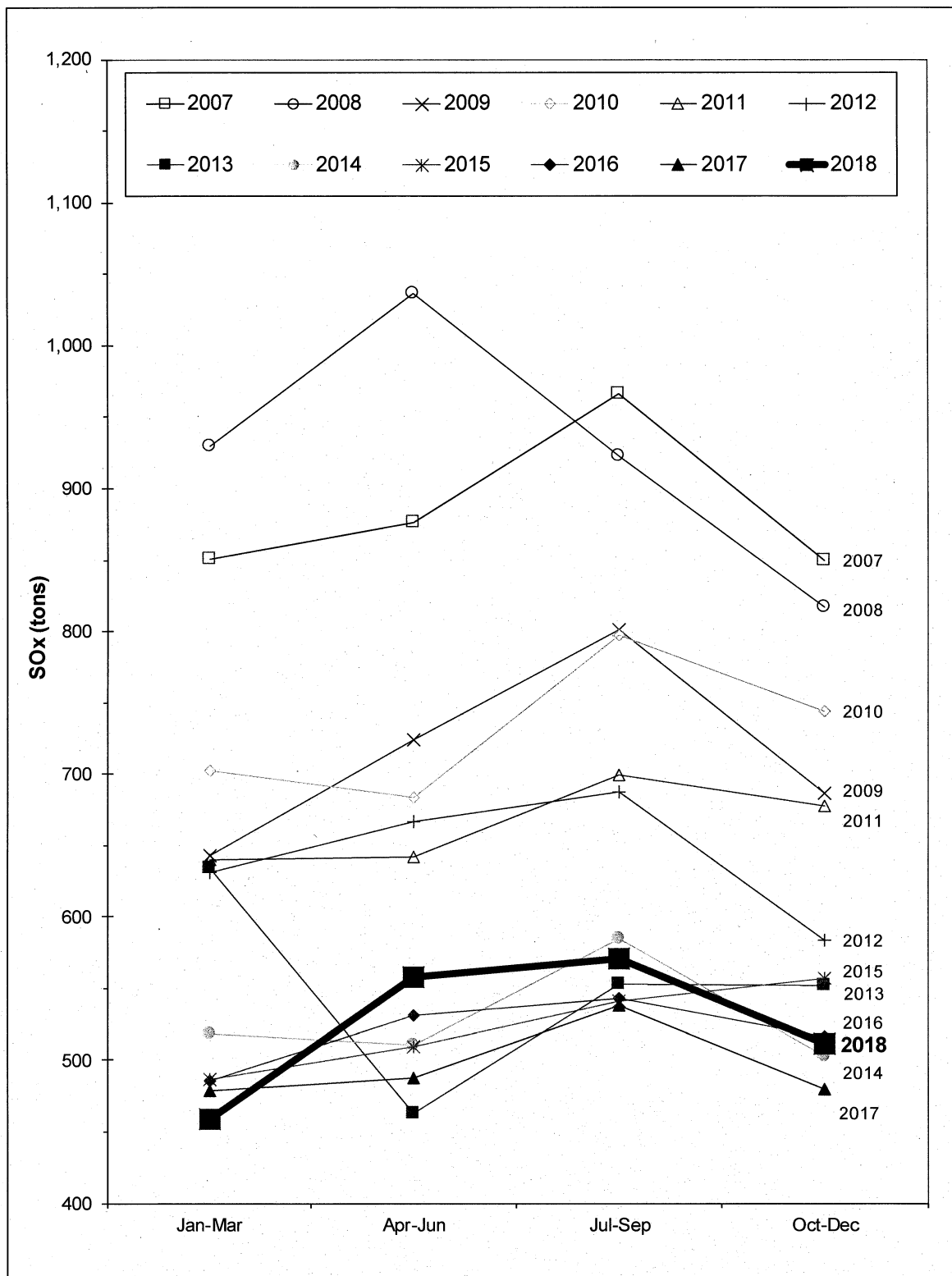


Similar to Figure 7-3 and 7-4 for NOx quarterly emissions, Figure 7-5 presents the 2018 mean quarterly SOx emissions and the 2018 audited quarterly emissions, while Figure 7-6 compares the 2018 quarterly SOx emissions with the quarterly emissions from 2007 through 2017. Figure 7-5 shows that quarterly SOx emissions during calendar year 2018 varied from thirteen percent below the mean in the first quarter (January to March) to about nine percent above the mean in the third quarter (July to September). Figure 7-6 shows that the calendar year 2018 quarterly emissions profile is roughly consistent with previous years under RECLAIM. Both Figures 7-5 and 7-6, along with the qualitative analysis performed above, show that in calendar year 2018 there was not a significant shift in SOx emissions from the winter months to the summer months.

**Figure 7-5**  
**Calendar Year 2018 SOx Quarterly Emissions**



**Figure 7-6**  
**Quarterly SOx Emissions from Calendar Years 2007 through 2018**



## Per Capita Exposure to Pollution

The predicted effects of RECLAIM on air quality and public health were thoroughly analyzed through modeling during program development. The results were compared to the projected impacts from continuing traditional command-and-control regulations and to implementing control measures in the 1991 AQMP. One of the criteria examined in the analysis was per capita population exposure.

Per capita population exposure reflects the length of time each person is exposed to unhealthful air quality. The modeling performed in the program development analysis projected that the reductions in per capita exposure under RECLAIM in calendar year 1994 would be nearly identical to the reductions projected for implementation of the control measures in the 1991 AQMP, and the reductions resulting from RECLAIM would be greater in calendar years 1997 and 2000. As reported in previous annual reports, actual per capita exposures to ozone for 1994 and 1997 were below the projections.

As part of the Children's Environmental Health Protection Act that was passed in 1999, and in consultation with the Office of Environmental Health Hazard Assessment (OEHHA), CARB is to "review all existing health-based ambient air quality standards to determine whether these standards protect public health, including infants and children, with an adequate margin of safety." As a result of that requirement, CARB adopted a new 8-hour ozone standard (0.070 ppm), which became effective May 17, 2006, in addition to the 1-hour ozone standard (0.09 ppm) already in place. Table 7-1 shows the number of days that both the state 8-hour ozone standard of 0.070 ppm and the 1-hour standard of 0.09 ppm were exceeded.

In July 1997, the USEPA established an ozone National Ambient Air Quality Standard (NAAQS) of 0.085 ppm based on an 8-hour average measurement. As part of the Phase I implementation that was finalized in June 2004, the federal 1-hour ozone standard (0.12 ppm) was revoked effective June 2005. Effective May 27, 2008, the 8-hour NAAQS for ozone was reduced to 0.075 ppm. Table 7-1 shows monitoring results based on this 8-hour federal standard. Effective December 28, 2015, the 8-hour NAAQS for ozone was further reduced to 0.070 ppm, the level of the current California Ambient Air Quality Standard. Table 7-1 shows that the Basin exceeded both the newer 8-hour federal 0.07 ppm standard and the state 0.07 ppm standard by 128 days in 2019. A difference in the number of days per year the basin exceeds each standard periodically occurs due to the differing language and methods for deriving exceedance days in the federal and state rules.

Table 7-1 summarizes ozone data for calendar years 2001 through 2019 in terms of the number of days that exceeded the state's 1-hour and 8-hour ozone standards, the 2008 and 2015 federal ambient 8-hour ozone standard, and both the Basin's maximum 1-hour and 8-hour ozone concentrations in each calendar year. This table shows that the number of days that exceeded each standard in 2019 decreased when compared to 2018. These numbers are the lowest since 2016. Table 7-1 also shows that both the Basin Maximum 8-hour ozone concentration and 1-hour ozone concentration decreased relative to last year. The Basin Maximum 1-hour ozone concentration in 2019 is the lowest it has been for at least the last 19 years.

**Table 7-1**  
**Summary of Ozone Data**

Year	Days exceeding state 1-hour standard (0.09 ppm)	Days exceeding state 8-hour standard (0.07 ppm)	Days exceeding old federal 8-hour standard (0.075 ppm)	Days exceeding new federal 8-hour standard (0.07 ppm)	Basin Maximum 1-hour ozone concentration (ppm)	Basin Maximum 8-hour ozone concentration (ppm)
2001	121	156	132	N/A	0.191	0.146
2002	118	149	135	N/A	0.169	0.148
2003	133	161	141	N/A	0.216	0.200
2004	110	161	126	N/A	0.163	0.148
2005	111	142	116	N/A	0.163	0.145
2006	102	121	114	N/A	0.175	0.142
2007	99	128	108	N/A	0.171	0.137
2008	98	136	121	N/A	0.176	0.131
2009	100	131	113	N/A	0.176	0.128
2010	83	128	109	N/A	0.143	0.123
2011	94	127	107	N/A	0.160	0.136
2012	97	140	111	N/A	0.147	0.112
2013	92	123	106	N/A	0.151	0.122
2014	76	134	93	N/A	0.142	0.114
2015	72	116	83	113	0.144	0.127
2016	85	132	105	132	0.164	0.122
2017	109	150	122	145	0.158	0.136
2018	86	141	109	141	0.125	0.142
2019	82	128	105	128	0.118	0.137

The CCAA, which was enacted in 1988, established targets for reducing overall population exposure to severe non-attainment pollutants in the Basin—a 25% reduction by December 31, 1994, a 40% reduction by December 31, 1997, and a 50% reduction by December 31, 2000 relative to a calendar years' 1986-88 baseline. These targets are based on the average number of hours a person is exposed ("per capita exposure"<sup>3</sup>) to ozone concentrations above the state 1-hour standard of 0.09 ppm. Table 7-2 shows the 1986-88 baseline per capita exposure, the actual per capita exposures each year since 1994 (RECLAIM's initial year), and the 1997 and 2000 targets set by the CCAA for each of the four counties in the district and the Basin overall. As shown in Table 7-2, the CCAA reduction targets were achieved as early as 1994 (actual 1994 Basin per capita

<sup>3</sup> SCAQMD staff divides the air basin into a grid of square cells and interpolates recorded ozone data from ambient air quality monitors to determine ozone levels experienced in each of these cells. The total person-hours in a county experiencing ozone higher than the state ozone standard is determined by summing over the whole county the products of the number of hours exceeding the state ozone standard per grid cell with the number of residents in the corresponding cell. The per capita ozone exposures are then calculated by dividing the sum of person-hours by the total population within a county. Similar calculations are used to determine the Basin-wide per capita exposure by summing and dividing over the whole Basin.



exposure was 37.6 hours, which is below the 2000 target of 40.2 hours). The per capita exposure continues to remain much lower than the CCAA targets. Relative to calendar year 2018, the 2019 per capita exposures were slightly higher for all regions, except for Riverside County. For calendar year 2019, the actual per capita exposure for the Basin was 2.07 hours, which represents a 97.4% reduction from the 1986-88 baseline level.

**Table 7-2**  
**Per Capita Exposure to Ozone above the State One-Hour Standard of 0.09 ppm (hours)**

Calendar Year	Basin	Los Angeles	Orange	Riverside	San Bernardino
1986-88 baseline <sup>1</sup>	80.5	75.8	27.2	94.1	192.6
1994 actual	37.6	26.5	9	71.1	124.9
1995 actual	27.7	20	5.7	48.8	91.9
1996 actual	20.3	13.2	4	42.8	70
1997 actual	5.9	3	0.6	13.9	24.5
1998 actual	12.1	7.9	3.1	25.2	40.2
2000 actual	3.8	2.6	0.7	8.5	11.4
2001 actual	1.73	0.88	0.15	6	5.68
2002 actual	3.87	2.16	0.13	11.12	12.59
2003 actual	10.92	6.3	0.88	20.98	40.21
2004 actual	3.68	2.26	0.50	6.82	12.34
2005 actual	3.11	1.43	0.03	6.06	12.54
2006 actual	4.56	3.08	0.68	8.02	13.30
2007 actual	2.90	1.50	0.35	4.65	10.53
2008 actual	4.14	2.04	0.26	7.50	14.71
2009 actual	2.87	1.54	0.08	3.88	10.54
2010 actual	1.18	0.38	0.11	2.45	4.48
2011 actual	2.10	0.85	0.02	3.46	8.13
2012 actual	2.37	1.05	0.05	2.59	9.78
2013 actual	1.31	0.52	0.07	1.61	5.50
2014 actual	1.84	1.26	0.29	1.47	6.02
2015 actual	1.96	0.76	0.10	2.14	8.47
2016 actual	2.64	1.14	0.07	2.19	11.56
2017 actual	4.94	2.90	0.14	4.01	18.78
2018 actual	1.97	0.90	0.14	2.37	7.79
2019 actual	2.07	0.94	0.22	1.88	8.57
1997 target <sup>2</sup>	48.3	45.5	16.3	56.5	115.6
2000 target <sup>3</sup>	40.2	37.9	13.6	47	96.3

<sup>1</sup> Average over three years, 1986 through 1988.

<sup>2</sup> 60% of the 1986-88 baseline exposures.

<sup>3</sup> 50% of the 1986-88 baseline exposures.

Table 7-2 shows that actual per capita exposures during all the years mentioned were well under the 1997 and 2000 target exposures limits. It should also be noted that air quality in the Basin is a complex function of meteorological conditions and an array of different emission sources, including mobile, area, RECLAIM stationary sources, and non-RECLAIM stationary sources. Therefore, the reduction of per capita exposure beyond the projected level is not necessarily wholly attributable to implementation of the RECLAIM program in lieu of the command-and-control regulations.

## Toxic Impacts

Based on a comprehensive toxic impact analysis performed during program development, it was concluded that RECLAIM would not result in any significant impacts on air toxic emissions. Nevertheless, to ensure that the implementation of RECLAIM does not result in adverse toxic impacts, each annual program audit is required to assess any increase in the public health exposure to air toxics potentially caused by RECLAIM.

One of the safeguards to ensure that the implementation of RECLAIM does not result in adverse air toxic health impacts is that RECLAIM sources are subject to the same air toxic statutes and regulations (e.g., South Coast AQMD Regulation XIV; State AB 2588, State Air Toxics Control Measures, Federal National Emissions Standards for Hazardous Air Pollutants, etc.) as other sources in the Basin. Additionally, air toxic health risk is primarily caused by emissions of VOCs and fine particulates such as certain metals. VOC sources at RECLAIM facilities are subject to source-specific command-and-control rules the same way as are non-RECLAIM facilities, in addition to the toxics requirements described above. Sources of fine particulates and toxic metal emissions are also subject to the above-identified regulations pertaining to toxic emissions. Moreover, new or modified RECLAIM sources with NO<sub>x</sub> or SO<sub>x</sub> emission increases are also required to be equipped with BACT, which minimizes to the extent feasible NO<sub>x</sub> and SO<sub>x</sub> emissions, which are precursors to particulate matter.

There have been concerns raised that trading RTCs could allow for higher production at a RECLAIM facility, which may indirectly cause higher emissions of toxic air contaminants, and thereby make the health risk in the vicinity of the facility worse. Other South Coast AQMD rules and programs for toxic air contaminants apply to facilities regardless of them being in RECLAIM or under traditional command and control rules. Emission increases at permit units are subject to new source review. RECLAIM facilities must also comply with any applicable Regulation XIV rules for toxics. Permits generally include limiting throughput conditions for new source review or applicable source specific rules. AB2588 and Rule 1402 could also be triggered based on risk, which would require the facility to take appropriate risk reduction measures.

Under the AER program, facilities that emit either: 1) four tons per year or more of VOC, NO<sub>x</sub>, SO<sub>x</sub>, or PM, or 100 tons per year or more of CO; or 2) any one of 24 toxic air contaminants (TACs) and ozone depleting compounds (ODCs) emitted above specific thresholds (Rule 301 Table IV), are required to report their emissions annually to South Coast AQMD. Beginning with the FY 2000-01 reporting cycle, toxics emission reporting for the AB2588 Program was incorporated into South Coast AQMD's AER Program. The data collected in the AER program is used to determine which facilities will be required to take further actions under the AB2588 Hot Spots Program.

Facilities in the AB2588 Program are required to submit a comprehensive toxics inventory, which is then prioritized using Board-approved procedures<sup>4</sup> into one of three categories: low, intermediate, or high priority. Facilities ranked with low priority are exempt from future reporting. Facilities ranked with intermediate

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<sup>4</sup> The toxics prioritization procedures can be found at: <http://www.aqmd.gov/home/regulations/compliance/toxic-hot-spots-ab-2588>.

priority are classified as South Coast AQMD tracking facilities, which are then required to submit a complete toxics inventory once every four years. In addition to reporting their toxic emissions quadrennially, facilities designated as high priority are required to submit a health risk assessment (HRA) to determine their impacts to the surrounding community.

According to South Coast AQMD's 2018 Annual Report on the AB2588 Air Toxics "Hot Spots" program<sup>5</sup>, staff has reviewed and approved 344 HRAs as of the end calendar of year 2018. About 95% of the facilities have cancer risks below 10 in a million and 96% of the facilities have acute and chronic non-cancer hazard indices less than 1. Facilities with cancer risks above 10 in a million or a non-cancer hazard index above 1 are required to issue public notices informing the community. A public meeting is held during which South Coast AQMD discusses the health risks from the facility. South Coast AQMD has conducted such public notification meetings for 59 facilities under the AB2588 Program.

The Board has also established the following action risk levels in Rule 1402 – Control of Toxic Air Contaminants from Existing Sources: a cancer burden of 0.5, a cancer risk of 25 in a million, and a hazard index of 3.0. Facilities above any of the action risk levels must reduce their risks below the action risk levels within three years. To date, 27 facilities have been required to reduce risks and all of these facilities have reduced risks well below the action risk levels mandated by Rule 1402.

The impact of the above rules and measures are analyzed in Multiple Air Toxic Exposure Studies (MATES), which South Coast AQMD staff conducts periodically to assess cumulative air toxic impacts to the residents and workers of southern California. The fourth version of MATES (*i.e.*, MATES IV) was conducted over a one-year period from July 2012 to June 2013, and the final MATES IV report was released on May 1, 2015<sup>6</sup>. Monitoring conducted at that time indicated that the basin-wide population-weighted air toxics exposure was reduced by 57% since MATES III (conducted from April 2004 to March 2006). The results of these recent MATES studies continue to show that the region-wide cumulative air toxic impacts on residents and workers in southern California have been declining. Therefore, staff has not found any evidence that would suggest that the substitution of NO<sub>x</sub> and SO<sub>x</sub> RECLAIM for the command-and-control rules and the measures RECLAIM subsumes caused a significant increase in public exposure to air toxic emissions relative to what would have happened if the RECLAIM program was not implemented.

South Coast AQMD has initiated a MATES V study and staff began air toxics measurements at 10 fixed stations in early 2018. The advanced monitoring components also began in 2018, and included flight measurements, mobile monitoring and optical remote sensing technologies. The advanced monitoring components focus mainly on refinery emissions and potential community impacts, but also include other air pollution sources that are located close to communities. Staff has developed the emissions inventory and has been developing the modeling platform for the air toxics health risk modeling. Staff will

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<sup>5</sup> The 2018 AB2588 Annual Report can be found at: [http://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab2588\\_annual\\_report\\_2018.pdf](http://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab2588_annual_report_2018.pdf).

<sup>6</sup> The Final MATES IV Report can be found at: <http://www.aqmd.gov/docs/default-source/air-quality/air-toxic-studies/mates-iv/mates-iv-final-draft-report-4-1-15.pdf>.

continue to monitor and assess toxic impacts as part of future annual program audits.

## APPENDIX A RECLAIM UNIVERSE OF SOURCES

The RECLAIM universe of active sources as of the end of Compliance Year 2018 is provided below.

Facility ID	Cycle	Facility Name	Program
800088	2	3M COMPANY	NOx
185145	2	9W HALO WESTERN OPCP LP DBA ANGELICA	NOx
185146	2	9W HALO WESTERN OPCP L.P. D/B/A ANGELICA	NOx
23752	2	AEROCRAFT HEAT TREATING CO INC	NOx
115394	1	AES ALAMITOS, LLC	NOx
115389	2	AES HUNTINGTON BEACH, LLC	NOx/SOx
115536	1	AES REDONDO BEACH, LLC	NOx
148236	2	AIR LIQUIDE LARGE INDUSTRIES U.S., LP	NOx/SOx
3417	1	AIR PROD & CHEM INC	NOx
101656	2	AIR PRODUCTS AND CHEMICALS, INC.	NOx
5998	1	ALL AMERICAN ASPHALT	NOx
114264	1	ALL AMERICAN ASPHALT	NOx
3704	2	ALL AMERICAN ASPHALT, UNIT NO.01	NOx
176708	2	ALTAGAS POMONA ENERGY INC.	NOx
187165	1	ALTAIR PARAMOUNT, LLC	NOx/SOx
800196	2	AMERICAN AIRLINES, INC,	NOx
16642	1	ANHEUSER-BUSCH LLC., (LA BREWERY)	NOx/SOx
117140	2	AOC, LLC	NOx
174406	1	ARLON GRAPHICS LLC	NOx
12155	1	ARMSTRONG FLOORING INC	NOx
183832	2	AST TEXTILE GROUP, INC.	NOx
181510	1	AVCORP COMPOSITE FABRICATION, INC	NOx
117290	2	B BRAUN MEDICAL, INC	NOx
800016	2	BAKER COMMODITIES INC	NOx
800205	2	BANK OF AMERICA NT & SA, BREA CENTER	NOx
40034	1	BENTLEY PRINCE STREET INC	NOx
185801	1	BERRY PETROLEUM COMPANY, LLC	NOx
166073	1	BETA OFFSHORE	NOx
155474	2	BICENT (CALIFORNIA) MALBURG LLC	NOx
132068	1	BIMBO BAKERIES USA INC	NOx

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Facility ID	Cycle	Facility Name	Program
1073	1	BORAL ROOFING LLC	NOx
150201	2	BREITBURN OPERATING LP	NOx
174544	2	BREITBURN OPERATING LP	NOx
185574	1	BRIDGE ENERGY, LLC	NOx
185575	2	BRIDGE ENERGY, LLC	NOx
185600	2	BRIDGE ENERGY, LLC	NOx
185601	2	BRIDGE ENERGY, LLC	NOx
184958	1	BRONCS INC. DBA WEST COAST TEXTILES	NOx
25638	2	BURBANK CITY, BURBANK WATER & POWER	NOx
128243	1	BURBANK CITY, BURBANK WATER & POWER, SCPPA	NOx
800344	1	CALIFORNIA AIR NATIONAL GUARD, MARCH AFB	NOx
22607	2	CALIFORNIA DAIRIES, INC	NOx
138568	1	CALIFORNIA DROP FORGE, INC	NOx
800181	2	CALIFORNIA PORTLAND CEMENT CO	NOx/SOx
148896	2	CALIFORNIA RESOURCES PRODUCTION CORP	NOx
148897	2	CALIFORNIA RESOURCES PRODUCTION CORP	NOx
151899	2	CALIFORNIA RESOURCES PRODUCTION CORP	NOx
46268	1	CALIFORNIA STEEL INDUSTRIES INC	NOx
107653	2	CALMAT CO	NOx
107654	2	CALMAT CO	NOx
107655	2	CALMAT CO	NOx
107656	2	CALMAT CO	NOx
153992	1	CANYON POWER PLANT	NOx
94930	1	CARGILL INC	NOx
22911	2	CARLTON FORGE WORKS	NOx
118406	1	CARSON COGENERATION COMPANY	NOx
141555	2	CASTAIC CLAY PRODUCTS, LLC	NOx
14944	1	CENTRAL WIRE, INC.	NOx/SOx
42676	2	CES PLACERITA INC	NOx
148925	1	CHERRY AEROSPACE	NOx
800030	2	CHEVRON PRODUCTS CO.	NOx/SOx
56940	1	CITY OF ANAHEIM/COMB TURBINE GEN STATION	NOx
172077	1	CITY OF COLTON	NOx
129810	1	CITY OF RIVERSIDE PUBLIC UTILITIES DEPT	NOx
139796	1	CITY OF RIVERSIDE PUBLIC UTILITIES DEPT	NOx
164204	2	CITY OF RIVERSIDE, PUBLIC UTILITIES DEPT	NOx

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Facility ID	Cycle	Facility Name	Program
182561	1	COLTON POWER, LP	NOx
182563	1	COLTON POWER, LP	NOx
38440	2	COOPER & BRAIN - BREA	NOx
126536	1	CPP - POMONA	NOx
50098	1	D&D DISPOSAL INC, WEST COAST RENDERING CO	NOx
63180	1	DARLING INGREDIENTS INC.	NOx
3721	2	DART CONTAINER CORP OF CALIFORNIA	NOx
7411	2	DAVIS WIRE CORP	NOx
143738	2	DCOR LLC	NOx
143739	2	DCOR LLC	NOx
143740	2	DCOR LLC	NOx
143741	1	DCOR LLC	NOx
47771	1	DELEO CLAY TILE CO INC	NOx
800037	2	DEMENNO-KERDOON DBA WORLD OIL RECYCLING	NOx
125579	1	DIRECTV	NOx
800189	1	DISNEYLAND RESORT	NOx
142536	2	DRS SENSORS & TARGETING SYSTEMS, INC	NOx
180908	1	ECO SERVICES OPERATIONS CORP.	NOx/SOx
800264	2	EDGINGTON OIL COMPANY	NOx/SOx
115663	1	EL SEGUNDO ENERGY CENTER LLC	NOx
9053	1	ENWAVE LOS ANGELES INC.	NOx
11034	2	ENWAVE LOS ANGELES INC.	NOx
800372	2	EQUILON ENTER. LLC, SHELL OIL PROD. US	NOx/SOx
124838	1	EXIDE TECHNOLOGIES	NOx/SOx
95212	1	FABRICA	NOx
11716	1	FONTANA PAPER MILLS INC	NOx
346	1	FRITO-LAY, INC.	NOx
2418	2	FRUIT GROWERS SUPPLY CO	NOx
142267	2	FS PRECISION TECH LLC	NOx
176934	1	GI TC IMPERIAL HIGHWAY, LLC	NOx
124723	1	GREKA OIL & GAS	NOx
137471	2	GRIFOLS BIOLOGICALS INC	NOx
156741	2	HARBOR COGENERATION CO, LLC	NOx
157359	1	HENKEL ELECTRONIC MATERIALS, LLC	NOx
123774	1	HERAEUS PRECIOUS METALS NO. AMERICA, LLC	NOx
113160	2	HILTON COSTA MESA	NOx

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Facility ID	Cycle	Facility Name	Program
800066	1	HITCO CARBON COMPOSITES INC	NOx
2912	2	HOLLIDAY ROCK CO INC	NOx
800003	2	HONEYWELL INTERNATIONAL INC	NOx
187348	2	HYDRO EXTRUDER, LLC	NOx
124808	2	INEOS POLYPROPYLENE LLC	NOx/SOx
129816	2	INLAND EMPIRE ENERGY CENTER, LLC	NOx
157363	2	INTERNATIONAL PAPER CO	NOx
16338	1	KAISER ALUMINUM FABRICATED PRODUCTS, LLC	NOx
21887	2	KIMBERLY-CLARK WORLDWIDE INC.-FULT. MILL	NOx/SOx
187823	2	KIRKHILL INC	NOx
800335	2	LA CITY, DEPT OF AIRPORTS	NOx
800170	1	LA CITY, DWP HARBOR GENERATING STATION	NOx
800074	1	LA CITY, DWP HAYNES GENERATING STATION	NOx
800075	1	LA CITY, DWP SCATTERGOOD GENERATING STN	NOx
800193	2	LA CITY, DWP VALLEY GENERATING STATION	NOx
61962	1	LA CITY, HARBOR DEPT	NOx
550	1	LA CO., INTERNAL SERVICE DEPT	NOx
173904	2	LAPEYRE INDUSTRIAL SANDS, INC	NOx
141295	2	LEKOS DYE AND FINISHING, INC	NOx
144455	2	LIFOAM INDUSTRIES, LLC	NOx
83102	2	LIGHT METALS INC	NOx
115314	2	LONG BEACH GENERATION, LLC	NOx
17623	2	LOS ANGELES ATHLETIC CLUB	NOx
58622	2	LOS ANGELES COLD STORAGE CO	NOx
185101	2	LSC COMMUNICATIONS, LA MFG DIV	NOx
800080	2	LUNDAY-THAGARD CO DBA WORLD OIL REFINING	NOx/SOx
38872	1	MARS PETCARE U.S., INC.	NOx
14049	2	MARUCHAN INC	NOx
3029	2	MATCHMASTER DYEING & FINISHING INC	NOx
182970	1	MATRIX OIL CORP	NOx
2825	1	MCP FOODS INC	NOx
173290	1	MEDICLEAN	NOx
176952	2	MERCEDES-BENZ WEST COAST CAMPUS	NOx
94872	2	METAL CONTAINER CORP	NOx
800207	1	METRO ST HOSP (EIS USE)	NOx
155877	1	MILLERCOORS USA LLC	NOx



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Facility ID	Cycle	Facility Name	Program
12372	1	MISSION CLAY PRODUCTS	NOx
11887	2	NASA JET PROPULSION LAB	NOx
115563	1	NCI GROUP INC., DBA, METAL COATERS OF CA	NOx
172005	2	NEW- INDY ONTARIO, LLC	NOx
12428	2	NEW NGC, INC.	NOx
131732	2	NEWPORT FAB, LLC	NOx
18294	1	NORTHROP GRUMMAN SYSTEMS CORP	NOx
800408	1	NORTHROP GRUMMAN SYSTEMS	NOx
800409	2	NORTHROP GRUMMAN SYSTEMS CORPORATION	NOx
130211	2	NOVIPAX, INC	NOx
89248	2	OLD COUNTRY MILLWORK INC	NOx
47781	1	OLS ENERGY-CHINO	NOx
183564	2	ONNI TIMES SQUARE LP	NOx
183415	2	ONTARIO INTERNATIONAL AIRPORT AUTHORITY	NOx
35302	2	OWENS CORNING ROOFING AND ASPHALT, LLC	NOx/SOx
7427	1	OWENS-BROCKWAY GLASS CONTAINER INC	NOx/SOx
45746	2	PABCO BLDG PRODUCTS LLC,PABCO PAPER, DBA	NOx/SOx
17953	1	PACIFIC CLAY PRODUCTS INC	NOx
59618	1	PACIFIC CONTINENTAL TEXTILES, INC.	NOx
2946	1	PACIFIC FORGE INC	NOx
800168	1	PASADENA CITY, DWP	NOx
171107	2	PHILLIPS 66 CO/LA REFINERY WILMINGTON PL	NOx/SOx
171109	1	PHILLIPS 66 COMPANY/LOS ANGELES REFINERY	NOx/SOx
137520	1	PLAINS WEST COAST TERMINALS LLC	NOx
800416	1	PLAINS WEST COAST TERMINALS LLC	NOx
800417	2	PLAINS WEST COAST TERMINALS LLC	NOx
800419	2	PLAINS WEST COAST TERMINALS LLC	NOx
800420	2	PLAINS WEST COAST TERMINALS LLC	NOx
168088	1	POLYNT COMPOSITES USA INC	NOx
11435	2	PQ CORPORATION	NOx/SOx
7416	1	PRAXAIR INC	NOx
42630	1	PRAXAIR INC	NOx
136	2	PRESS FORGE CO	NOx
105903	1	PRIME WHEEL	NOx
179137	1	QG PRINTING II LLC	NOx
8547	1	QUEMETCO INC	NOx/SOx

ANNUAL RECLAIM AUDIT

Facility ID	Cycle	Facility Name	Program
19167	2	R J. NOBLE COMPANY	NOx
20604	2	RALPHS GROCERY CO	NOx
114997	1	RAYTHEON COMPANY	NOx
115172	2	RAYTHEON COMPANY	NOx
800371	2	RAYTHEON SYSTEMS COMPANY - FULLERTON OPS	NOx
20203	2	RECONSERVE OF CALIFORNIA-LOS ANGELES INC	NOx
180410	2	REICHHOLD LLC 2	NOx
52517	1	REXAM BEVERAGE CAN COMPANY	NOx
800113	2	ROHR, INC.	NOx
4242	2	SAN DIEGO GAS & ELECTRIC	NOx
15504	2	SCHLOSSER FORGE COMPANY	NOx
14926	1	SEMPRA ENERGY (THE GAS CO)	NOx
152707	1	SENTINEL ENERGY CENTER LLC	NOx
184288	2	SENTINEL PEAK RESOURCES CALIFORNIA, LLC	NOx
184301	1	SENTINEL PEAK RESOURCES CALIFORNIA, LLC	NOx
800129	1	SFPP, L.P.	NOx
37603	1	SGL TECHNIC LLC	NOx
131850	2	SHAW DIVERSIFIED SERVICES INC	NOx
117227	2	SHCI SM BCH HOTEL LLC, LOEWS SM BCH HOTE	NOx
16639	1	SHULTZ STEEL CO	NOx
54402	2	SIERRA ALUMINUM COMPANY	NOx
85943	2	SIERRA ALUMINUM COMPANY	NOx
101977	1	SIGNAL HILL PETROLEUM INC	NOx
187885	2	SMITHFIELD PACKAGED MEATS CORP	NOx
119596	2	SNACK KING CORPORATION	NOx
185352	2	SNOW SUMMIT, LLC.	NOx
4477	1	SO CAL EDISON CO	NOx
5973	1	SOCAL GAS CO	NOx
8582	1	SO CAL GAS CO/PLAYA DEL REY STORAGE FAC	NOx
800127	1	SO CAL GAS CO	NOx
800128	1	SO CAL GAS CO	NOx
169754	1	SO CAL HOLDING, LLC	NOx
14871	2	SONOCO PRODUCTS CO	NOx
160437	1	SOUTHERN CALIFORNIA EDISON	NOx
800338	2	SPECIALTY PAPER MILLS INC	NOx
1634	2	STEELCASE INC, WESTERN DIV	NOx

**ANNUAL RECLAIM AUDIT**

Facility ID	Cycle	Facility Name	Program
126498	2	STEELSCAPE, INC	NOx
105277	2	SULLY MILLER CONTRACTING CO	NOx
19390	1	SULLY-MILLER CONTRACTING CO.	NOx
3968	1	TABC, INC	NOx
18931	2	TAMCO	NOx/SOx
174591	1	TESORO REF & MKTG CO LLC,CALCINER	NOx/SOx
174655	2	TESORO REFINING & MARKETING CO, LLC	NOx/SOx
151798	1	TESORO REFINING AND MARKETING CO, LLC	NOx/SOx
800436	1	TESORO REFINING AND MARKETING CO, LLC	NOx/SOx
96587	1	TEXOLLINI INC	NOx
16660	2	THE BOEING COMPANY	NOx
115241	1	THE BOEING COMPANY	NOx
800067	1	THE BOEING COMPANY	NOx
14736	2	THE BOEING CO-SEAL BEACH COMPLEX	NOx
11119	1	THE GAS CO./ SEMPRA ENERGY	NOx
153199	1	THE KROGER CO/RALPHS GROCERY CO	NOx
62548	2	THE NEWARK GROUP, INC.	NOx
97081	1	THE TERMO COMPANY	NOx
129497	1	THUMS LONG BEACH CO	NOx
800330	1	THUMS LONG BEACH	NOx
68118	2	TIDELANDS OIL PRODUCTION COMPANY ETAL	NOx
800325	2	TIDELANDS OIL PRODUCTION CO	NOx
171960	2	TIN, INC. DBA INTERNATIONAL PAPER	NOx
137508	2	TONOGA INC, TACONIC DBA	NOx
181667	1	TORRANCE REFINING COMPANY LLC	NOx/SOx
182049	2	TORRANCE VALLEY PIPELINE CO LLC	NOx
182050	1	TORRANCE VALLEY PIPELINE CO LLC	NOx
182051	1	TORRANCE VALLEY PIPELINE CO LLC	NOx
53729	1	TREND OFFSET PRINTING SERVICES, INC	NOx
165192	2	TRIUMPH AEROSTRUCTURES, LLC	NOx
43436	1	TST, INC.	NOx
800026	1	ULTRAMAR INC	NOx/SOx
9755	2	UNITED AIRLINES INC	NOx
183108	2	URBAN COMMONS LLC EVOLUTION HOSPITALITY	NOx
800149	2	US BORAX INC	NOx
800150	1	US GOVT, AF DEPT, MARCH AIR RESERVE BASE	NOx

**ANNUAL RECLAIM AUDIT**

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<b>Facility ID</b>	<b>Cycle</b>	<b>Facility Name</b>	<b>Program</b>
800393	1	VALERO WILMINGTON ASPHALT PLANT	NOx
14502	2	VERNON PUBLIC UTILITIES	NOx
14495	2	VISTA METALS CORPORATION	NOx
146536	1	WALNUT CREEK ENERGY, LLC	NOx/SOx
42775	1	WEST NEWPORT OIL CO	NOx/SOx
17956	1	WESTERN METAL DECORATING CO	NOx
127299	2	WILDFLOWER ENERGY LP/INDIGO GEN., LLC	NOx

**APPENDIX B**  
**FACILITY INCLUSIONS**

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As discussed in Chapter 1, no facilities were added to the RECLAIM universe in Compliance Year 2018. As of January 5, 2018, no inclusion of facilities is allowed pursuant to amendments to Rule 2001.

## APPENDIX C

### RECLAIM FACILITIES CEASING OPERATION OR EXCLUDED

South Coast AQMD staff is aware of the following RECLAIM facilities that permanently shut down all operations, inactivated all their RECLAIM permits, or were excluded from the RECLAIM universe during Compliance Year 2018. The reasons for shutdowns and exclusions cited below are based on the information provided by the facilities and other information available to South Coast AQMD staff.

Facility ID	115315
Facility Name	NRG California South LP, Etiwanda Gen St
City and County	Rancho Cucamonga, San Bernardino County
SIC	4911
Pollutant(s)	NOx
1994 Allocation	1,246,300 lbs.
Reason for Shutdown	The facility cited a declining demand for their product as a reason for the shutdown.

Facility ID	122666
Facility Name	A's Match Dyeing & Finishing
City and County	Vernon, Los Angeles County
SIC	2260
Pollutant(s)	NOx
1994 Allocation	0 lbs.
Reason for Shutdown	The facility stated that they had financial difficulties as a reason for the shutdown.

Facility ID	124619
Facility Name	Ardagh Metal Packaging USA Inc.
City and County	Terminal Island, Los Angeles County
SIC	3411
Pollutant(s)	NOx
1994 Allocation	8,844 lbs.
Reason for Shutdown	The facility cited a declining demand for their products as a reason for the shutdown.

Facility ID	148340
Facility Name	The Boeing Company-Building 800 Complex
City and County	Long Beach, Los Angeles County
SIC	8711
Pollutant(s)	NOx
1994 Allocation	70,882 lbs.
Reason for Exclusion	The facility opted out of RECLAIM based on Rule 2001(g)(2) as amended 10/5/2018.

**ANNUAL RECLAIM AUDIT**

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Facility ID 800038  
Facility Name The Boeing Company - C17 Program  
City and County Long Beach, Los Angeles County  
SIC 8711  
Pollutant(s) NOx  
1994 Allocation 70,882 lbs.  
Reason for Exclusion The facility opted out of RECLAIM based on Rule 2001(g)(2) as amended 10/5/2018.

## APPENDIX D FACILITIES THAT EXCEEDED THEIR ANNUAL ALLOCATION FOR COMPLIANCE YEAR 2018

The following is a list of facilities that did not have enough RTCs to cover their NOx and/or SOx emissions in Compliance Year 2018 based on the results of audits conducted by South Coast AQMD staff.

Facility ID	Facility Name	Compliance Year	Pollutant
550	LA Co., Internal Service Dept.	2018	NOx
2912	Holliday Rock Co. Inc.	2018	NOx
18931	TAMCO	2018	NOx
20604	Ralphs Grocery Co.	2018	NOx
59618	Pacific Continental Textiles, Inc.	2018	NOx
126498	Steelscape, Inc.	2018	NOx
131732	Newport Fab, LLC	2018	NOx
173290	Mediclean	2018	NOx
174591	Tesoro Ref & Mktg Co LLC, Calciner	2018	NOx
182561	Colton Power, LP	2018	NOx
182563	Colton Power, LP	2018	NOx
184958	Broncs Inc. DBA West Coast Textiles	2018	NOx
800016	Baker Commodities Inc.	2018	NOx
800181	California Portland Cement Co.	2018	SOx
800264	Edgington Oil Company	2018	NOx
800325	Tidelands Oil Production Co.	2018	NOx



## APPENDIX E REPORTED JOB IMPACTS ATTRIBUTED TO RECLAIM

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Each year RECLAIM facility operators are asked to provide employment data in their APEP reports. The report asks company representatives to quantify job increases and/or decreases, and to report the positive and/or negative impacts of the RECLAIM program on employment at their facilities. This appendix is included in each Annual RECLAIM Audit Report to provide detailed information for facilities reporting that RECLAIM contributed to job gains or losses.

### Facilities with reported job gains or losses attributed to RECLAIM:

Facility ID:	186899
Facility Name:	Enery Holdings LLC
City and County:	Carson, Los Angeles County
SIC:	4931
Pollutant(s):	NOx
Cycle:	1
Job Gain:	6
Job Loss:	0
Comments:	The facility cited a gain of six jobs due to RECLAIM. The owner explained that the previous facility had ceased operations due to being insolvent and sold the business. The new owner refurbished the equipment to bring it into compliance with RECLAIM regulations. Once the facility was able to competitively operate in the market, the six original employees from the former facility were hired back. The owner stated that if it wasn't for RECLAIM regulations, the facility would not have replaced the catalyst, and would not be able to competitively operate.





# Annual RECLAIM Audit Report for 2018 Compliance Year

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South Coast Air Quality Management District  
Governing Board Meeting  
March 6, 2020



## RECLAIM

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Regional Clean Air Incentives Market (RECLAIM) program:

- A cap and trade program adopted in October 1993
- Objective is to meet emission reduction requirements and enhance emission monitoring while providing additional flexibility to lower compliance costs
- Includes largest NO<sub>x</sub> and SO<sub>x</sub> sources
- Specifies facility declining annual emissions caps
- Allows options to reduce emissions or buy RECLAIM Trading Credits (RTCs)

Compliance Year (CompYr) 2018 is the 25<sup>th</sup> year of the program (started in 1994)



## RECLAIM Annual Audit

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- RECLAIM (Rule 2015) requires an annual audit of the program
- Annual RECLAIM Audit Report for Compliance Year 2018
  - Cycle 1: Jan 1, 2018 – Dec 31, 2018
  - Cycle 2: Jul 1, 2018 – Jun 30, 2019
- RECLAIM had 253 facilities at the end of CompYr 2018 (258 at end of CompYr 2017)

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## 2018 Annual RECLAIM Audit Findings Compliance

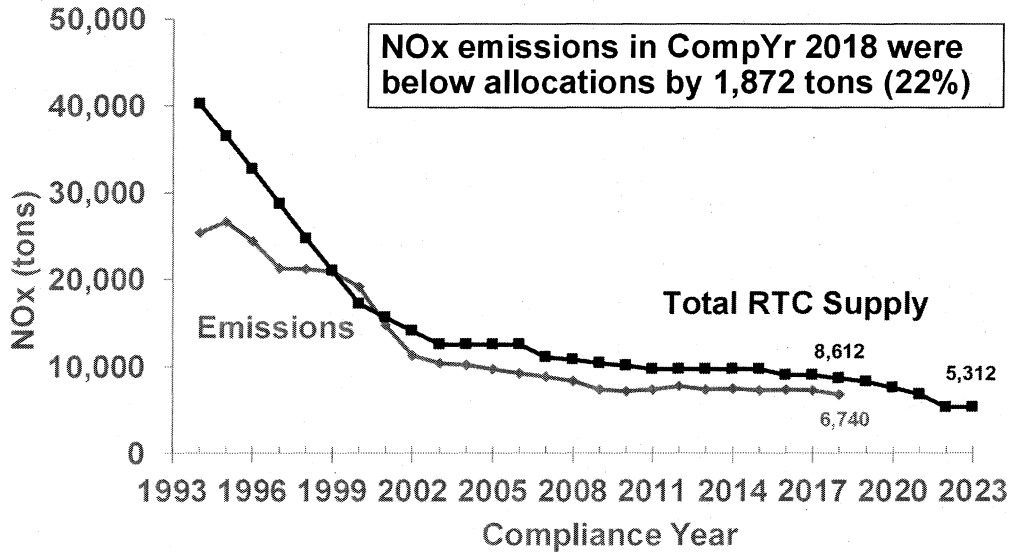
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- RECLAIM met overall NOx and SOx emissions goals:
  - NOx emissions **22%** below allocations
  - SOx emissions **14%** below allocations
- Allocation Shave
  - NOx Shave of 22.5% adopted January 2005 and implemented in 2007 - 2011
  - SOx Shave of 48.4% adopted November 2010 and implemented in 2013 – 2019
  - Additional NOx Shave of 45.2% adopted in December 2015 and implemented in 2016 – 2022
  - Reduction of 3 tons/day (11.3%) NOx and 5 tons /day (42.4%) SOx allocations in Compliance Year 2018

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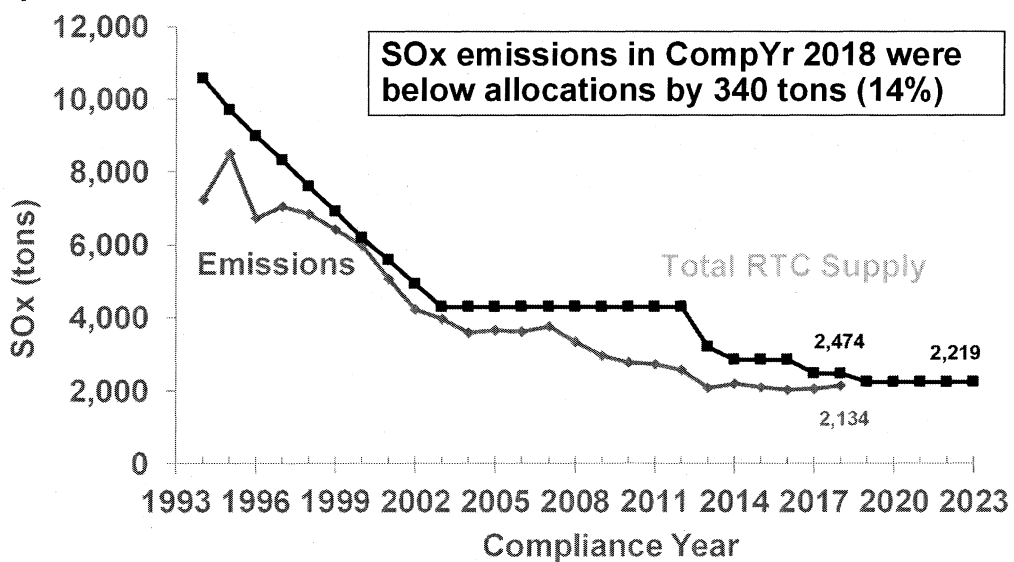
## RECLAIM NOx Emissions vs. Allocations Trends



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## RECLAIM SOx Emissions vs. Allocations Trends



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## 2018 Annual RECLAIM Audit Findings Compliance

- RECLAIM had a high rate of facility compliance:
  - NOx Facilities – **94%**
  - SOx Facilities – **97%**
- Facilities exceeding their allocations
  - NOx – 15 facilities exceeded by 454.4 tons (0.35% of total allocations)
  - SOx – one facility exceeded by 0.5 tons (0.01% of total allocations)

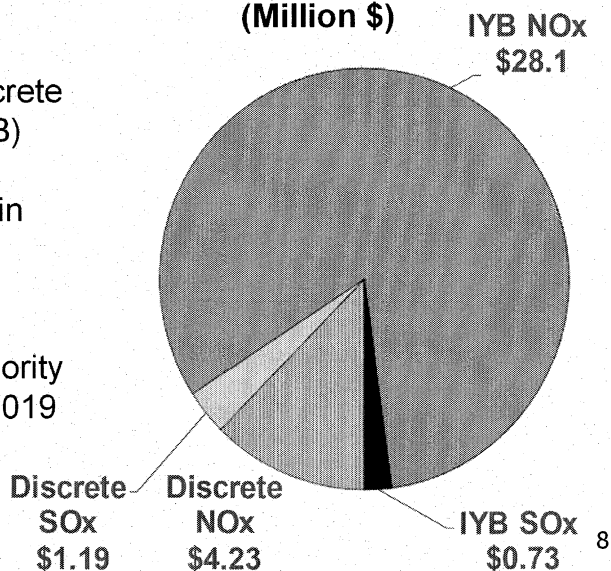
7



## 2018 Annual RECLAIM Audit Findings Credit Trading and Prices

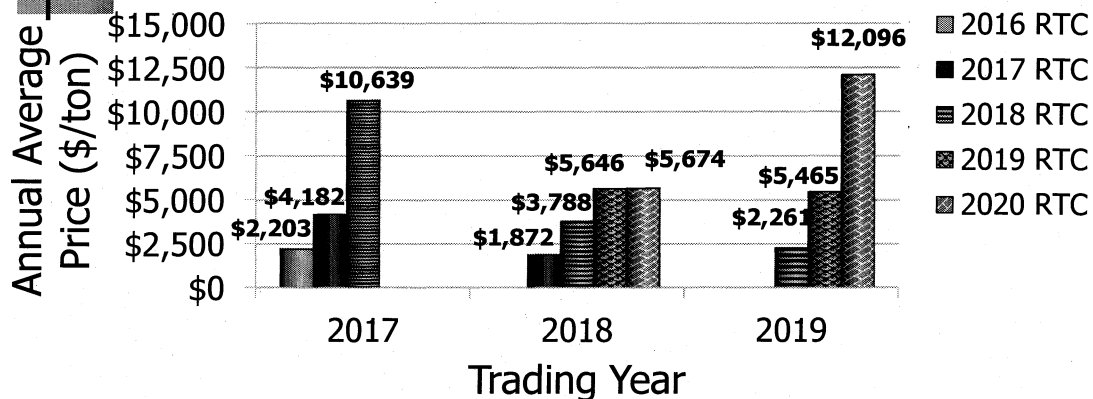
- \$1.52 billion of RTCs traded since program inception
- RTCs are traded as either Discrete Year or Infinite-Year Block (IYB)
- \$34.24 million of RTCs traded in Calendar Year (CaYr) 2019 (\$3.94 million in CaYr 2018)
- Refinery sector bought the majority of IYB RTCs traded in CaYr 2019

**Value Traded in CaYr 2019  
(Million \$)**





## 2018 Annual RECLAIM Audit Findings Average Discrete Year NOx RTC Prices

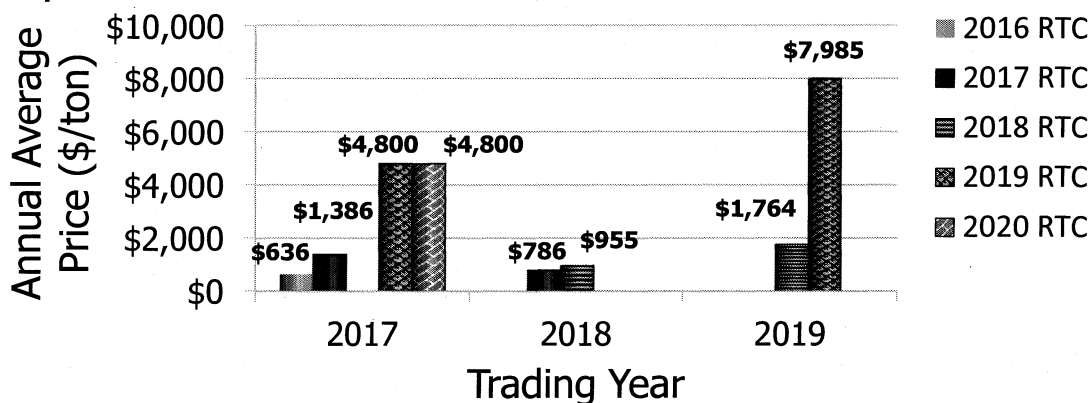


- Average prices in CalYr 2019 below program review thresholds:
  - \$15,000/ton [Rule 2015]
  - \$46,657/ton\* [Health and Safety Code] \* - Adjusted by August 2019 CPI
- Two trades of Compliance Year 2020 NOx RTC were for \$19,000/ton though the average price is under the \$15,000/ton threshold

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## 2018 Annual RECLAIM Audit Findings Average Discrete Year SOx RTC Prices

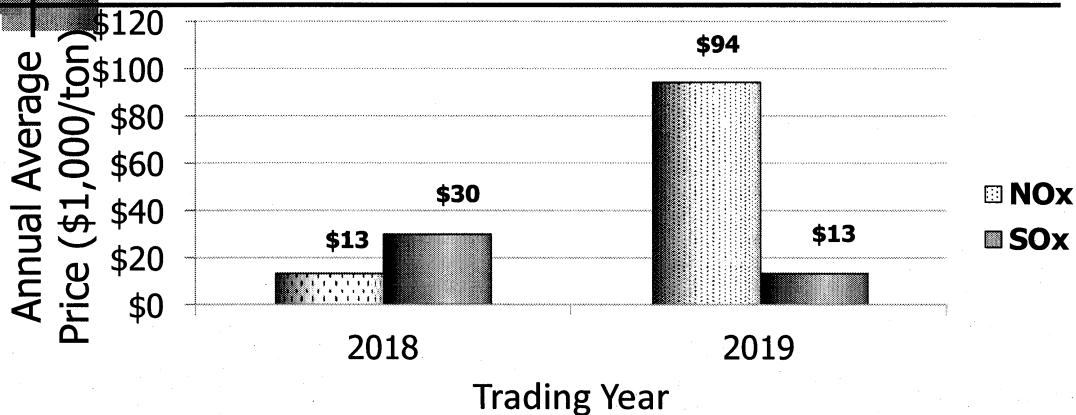


- Average prices in CalYr 2018 below program review thresholds:
  - \$15,000/ton [Rule 2015]
  - \$33,593\*/ton [Health and Safety Code] \* - Adjusted by August 2019 CPI

\* - Adjusted by August 2019 CPI 10



## 2018 Annual RECLAIM Audit Findings Average IYB RTC Prices



- 2019 IYB RTC average prices remain below program review thresholds [Health and Safety Code]

- NOx = \$699,852/ton\*

- SOx = \$503,893/ton\*

\* - Adjusted by August 2019 CPI 11



## 2018 Annual RECLAIM Audit Findings Investor Participation during CalYr 2019

- Investors are RTC holders who are not RECLAIM facility operators
- Investor participation remains active in CalYr 2019 trades.

RTC Type	Value		Volume	
	NOx	SOx	NOx	SOx
Discrete	64%	75%	55%	47%
IYB	74%	43%	71%	45%

- Investors' holdings at the end of CalYr 2019
  - 1.3% of IYB NOx RTCs (down from 3.8 % in CalYr 2018)
  - 4.7% of IYB SOx RTCs (remained the same as in CalYr 2018)

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## 2018 Annual RECLAIM Audit Findings RECLAIM Transition

- On January 5, 2018, the Board directed staff to initiate the transition of the RECLAIM program to a command-and-control regulatory structure:
  - Monthly working group meetings
  - Rule-specific working groups
  - As of January 2020, the Board amended and/or adopted 10 "Landing Rules" to implement BARCT

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## 2018 Annual RECLAIM Audit Findings

- RECLAIM facilities overall employment <sup>gain</sup> ~~loss~~ of 0.32% (net gain of 326 jobs)
- Met federal NSR offset ratios
- No significant shift in seasonal emissions
- No evidence of increased health risk due to RECLAIM

*Amended  
3/6/2020  
J.F.*

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## 2018 Annual RECLAIM Audit Findings Summary/Recommendations

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### Summary:

- Programmatic compliance achieved (NOx and SOx emissions were 22% and 14% below allocations, respectively)
- Individual facility compliance rate remained high (94% & 97% for NOx and SOx, respectively, based on 100% of RECLAIM facilities audited in Compliance Year 2018)
- RTC prices stayed below program review thresholds
- RECLAIM met all other requirements

### Recommendation:

- Approve the Annual RECLAIM Audit Report for 2018 Compliance Year