



South Coast Air Quality Management District

South Coast
AQMD

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

MEETING, MARCH 6, 2020

A meeting of the South Coast Air Quality Management District Board will be held at 9:00 AM, in the Auditorium at South Coast AQMD Headquarters, 21865 Copley Drive, Diamond Bar, California.

Questions About an Agenda Item

- The name and telephone number of the appropriate staff person to call for additional information or to resolve concerns is listed for each agenda item.
- In preparation for the meeting, you are encouraged to obtain whatever clarifying information may be needed to allow the Board to move expeditiously in its deliberations.

Meeting Procedures

- The public meeting of the South Coast AQMD Governing Board begins at 9:00 a.m. The Governing Board generally will consider items in the order listed on the agenda. However, any item may be considered in any order.
- After taking action on any agenda item not requiring a public hearing, the Board may reconsider or amend the item at any time during the meeting.

Questions About Progress of the Meeting

- During the meeting, the public may call the Clerk of the Board's Office at (909) 396-2500 for the number of the agenda item the Board is currently discussing.

All documents (i) constituting non-exempt public records, (ii) relating to an item on the agenda, and (iii) having been distributed to at least a majority of the Governing Board after the agenda is posted, are available prior to the meeting for public review at the South Coast Air Quality Management District Clerk of the Board's Office, 21865 Copley Drive, Diamond Bar, CA 91765.

The Agenda is subject to revisions. For the latest version of agenda items herein or missing agenda items, check the South Coast AQMD's web page (www.aqmd.gov) or contact the Clerk of the Board, (909) 396-2500. Copies of revised agendas will also be available at the Board meeting.

Americans with Disabilities Act and Language Accessibility

Disability and language-related accommodations can be requested to allow participation in the Governing Board meeting. The agenda will be made available, upon request, in appropriate alternative formats to assist persons with a disability (Gov't Code Section 54954.2(a)). In addition, other documents may be requested in alternative formats and languages. Any disability or language-related accommodation must be requested as soon as practicable. Requests will be accommodated unless providing the accommodation would result in a fundamental alteration or undue burden to the South Coast AQMD. Please contact the Clerk of the Board Office at (909) 396-2500 from 7:00 a.m. to 5:30 p.m., Tuesday through Friday, or send the request to cob@aqmd.gov

A webcast of the meeting is available for viewing at:

<http://www.aqmd.gov/home/news-events/webcast>

Cleaning the air that we breathe...

CALL TO ORDER

- Pledge of Allegiance
- Opening Comments: William A. Burke, Ed.D., Chair
Other Board Members
Wayne Nastri, Executive Officer
- Swearing in of Reappointed Board Member Michael A. Cacciotti **Burke**
- Swearing in of Newly Appointed Board Member Gideon Kracov **Burke**

Staff/Phone (909) 396-

CONSENT CALENDAR (Items 1 through 19)

Note: Consent Calendar items held for discussion will be moved to Item No. 20

1. Approve Minutes of February 7, 2020 Board Meeting **Thomas/2500**

Budget/Fiscal Impact

2. Execute Contracts to Replace Heavy-Duty Diesel Trucks with Near-Zero Emissions Natural Gas Trucks **Berry/2363**

In October 2018, the Board approved awards totaling \$14 million to replace 140 heavy-duty diesel trucks with near-zero emissions natural gas trucks. The clean trucks will be funded using \$8 million in grant funds provided by the CEC plus \$6 million in local match funds. Since approval of these awards, some fleets have declined their award or opted to switch to a fuel type not allowed under the CEC grant. These changes resulted in available funds that may be reallocated to other eligible trucks. These actions are to execute two contracts in the amount of \$3,900,000 from the Community Air Protection AB 134 Fund (77) and, in the case of turnback funds, authorize the Executive Officer to execute additional contracts for eligible trucks meeting the CEC grant requirements from the applications received through the Proposition 1B-Goods Movement solicitation until all funds are exhausted. (Reviewed: Technology Committee, February 21, 2020; Less than a quorum was present; a concurrence of the staff recommendation will be forwarded to the Board)

3. **Adopt Resolution Recognizing Funds for FY 2019-20 Carl Moyer Program Award, Issue Program Announcements for Carl Moyer Program and SOON Provision and Transfer Funds for Voucher Incentive Program** **Berry/2363**

These actions are to adopt a Resolution recognizing up to \$37 million in Carl Moyer Program grant funds from CARB with its terms and conditions for FY 2019-20 and issue Program Announcements for “Year 22” of the Carl Moyer Program and SOON Provision to solicit applications for eligible zero and low emitting on- and off-road vehicles and equipment. This action is to also transfer \$3 million from the Carl Moyer Program AB 923 Special Revenue Fund (80) to the Voucher Incentive Program Fund (59) to continue funding truck replacement projects on a first-come, first-served basis. (Reviewed: Technology Committee, February 21, 2020; Less than a quorum was present; a concurrence of the staff recommendation will be forwarded to the Board)

4. **Recognize Revenue and Transfer and Appropriate Funds for Volkswagen Environmental Mitigation Trust** **Berry/2363**

In November 2018, the Board recognized \$150 million in revenue from CARB for the Volkswagen (VW) Environmental Mitigation Trust and authorized the transfer of up to 10 percent into the General Fund to reimburse administrative costs for this program. Subsequently, CARB and the South Coast AQMD executed a project agreement for this program totaling \$165 million, which included \$150 million for projects and \$15 million for administrative costs. These actions are to recognize up to \$15 million in additional revenue from CARB, transfer \$520,733 into the General Fund to reimburse FY 2018-19 Salaries & Employee Benefits and Service & Supplies, and transfer and appropriate up to \$898,000 into Science & Technology Advancement’s and Information Management’s FYs 2019-20 and 2020-21 Budgets, Professional and Special Services and Capital Outlays Major Objects, for administrative expenses to implement the VW Mitigation Program. (Reviewed: Technology Committee, February 21, 2020; Less than a quorum was present; a concurrence of the staff recommendation will be forwarded to the Board)

5. **Execute Contract to Conduct Airborne Measurements of NOx Emissions in the South Coast Air Basin** **Rees/2856**

Emission inventories are a critical component of South Coast AQMD’s air quality modeling and control strategy development. The University of California, Berkeley (UC Berkeley) has proposed to conduct airborne flux measurements by aircraft, offering a robust method to evaluate NOx emission inventories. CARB has committed \$700,000 for the parallel measurement of VOC fluxes during this field effort. This action is to execute a contract with the UC Berkeley to conduct airborne measurements of NOx emissions in the South Coast Air Basin at a cost not to exceed \$300,000 from the Clean Fuels Program Fund (31). (Reviewed: Technology Committee, February 21, 2020; Less than a quorum was present; a concurrence of the staff recommendation will be forwarded to the Board)

6. Recognize Revenue, Amend Contract for Heavy-Duty Truck Replacements and Reimburse General Fund for Administrative Costs **Miyasato/3249**

In November 2019, South Coast AQMD received approval of a revised project scope for a FY 18 U.S. EPA Diesel Emissions Reductions Act (DERA) grant previously awarded. The approved project scope will allow for replacement of older on-road heavy-duty diesel trucks with new near-zero emissions natural gas-powered trucks in non-drayage applications. Since Proposition 1B eligible projects qualify for these DERA funds, staff proposes to award the funds to a previously approved Proposition 1B project. These actions are to recognize \$1,601,523 in revenue from U.S. EPA DERA into the Advanced Technology Outreach and Education Fund (17), amend a contract for heavy-duty truck replacements adding DERA funds to reduce Proposition 1B-Goods Movement funding, and reimburse the General Fund for administrative costs up to \$99,444 to implement the project. (Reviewed: Technology Committee, February 21, 2020; Less than a quorum was present; a concurrence of the staff recommendation will be forwarded to the Board)

7. Execute Contract for Independent Audit Services for FYs Ending June 30, 2020, 2021 and 2022 **Jain/2804**

On November 1, 2019, the Board approved release of an RFP for independent financial audit services. Two proposals were submitted to the Administrative Committee for consideration at its February 14, 2020 meeting. After the Committee interviewed representatives of each of the firms, BCA Watson Rice, LLP was selected to be recommended to the full Board. (Reviewed: Administrative Committee, February 14, 2020; Recommended for Approval)

8. Approve South Coast AQMD Annual Investment Policy and Delegation of Authority to Appointed Treasurer to Invest South Coast AQMD Funds **Jain/2804**

The South Coast AQMD adopts an annual investment policy which, if done, must be considered at a public meeting of the Board. State law additionally requires South Coast AQMD to annually renew its delegation of authority to its treasurer to invest or to reinvest funds of the local agency. This action is to approve the Annual Investment Policy and the Resolution to renew delegation of authority to the Los Angeles County Treasurer to invest and reinvest South Coast AQMD funds. (Reviewed: Investment Oversight Committee, February 21, 2020; Recommended for Approval)

9. Appropriate Funds and Amend Contract for Consultant Services for South Coast AQMD's Why Healthy Air Matters High School Program **Alatorre/3122**

The current contract with Lee Andrews Group, Inc., for outreach efforts conducted for the WHAM Program, expires on April 17, 2020. This contract includes an option for two one-year extensions. Based on the firm's effective performance during their current contract, this action is to approve the one-year extension of the consultant's contract in the amount of \$500,000 for Calendar Year 2020 from the BP ARCO Settlement Projects Fund (46). (Reviewed: Administrative Committee, February 14, 2020; Recommended for Approval)

10. Issue Purchase Order to Promote "The Right to Breathe" Video **Alatorre/3122**

This action is to add \$500,000 to South Coast AQMD's Google AdWords campaign to promote South Coast AQMD's "The Right to Breathe" video. Funding for this effort will come from the BP ARCO Settlement Projects Fund (46). (Reviewed: Administrative Committee, February 14, 2020; Recommended for Approval)

Action Item/No Fiscal Impact

11. Annual Meeting of the Health Effects of Air Pollution Foundation **Gilchrist/3459**

This item is to conduct the annual meeting of the Health Effects of Air Pollution Foundation. The Foundation staff will present an annual report detailing the research supported by the Foundation over the past year, the Foundation's plans for the future, and a financial report. (No Committee Review)

Items 12 through 19 - Information Only/Receive and File

12. Legislative, Public Affairs, and Media Report **Alatorre/3122**

This report highlights the January 2020 outreach activities of the Legislative, Public Affairs and Media Office, which includes: Major Events, Community Events/Public Meetings, Environmental Justice Update, Speakers Bureau/Visitor Services, Communications Center, Public Information Center, Business Assistance, Media Relations and Outreach to Business and Federal, State and Local Government. (No Committee Review)

13. Hearing Board Report **Prussack/2500**

This reports the actions taken by the Hearing Board during the period of January 1 through January 31, 2020. (No Committee Review)

14. Civil Filings and Civil Penalties Report **Gilchrist/3459**

This reports the monthly penalties from January 1, 2020 through January 31, 2020, and legal actions filed by the General Counsel's Office from January 1, 2020 through January 31, 2020. An Index of South Coast AQMD Rules is attached with the penalty report. (No Committee Review)

15. Lead Agency Projects and Environmental Documents Received **Nakamura/3105**

This report provides a listing of CEQA documents received by the South Coast AQMD between January 1, 2020 and January 31, 2020, and those projects for which the South Coast AQMD is acting as lead agency pursuant to CEQA. (Reviewed: Mobile Source Committee, February 21, 2020)

16. Rule and Control Measure Forecast Fine/2239
- This report highlights South Coast AQMD rulemaking activities and public hearings scheduled for 2020. (No Committee Review)
17. Status Report on Major Ongoing and Upcoming Projects for Information Management Moskowitz/3329
- Information Management is responsible for data systems management services in support of all South Coast AQMD operations. This action is to provide the monthly status report on major automation contracts and planned projects. (Reviewed: Administrative Committee, February 14, 2020)
18. FY 2019-20 Contract Activity Jain/2804
- This report lists the number of contracts let during the first six months of FY 2019-20, the respective dollar amounts, award type, and the authorized contract signatory for the South Coast AQMD. (No Committee Review)
19. Report of RFPs Scheduled for Release in March Jain/2804
- This report summarizes the RFPs for budgeted services over \$100,000 scheduled to be released for advertisement for the month of March. (Reviewed: Administrative Committee, February 14, 2020)
20. Items Deferred from Consent Calendar

BOARD CALENDAR

Note: The February meeting of the Mobile Source Air Pollution Reduction Review Committee (MSRC) was canceled. The next meeting of the MSRC is scheduled for March 19, 2020. The February meeting of the Stationary Source Committee was canceled. The next meeting of the Stationary Source Committee is scheduled for March 20, 2020.

21. Administrative Committee (Receive & File) Chair: Burke Nastri/3131
22. Investment Oversight Committee (Receive and File) Chair: Cacciotti Jain/2804
23. Legislative Committee Chair: Mitchell Alatorre/3122

Receive and file; and take the following action as recommended:

Agenda Item	Recommendation
H.R. 2616 (DeSaulnier, Porter, and Rouda) Clean Corridors Act of 2019	Withdrawn

- | | | | |
|-----|--|---------------------|---------------|
| 24. | Mobile Source Committee (Receive & File) | Chair: Burke | Fine/2239 |
| 25. | Technology Committee (Receive & File) | Chair: Buscaino | Miyasato/3249 |
| 26. | California Air Resources Board Monthly Report (Receive & File) | Board Rep: Mitchell | Thomas/2500 |

Staff Presentation/Board Discussion

- | | | | |
|-----|--|--|-----------|
| 27. | Update on MOU for the Marine Ports (<i>Presentation in lieu of Board Letter</i>) | | Rees/2856 |
|-----|--|--|-----------|

This staff presentation will provide an update on MOU development for the Marine Ports. Following Board's direction, staff has been pursuing an MOU with the Ports based on the San Pedro Bay Ports Clean Air Action Plan measures. Staff will provide an update on recent activities and will present options to proceed for consideration. (Reviewed: Mobile Source Committee, February 21, 2020)

PUBLIC HEARINGS

- | | | |
|-----|--|---------------|
| 28. | Approve and Adopt Technology Advancement Office Clean Fuels Program 2019 Annual Report and 2020 Plan Update, Resolution and Membership Changes for Clean Fuels Advisory Group and Receive and File Updated Membership of Technology Advancement Advisory Group | Miyasato/3249 |
|-----|--|---------------|

Each year by March 31, the South Coast AQMD must submit to the California Legislative Analyst an approved Annual Report for the past year and a Plan Update for the current calendar year for the Clean Fuels Program. This action is to approve and adopt the Technology Advancement Clean Fuels Program Annual Report for 2019 and 2020 Plan Update as well as the Resolution finding that proposed projects do not duplicate any past or present programs. These actions are to also approve and adopt membership changes to the SB 98 Clean Fuels Advisory Group and receive and file membership changes to the Technology Advancement Advisory Group. (Reviewed: Technology Committee, February 21, 2020; Less than a quorum was present; a concurrence of the staff recommendation will be forwarded to the Board)

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|-----|--|----------------|
| 29. | Approve Annual RECLAIM Audit Report for 2018 Compliance Year | Dejbakhsh/2618 |
|-----|--|----------------|

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 in the report. (No Committee Review)

PUBLIC COMMENT PERIOD – (Public Comment on Non-Agenda Items, Pursuant to Government Code Section 54954.3)

BOARD MEMBER TRAVEL – (No Written Material)

Board member travel reports have been filed with the Clerk of the Boards, and copies are available upon request.

CLOSED SESSION - (No Written Material)

Gilchrist/3459

CONFERENCE WITH LEGAL COUNSEL – EXISTING LITIGATION

It is necessary for the Board to recess to closed session pursuant to Government Code sections 54956.9(a) and 54956.9(d)(1) to confer with its counsel regarding pending litigation which has been initiated formally and to which the SCAQMD is a party. The actions are:

- In the Matter of SCAQMD v. Aerocraft Heat Treating Co., Inc. and Anaplex Corp., SCAQMD Hearing Board Case No. 6066-1 (Order for Abatement);
- In the Matter of SCAQMD v. Browning-Ferris Industries of California, Inc. dba Sunshine Canyon Landfill, SCAQMD Hearing Board Case No. 3448-14;
- Communities for a Better Environment v. SCAQMD, Los Angeles Superior Court Case No. BS161399 (RECLAIM);
- Communities for a Better Environment v. South Coast Air Quality Management District, Court of Appeals, Second Appellate District, Case No. B294732; (Tesoro)
- People of the State of California, ex rel. SCAQMD v. Exide Technologies, Inc., Los Angeles Superior Court Case No. BC533528;
- In re: Exide Technologies, Inc., U.S. Bankruptcy Court, District of Delaware, Case No. 13-11482 (KJC) (Bankruptcy Case); Delaware District Court, Case No.: 19-00891 (Appellate Case);
- In the Matter of SCAQMD v. Southern California Gas Company, Aliso Canyon Storage Facility, SCAQMD Hearing Board Case No. 137-76 (Order for Abatement); People of the State of California, ex rel SCAQMD v. Southern California Gas Company, Los Angeles Superior Court Case No. BC608322; Judicial Council Coordinated Proceeding No. 4861;
- In the Matter of SCAQMD v. Torrance Refining Company, LLC, SCAQMD Hearing Board Case No. 6060-5 (Order for Abatement);
- People of the State of California, ex rel South Coast Air Quality Management District v. The Sherwin-Williams Company, an Ohio Corporation, and Does 1 through 50, Inclusive, Los Angeles Superior Court Case No. PSCV 00136;
- CalPortland Company v. South Coast Air Quality Management District; Governing Board of the South Coast Air Quality Management District; and Wayne Nastri, Executive Officer, and Does 1-100, San Bernardino County Superior Court, Case No. CIV DS 19258941;

- Downwinders at Risk et al. v. EPA, United States Court of Appeals D.C. Circuit, Case No. 19-1024 (consolidated with Sierra Club, et al. v. EPA, No. 15-1465);
- SCAQMD, et al. v. Elaine L. Chao, et al., District Court for the District of Columbia, Case No. 1:19-cv-03436-KBJ;
- SCAQMD, et al. v. EPA, United States Court of Appeals D.C. Circuit, Case No. 19-1241 (consolidated with Union of Concerned Scientists v. NHTSA, No. 19-1230);
- Association of Irrigated Residents v. U.S. EPA, SCAQMD, SJVUAPCD, et al., United States Court of Appeals, D.C. Circuit, Case No. 19-71223; and
- Communities for a Better Environment v. South Coast Air Quality Management District, Los Angeles Superior Court Case No. 19STCP05239 (Tesoro).

CONFERENCE WITH LEGAL COUNSEL – INITIATING LITIGATION

It is also necessary for the Board to recess to closed session pursuant to Government Code section 54956.9(a) and 54956.9(d)(4) to consider initiation of litigation (four cases).

CONFERENCE WITH LEGAL COUNSEL – ANTICIPATED LITIGATION

Also, it is necessary for the Board to recess to closed session pursuant to Government Code section 54956.9(d)(2) to confer with its counsel because there is a significant exposure to litigation against the SCAQMD (two cases).

Letter from Steven J. Olson, O'Melveny & Myers LLP, on behalf of ExxonMobil Corporation, dated August 22, 2018.

Email from Somerset Perry, California Deputy Attorney General, dated March 13, 2019, regarding Notice of Violation P61321.

ADJOURNMENT

*****PUBLIC COMMENTS*****

Members of the public are afforded an opportunity to speak on any agenda item before consideration of that item. Please notify the Clerk of the Board, (909) 396-2500, if you wish to do so. All agendas are posted at South Coast AQMD Headquarters, 21865 Copley Drive, Diamond Bar, California, at least 72 hours in advance of the meeting. At the end of the agenda, an opportunity is also provided for the public to speak on any subject within the South Coast AQMD's authority. Speakers will be limited to a total of three (3) minutes for the Consent Calendar and Board Calendar and three (3) minutes or less for other agenda items.

Note that on items listed on the Consent Calendar and the balance of the agenda any motion, including action, can be taken (consideration is not limited to listed recommended actions). Additional matters can be added and action taken by two-thirds vote, or in the case of an emergency, by a majority vote. Matters raised under the Public Comment Period may not be acted upon at that meeting other than as provided above.

Written comments will be accepted by the Board and made part of the record, provided 25 copies are presented to the Clerk of the Board. Electronic submittals to cob@aqmd.gov of 10 pages or less including attachment, in MS WORD, PDF, plain or HTML format will also be accepted by the Board and made part of the record if received no later than 5:00 p.m., on the Tuesday prior to the Board meeting.

ACRONYMS

AQ-SPEC = Air Quality Sensor Performance Evaluation Center

AQIP = Air Quality Investment Program

AQMP = Air Quality Management Plan

AVR = Average Vehicle Ridership

BACT = Best Available Control Technology

BARCT = Best Available Retrofit Control Technology

Cal/EPA = California Environmental Protection Agency

CARB = California Air Resources Board

CEMS = Continuous Emissions Monitoring Systems

CEC = California Energy Commission

CEQA = California Environmental Quality Act

CE-CERT =College of Engineering-Center for Environmental Research and Technology

CNG = Compressed Natural Gas

CO = Carbon Monoxide

DOE = Department of Energy

EV = Electric Vehicle

FY = Fiscal Year

GHG = Greenhouse Gas

HRA = Health Risk Assessment

LEV = Low Emission Vehicle

LNG = Liquefied Natural Gas

MATES = Multiple Air Toxics Exposure Study

MOU = Memorandum of Understanding

MSERCs = Mobile Source Emission Reduction Credits

MSRC = Mobile Source (Air Pollution Reduction) Review Committee

NATTS =National Air Toxics Trends Station

NESHAPS = National Emission Standards for Hazardous Air Pollutants

NGV = Natural Gas Vehicle

NOx = Oxides of Nitrogen

NSPS = New Source Performance Standards

NSR = New Source Review

OEHHA = Office of Environmental Health Hazard Assessment

PAMS = Photochemical Assessment Monitoring Stations

PEV = Plug-In Electric Vehicle

PHEV = Plug-In Hybrid Electric Vehicle

PM10 = Particulate Matter \leq 10 microns

PM2.5 = Particulate Matter \leq 2.5 microns

RECLAIM=Regional Clean Air Incentives Market

RFP = Request for Proposals

RFQ = Request for Quotations

RFQQ=Request for Qualifications and Quotations

SCAG = Southern California Association of Governments

SIP = State Implementation Plan

SOx = Oxides of Sulfur

SOON = Surplus Off-Road Opt-In for NOx

SULEV = Super Ultra Low Emission Vehicle

TCM = Transportation Control Measure

ULEV = Ultra Low Emission Vehicle

U.S. EPA = United States Environmental Protection Agency

VOC = Volatile Organic Compound

ZEV = Zero Emission Vehicle

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BOARD MEETING DATE: March 6, 2020

AGENDA NO. 1

MINUTES: Governing Board Monthly Meeting

SYNOPSIS: Attached are the Minutes of the February 7, 2020 meeting.

RECOMMENDED ACTION:

Approve Minutes of the February 7, 2020 Board Meeting.

Faye Thomas
Clerk of the Boards

FT:cmw

FRIDAY, FEBRUARY 7, 2020

Notice having been duly given, the regular meeting of the South Coast Air Quality Management District Board was held at District Headquarters, 21865 Copley Drive, Diamond Bar, California. Members present:

William A. Burke, Ed.D., Chairman (Left at 10:35 a.m.)
Speaker of the Assembly Appointee

Council Member Ben Benoit, Vice Chairman
Cities of Riverside County

Supervisor Kathryn Barger
County of Los Angeles

Supervisor Lisa A. Bartlett
County of Orange

Council Member Michael A. Cacciotti
Cities of Los Angeles County – Eastern Region

Senator Vanessa Delgado (Ret.)
Senate Rules Committee Appointee

Mayor Larry McCallon
Cities of San Bernardino County

Council Member Judith Mitchell
Cities of Los Angeles County – Western Region

Supervisor V. Manuel Perez (Arrived at 9:10 a.m.)
County of Riverside

Council Member Carlos Rodriguez
Cities of Orange County

Supervisor Janice Rutherford
County of San Bernardino

Members absent:

Council Member Joe Buscaino
City of Los Angeles

Vacant: Governor's Appointee

CALL TO ORDER: Chairman Burke called the meeting to order at 9:00 a.m.

- Pledge of Allegiance: Led by Supervisor Bartlett
- Opening Comments

Supervisor Barger asked staff for an update on the recent Delta jet fuel release over Cudahy.

Mr. Nastri responded that a Notice of Violation had been issued and data is being collected from the incident. An update will be provided to the Board when more information is available.

- Swearing in of Reappointed Board Member Larry McCallon

Chairman Burke administered the oath of office to Mayor Larry McCallon who was reappointed to the Board by the San Bernardino County City Selection Committee for a term ending January 15, 2024.

- Swearing in of Newly Appointed Board Member Carlos Rodriguez

Chairman Burke administered the oath of office to Council Member Rodriguez who was appointed to the Board by the Orange County City Selection Committee for a term ending January 15, 2024. Council Member Rodriguez stated that he was honored to serve on the Board.

(Supervisor Perez arrived at 9:10 a.m.)

CONSENT CALENDAR

1. Approve Minutes of January 10, 2020 Board Meeting

Budget/Fiscal Impact

2. Amend and Execute Contracts to Perform Data Collection of Zero Emissions Heavy-Duty Infrastructure and Other Equipment
3. Renew South Coast AQMD's Membership in CaFCP for Calendar Year 2020 and Receive and File California Fuel Cell Partnership Executive Board Meeting Agenda and Activity Updates
4. Recognize Revenue, Transfer and Appropriate Funds, Approve Positions, Issue Solicitations and Purchase Orders, and Execute Contracts and Agreements for Mid-Year Budget Adjustments

5. Establish List of Prequalified Vendors to Provide Computer, Network, Printer, Hardware and Software, and Audio Visual Equipment
6. Appropriate Funds and Amend Contract for Consultant Services for South Coast AQMD's Environmental Justice Outreach and Initiatives
7. Approve Contract Modifications as Approved by MSRC

Items 8 through 14 – Information Only/Receive and File

8. Legislative, Public Affairs and Media Report
9. Hearing Board Report
10. Civil Filings and Civil Penalties Report
11. Lead Agency Projects and Environmental Documents Received
12. Rule and Control Measure Forecast
13. Status Report on Major Ongoing and Upcoming Projects for Information Management
14. Receive and File Annual Report on 457 Deferred Compensation Plan

Council Member Mitchell noted that she has no financial interests in Item Nos. 2 and 4 but is required to identify for the record that she is a Board Member of CARB, which is involved in both items.

Agenda Item Numbers 4 and 14 were pulled for comment and discussion.

Harvey Eder, Public Solar Power Coalition, requested to speak on items 1 through 14 and items 16 through 22. He commented on difficulties he experienced while attempting to file a writ of mandate in Federal Court.

Steven Goldsmith, Torrance Refinery Action Alliance, expressed concerns regarding the continued use of hydrofluoric (HF) acid at refineries and provided an update on developments since the September 6, 2019 Board meeting. Mr. Goldsmith urged the Board to reconsider their decision to allow the continued use of HF and return to the rulemaking process. He invited Board members and the

public to attend a community event focusing on banning HF on February 15, 2020 in Torrance and distributed an informational flyer to Board members. (Submitted Written Comment)

MOVED BY BENOIT, SECONDED BY CACCIOTTI, AGENDA ITEMS 1, 2, 3 AND 5 THROUGH 13 APPROVED AS RECOMMENDED, BY THE FOLLOWING VOTE:

AYES: Barger, Bartlett, Benoit, Burke, Cacciotti, Delgado, McCallon, Mitchell, Perez, Rodriguez and Rutherford

NOES: None

ABSENT: Buscaino

15. Items Deferred from Consent Calendar

14. Receive and File Annual Report on 457 Deferred Compensation Plan

Supervisor Bartlett inquired about efforts for succession planning at the South Coast AQMD.

Jill Whynot, Chief Operating Officer, noted that there is a robust succession planning program in place as well as a mentoring program that supports the succession plan.

MOVED BY BARTLETT, SECONDED BY CACCIOTTI, AGENDA ITEM NO. 14 APPROVED AS RECOMMENDED, BY THE FOLLOWING VOTE:

AYES: Barger, Bartlett, Benoit, Burke, Cacciotti, Delgado, McCallon, Mitchell, Perez, Rodriguez and Rutherford

NOES: None

ABSENT: Buscaino

4. Recognize Revenue, Transfer and Appropriate Funds, Approve Positions, Issue Solicitations and Purchase Orders, and Execute Contracts and Agreements for Mid-Year Budget Adjustments

Council Member Cacciotti inquired about the type of fleet vehicles that will be purchased.

Dr. Matt Miyasato, DEO/Science and Technology Advancement, explained that the fleet vehicles are used primarily by inspectors and sufficient range is an important factor. The Honda Clarity Plug-in Hybrid is the best option because of its long driving range and zero emission capability. Staff will continue to evaluate other options as they become available.

MOVED BY CACCIOTTI, SECONDED BY BENOIT, AGENDA ITEM NO. 4 APPROVED AS RECOMMENDED, BY THE FOLLOWING VOTE:

AYES: Barger, Bartlett, Benoit, Burke, Cacciotti, Delgado, McCallon, Mitchell, Perez, Rodriguez and Rutherford

NOES: None

ABSENT: Buscaino

BOARD CALENDAR

16. Administrative Committee
17. Legislative Committee
18. Mobile Source Committee
19. Stationary Source Committee
20. Technology Committee
21. Mobile Source Air Pollution Reduction Review Committee
22. California Air Resources Board Monthly Report

MOVED BY BENOIT, SECONDED BY CACCIOTTI, AGENDA ITEMS 16 THROUGH 22, APPROVED AS RECOMMENDED, RECEIVING AND FILING THE COMMITTEE, MSRC AND CARB REPORTS, BY THE FOLLOWING VOTE:

AYES: Barger, Bartlett, Benoit, Burke, Cacciotti, Delgado, McCallon, Mitchell, Perez, Rodriguez and Rutherford

NOES: None

ABSENT: Buscaino

Staff Presentation/Board Discussion

23. NOx BARCT Rulemaking Update

Susan Nakamura, Assistant DEO/Planning, Rule Development and Area Sources, gave the staff presentation on Item No. 23.

Mike Carroll, Regulatory Flexibility Group and Western States Petroleum Association (WSPA), noted the success of the RECLAIM program in achieving emission reductions over the life of the program. He also commented that the New Source Review program is complicated, and expressed concern that the rulemaking schedule is not realistic.

Patty Senecal, WSPA, stated that RECLAIM has been successful in reducing emissions. She noted that implementing emission control projects is complicated and will require a significant amount of effort and take a number of years. WSPA is actively participating with staff on the RECLAIM transition project.

Mr. Eder commented on the benefits of solar power and added that solar powered technologies should be considered BARCT. He expressed concerns about natural gas and urged phase-out of fossil fuels.

Supervisor Barger noted that she sees the trends of emissions going down and does not see that the program has diminishing returns.

Wayne Nastri, Executive Officer, acknowledged that the overall program has been effective in addressing emission reductions and commented on the inherent challenges with the program's continuing effectiveness as the allocation cap decreased, and it becomes more difficult to achieve additional emission reductions.

Supervisor Rutherford inquired about the timing to transition RECLAIM to a command-and-control regulatory structure.

Dr. Philip Fine, DEO/Planning, Rule Development and Area Sources, acknowledged the timing challenge with transitioning RECLAIM as soon as practicable, but assured that staff has been regularly meeting with stakeholders to address their concerns. Staff understands the complexity of the issues when conducting a BARCT analysis, as well as the timing challenges, and will have to accommodate that within the implementation schedule for each rulemaking.

Council Member Mitchell commented on the success of RECLAIM but noted that its effectiveness has diminished over time, noting the number of equipment at facilities that does not meet BARCT requirements. She also acknowledged that although it is a slow and difficult process, facilities will get to BARCT since the agency needs to do its part for stationary sources, while CARB does its part on mobile sources.

Council Member Cacciotti inquired about the cost to bring equipment to BARCT levels.

Staff responded that the cost depends on the size of the equipment and that staff typically uses a cost effectiveness threshold of \$50,000 per ton. Cost effectiveness includes capital and operating costs and is also be affected by the emission reductions achieved. The cost can be on the higher end with SCR equipment. For smaller equipment, SCR may not be cost-effective. The \$50,000 per ton is a guideline that was set during the 2016 AQMP, and not every piece of equipment will be below the threshold, but the way that cost-effectiveness is calculated under command and control is that the costs are averaged across a specific equipment category when setting requirements.

Council Member Cacciotti asked whether any incentive programs can move the process along faster.

Staff responded that incentive programs would not typically apply because they would pay for a facility to comply, but some of the BARCT rules do incentivize the installation of near-zero emission or electric technology that goes beyond BARCT by providing a longer time for installation.

RECEIVE AND FILE; NO ACTION NECESSARY

24. Status Report on Regulation XIII - New Source Review

David Ono, Senior Air Quality Engineering Manager, gave the staff presentation on Item No. 24.

Mr. Eder commented on climate change and the arctic melting. He urged support for solar technologies and stressed the need to transition away from fossil fuels.

RECEIVE AND FILE; NO ACTION NECESSARY

PUBLIC HEARING

25. Determine That Proposed Amendments to Rule 1107 – Coating of Metal Parts and Products, Are Exempt from CEQA and Amend Rule 1107

Michael Morris, Planning and Rules Manager, gave the staff presentation on Item No. 25.

The public hearing was opened, and the following individuals addressed the Board on Item 25.

Mr. Eder commented on the need to include solar power in control technology guidelines. He added concern about housing costs, dependence on fossil fuels and climate change.

Rita Loof, RadTech International, commented that the American Society for Testing and Materials (ASTM) approved test method ASTM D7767 in 2011 and requested that staff include language for this test method in the test method section of the rule. (Submitted Written Comment)

Douglas DeLong, DDU Enterprises Inc., agreed that the test method should be added to the test method section of the rule and expressed concern with using other test methods for compliance. He asked whether the South Coast AQMD has the capability to measure UV curable coatings in its laboratory.

Staff explained that the test method is included in the definition section but U.S. EPA may not approve the rule if the ASTM method is included in the test method section of the rule. EPA does not recognize the compliance aspect of the ASTM method for thin film UV/EB. Our laboratory can measure UV curable coatings.

There was additional Board discussion about adding the test method to the test method section of the rule now or providing direction to staff to work with industry on this issue.

SUPERVISOR RUTHERFORD, MADE A MOTION TO APPROVE THE STAFF RECOMMENDATION FOR AGENDA NO. 25 ADOPTING RESOLUTION NO. 20-3 DETERMINING THAT THE PROPOSED AMENDED RULE 1107 – COATING OF METAL PARTS AND PRODUCTS, IS EXEMPT FROM THE REQUIREMENTS OF CEQA AND AMENDING RULE 1107 – COATING OF METAL PARTS AND PRODUCTS, WITH THE MODIFICATION TO INCORPORATE THE CURRENT LANGUAGE IN PARAGRAPH (b)(15) OF RULE 1107, INTO SUBDIVISION (e) METHODS OF ANALYSIS WHICH WILL STATE, “THE VOC CONTENT OF THIN FILM ENERGY CURABLE COATINGS MAY BE MEASURED BY MANUFACTURERS USING ASTM D7767 – STANDARD TEST METHOD TO MEASURE VOLATILES FROM RADIATION CURABLE ACRYLATE MONOMERS, OLIGOMERS, AND BLENDS, AND THIN COATINGS MADE FROM THEM”; AND DIRECTING STAFF TO WORK WITH INDUSTRY ON LANGUAGE REQUIRING FORMULATION DATA AND TO RETURN TO THE BOARD. THE MOTION WAS SECONDED BY SUPERVISOR BARGER, AND PASSED BY THE FOLLOWING VOTE:

AYES: Barger, Bartlett, Benoit, Burke, Cacciotti, Delgado, McCallon, Mitchell, Perez, Rodriguez, and Rutherford

NOES: None

ABSENT: Buscaino

(Chairman Burke left the meeting at 10:35 a.m.)

PUBLIC COMMENT PERIOD – (Public Comment on Non-Agenda Items, Pursuant to Government Code Section 54954.3)

Makara Baker, North East Los Angles (NELA) Climate Collective, expressed concerns about poor air quality and that children cannot play outside because of unhealthy pollution. She urged the Board to take measures to clean the air.

Frank Wright commented on the increase in manufacturing and logistics related industries in the city of Moreno Valley and urged the Board to use the settlement funds from the World Logistics Center in Moreno Valley.

Roy Bleckert commented on traffic congestion, inadequate roads and transit in the Inland Empire and urged the Board to focus on efforts to reduce commuting by encouraging development where people live.

Mr. Eder played an audio recording of the song “When the Music’s Over” by the Doors.

Emily Spokes, NELA Climate Collective expressed concerns about climate change and air quality. She suggested that the public comment period be moved to the beginning of the agenda to encourage greater public participation.

Bess Fanning, NELA Climate Collective expressed concerns about poor air quality in Los Angeles and commented on the need to provide solar energy rebates to lessen the cost of converting to solar energy.

CLOSED SESSION

Mr. Eder commented on family members he lost in Auschwitz.

Ido Benzeevi, Highland Fairview, commented on technologies that will be incorporated into the World Logistics Center project to reduce emissions and encouraged the Board to use the settlement funds in Moreno Valley.

Luis Portillo, Inland Empire Economic Partnership

*Patricia Nevins, City of Moreno Valley

*Azley Rivera

Christopher Mauldin

Santiago Hernandez

Roy Bleckert

*Rafael Brugueras

*Antonio Reza

Frank Wright

Lupita Marquez

Sean Mill

Tom Jerele

Juan Figueroa

Urged the Board to use funds from the settlement agreement with the World Logistics Center in Moreno Valley to develop mitigation efforts that reduce emissions in the areas affected by the warehouse project. *(Submitted Written Comments)

Written Comments Submitted By:

Angel Luna
Fernando Hernandez
Josefina Gregory
Joshua Mariscal
Angel Gamino
Monica Esparza
Esteban Hernandez
Juan Hernandez
Rodolfo Hernandez
Guillermo Patino
Nancy Badior

Rosie Mariscal
Manuela Patino
Martha Villanueva
Maria Jacobo
Vilma Restrepo
Dora Capolino
Norma Preciado
Maura Garcia
Eunice Kang
Daiana Mansfield
Aureliano Martinez

The Board recessed to closed session at 11:15 a.m., pursuant to Government Code sections:

CONFERENCE WITH LEGAL COUNSEL – EXISTING LITIGATION

- 54956.9(a) and 54956.9(d)(1) to confer with its counsel regarding pending litigation which has been initiated formally and to which the South Coast AQMD is a party. The actions are:

People of the State of California, ex rel. SCAQMD v. Exide Technologies, Inc., Los Angeles Superior Court Case No. BC533528;

In re: Exide Technologies, Inc., U.S. Bankruptcy Court, District of Delaware, Case No. 13-11482 (KJC) (Bankruptcy Case); Delaware District Court, Case No.: 19-00891 (Appellate Case); and

SCAQMD v. City of Moreno Valley, et al., Riverside County Superior Court, Case Nos. RIC 1511213 and RIC 1601988 (World Logistics Center); Center for Community Action and Environmental Justice, et al. v. City of Moreno Valley, et al., California Court of Appeal, Fourth District, Div. 2, Case No. E067200; Albert Paulek, et al v. City of Moreno Valley, et al, California Court of Appeal, Fourth District, Div. 2, Case No. E071184.

CONFERENCE WITH LEGAL COUNSEL – INITIATING LITIGATION

- 54956.9(a) and 54956.9(d)(4) to consider initiation of litigation (four cases).

Following closed session, Bayron Gilchrist, General Counsel, announced that no reportable actions were taken in closed session.

ADJOURNMENT

There being no further business, the meeting was adjourned by Mr. Gilchrist at 12:05 p.m.

The foregoing is a true statement of the proceedings held by the South Coast Air Quality Management District Board on February 7, 2020.

Respectfully Submitted,

Faye Thomas
Clerk of the Boards

Date Minutes Approved: _____

Dr. William A. Burke, Chairman

ACRONYMS

AQMP = Air Quality Management Plan
ASTM = American Society for Testing and Materials
BARCT = Best Available Retrofit Control Technology
CARB = California Air Resources Board
CEQA = California Environmental Quality Act
FY = Fiscal Year
MSRC = Mobile Source (Air Pollution Reduction) Review Committee
NOx = Oxides of Nitrogen
RECLAIM = Regional Clean Air Incentives Market
RFP = Request for Proposals
U.S. EPA = United States Environmental Protection Agency

BOARD MEETING DATE: March 6, 2020

AGENDA NO. 2

PROPOSAL: Execute Contracts to Replace Heavy-Duty Diesel Trucks with Near-Zero Emissions Natural Gas Trucks

SYNOPSIS: In October 2018, the Board approved awards totaling \$14 million to replace 140 heavy-duty diesel trucks with near-zero emissions natural gas trucks. The clean trucks will be funded using \$8 million in grant funds provided by the CEC plus \$6 million in local match funds. Since approval of these awards, some fleets have declined their award or opted to switch to a fuel type not allowed under the CEC grant. These changes resulted in available funds that may be reallocated to other eligible trucks. These actions are to execute two contracts in the amount of \$3,900,000 from the Community Air Protection AB 134 Fund (77) and, in the case of turnback funds, authorize the Executive Officer to execute additional contracts for eligible trucks meeting the CEC grant requirements from the applications received through the Proposition 1B-Goods Movement solicitation until all funds are exhausted.

COMMITTEE: Technology, February 21, 2020; Less than a quorum was present; a concurrence of the staff recommendation will be forwarded to the Board

RECOMMENDED ACTIONS:

1. Authorize the Chairman to execute the following agreements from the Community Air Protection AB 134 Fund (77):
 - a. A contract with National Ready Mixed Concrete Company to replace 29 diesel trucks with near-zero emissions natural gas trucks in an amount not to exceed \$2,900,000; and
 - b. A contract with Pacific Green Trucking, Inc., to replace 10 diesel trucks with near-zero emissions natural gas trucks in an amount not to exceed \$1,000,000.
2. Authorize the Executive Officer, in case of turnback funds, to execute additional contracts (or contract amendments) from the Community Air Protection AB 134 Fund (77) for eligible trucks meeting the CEC grant requirements from the

applications received through the Proposition 1B-Goods Movement until the \$8M in CEC funding and \$6M in local match funds are exhausted.

Wayne Natri
Executive Officer

MMM:NB:VW:TL:FX

Background

In October 2018, the Board approved awards totaling \$14 million to replace 140 heavy-duty diesel trucks with near-zero emissions natural gas trucks. These clean trucks will be funded using \$8 million in grant funds provided by the CEC plus \$6 million in local match funds, comprising \$2 million each from the Ports of Los Angeles and Long Beach and \$2 million from the Community Air Protection AB 134 Fund (77). Since approval of these awards, some fleets have declined their award or opted to switch to a fuel type not allowed under the CEC grant. A total amount of \$3.9 million is now available for other eligible trucks.

In October 2019, the Board issued a Proposition 1B-Goods Movement Program Announcement to solicit additional projects to utilize turnback funds until all Proposition 1B funds are exhausted. Under the CEC grant, near-zero emissions natural gas trucks meeting the criteria of Proposition 1B-Goods Movement are eligible for funding. Staff has identified eligible trucks from applications received under Proposition 1B #PA2020-01.

Proposal

This action is to execute contracts with National Ready Mixed Concrete Company to replace 29 diesel trucks with near-zero emissions natural gas trucks and Pacific Green Trucking, Inc., to replace 10 diesel trucks with near-zero emissions natural gas trucks in amounts not to exceed \$2,900,000 and \$1,000,000, respectively, from the Community Air Protection AB 134 Fund (77).

In case of turnback funds and to meet tight CEC grant deadlines, this action is to also authorize the Executive Officer to execute additional contracts from the Community Air Protection AB 134 Fund (77) for eligible trucks meeting the CEC grant requirements from the applications received through the Proposition 1B-Goods Movement solicitation until the \$8M in CEC funding and \$6M in local match funds are exhausted.

Benefits to South Coast AQMD

The successful deployment of near-zero emissions natural gas trucks approved under the CEC grant will provide direct emission reductions of both NO_x and PM. The

vehicles and equipment will operate for the life of the awarded contracts and beyond, thus providing long-term emission reductions and associated public health benefits. Some of the trucks will operate in and adjacent to disadvantaged and low-income communities, resulting in direct air quality benefits to communities most affected by goods movement.

Resource Impacts

Trucks to be funded under the CEC grant will not exceed \$8M and the local match funds will not exceed \$6 million. The contracts with National Ready Mixed Concrete Company and Pacific Green Trucking will not exceed available funds.

BOARD MEETING DATE: March 6, 2020

AGENDA NO. 3

PROPOSAL: Adopt Resolution Recognizing Funds for FY 2019-20 Carl Moyer Program Award, Issue Program Announcements for Carl Moyer Program and SOON Provision and Transfer Funds for Voucher Incentive Program

SYNOPSIS: These actions are to adopt a Resolution recognizing up to \$37 million in Carl Moyer Program grant funds from CARB with its terms and conditions for FY 2019-20 and issue Program Announcements for “Year 22” of the Carl Moyer Program and SOON Provision to solicit applications for eligible zero and low emitting on- and off-road vehicles and equipment. This action is to also transfer \$3 million from the Carl Moyer Program AB 923 Special Revenue Fund (80) to the Voucher Incentive Program Fund (59) to continue funding truck replacement projects on a first-come, first-served basis.

COMMITTEE: Technology, February 21, 2020; Less than a quorum was present; a concurrence of the staff recommendation will be forwarded to the Board

RECOMMENDED ACTIONS:

1. Adopt the attached Resolution recognizing upon receipt up to \$37 million from CARB into the Carl Moyer Program SB 1107 Fund (32);
2. Issue Program Announcement #PA2020-04 to solicit projects for the FY 2019-20 “Year 22” Carl Moyer Memorial Air Quality Standards Attainment Program;
3. Issue Program Announcement #PA2020-03 to solicit projects for the SOON Provision; and
4. Approve the transfer of \$3 million from the Carl Moyer Program AB 923 Special Revenue Fund (80) to the Voucher Incentive Program Fund (59) to continue funding truck replacement projects on a first-come, first-served basis.

Wayne Nastri
Executive Officer

Background

The Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) and the Surplus Off-Road Opt-in for NOx (SOON) Provision provide funding on an incentive basis for the incremental cost of purchasing cleaner-than-required engines and equipment. The Carl Moyer Program also allows funding for infrastructure projects that enable the deployment of advanced, cleaner technologies, including zero and near-zero emission vehicles, which are needed to support the State's and South Coast AQMD's air quality goals. Both programs are primarily funded with Carl Moyer Program SB 1107 (including additional funds resulting from AB 1274) and AB 923 funds. In previous years, additional funding from the Community Air Protection Program (CAPP) and other grants were used to fund eligible projects submitted through the Carl Moyer Program. This is the 22nd year of the Carl Moyer Program and the 16th year of the SOON Provision with funding from SB 1107 and AB 923. Program Announcements are needed to solicit applications for this year's Carl Moyer Program and SOON Provision.

The Carl Moyer Program On-Road Heavy-Duty Vehicles Voucher Incentive Program (VIP) is a streamlined funding program for small fleets (with 10 or fewer vehicles) to replace older trucks with newer, cleaner models. Since the start of this program in 2009, the South Coast has expended about \$42 million in VIP funds for the replacement of 1,220 older diesel trucks with cleaner, lower-emitting vehicles. Additional funds are needed to transfer to the VIP Fund (59) to continue the successful implementation of this program.

Proposal

These actions are to adopt the attached Resolution recognizing upon receipt up to \$37 million from CARB into the Carl Moyer Program SB 1107 Fund (32) for implementation of the FY 2019-20 "Year 22" Carl Moyer Program. CARB has tentatively allocated \$36,223,063 to the South Coast AQMD for the Carl Moyer Program. Of this amount, \$33,959,122 is designated for project funding and \$2,263,941 for administrative and outreach efforts. In addition, \$5,433,459 is required from the South Coast AQMD as the local match, which will be provided from AB 923 funds.

This action is to also issue Program Announcements #PA2020-04 and #PA2020-03 for the Carl Moyer Program and SOON Provision, respectively. The approximate amounts of available funding for these programs include \$29 million for the Carl Moyer Program and \$5 million for the SOON Provision. In the last three funding cycles of the Carl Moyer Program, the South Coast AQMD received additional funding beyond the Carl Moyer Program allocation of over \$80 million for eligible projects under the Carl Moyer Program. These additional funds were allocated to South Coast AQMD from CAPP Incentives, Carl Moyer Program, State Reserve and the Funding Agricultural Replacement Measures for Emission Reductions (FARMER) Program. At least 87 percent of these funds were awarded to projects that will reduce emissions in

disadvantaged and low-income communities. Staff anticipates receiving additional funds for this year's Carl Moyer Program, which may include funds in support of CAPP projects and the FARMER Program. Staff will provide a detailed account of available and awarded funds for the Carl Moyer Program, including earned interest and returned project funds, AB 923 and any additional sources of funding at the time of awards recommendations.

The Carl Moyer PA will solicit applications from equipment owners for projects that involve the retrofit, repower or replacement of older, in-use on-road vehicles, off-road equipment (including agricultural equipment), locomotives, marine and other heavy-duty vehicles and equipment with cleaner technologies. The Carl Moyer PA will also solicit applications for infrastructure projects that support zero or near-zero emissions vehicles and equipment.

The SOON Provision is designed to achieve additional NOx emission reductions above those that would be obtained from CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation. The SOON Provision PA will solicit projects that involve the retrofit, repower or replacement of off-road vehicles with cleaner technologies. As in previous years, South Coast AQMD will only fund diesel-to-diesel applications when alternative fuel engines/vehicles are not commercially available or certified by CARB, except for emergency vehicles.

The Carl Moyer Program Guidelines approved by CARB on April 27, 2017, and any subsequent updates or changes, will be utilized for the evaluation of projects submitted under the "Year 22" Carl Moyer and SOON Provision PAs. Applicants will be able to submit their applications for both the Carl Moyer Program and SOON Provision online. Proposals for all categories will be due by 1:00 pm on Tuesday, June 2, 2020. Staff expects to finalize the review and evaluation of the proposals and recommend awards for Board consideration at the October 2020 Board meeting. The Carl Moyer Program and SOON Provision PAs are attached.

Finally, this action is to approve the transfer of \$3 million from the Carl Moyer Program AB 923 Special Revenue Fund (80) to the Voucher Incentive Program Fund (59) to continue funding truck replacement projects for small fleets on a first-come, first-served basis.

Funding Distribution

The Carl Moyer Program Guidelines include the requirement that at least 50 percent of the program funds be expended on projects that will reduce emissions in disproportionately impacted areas, with the allowance for air districts to track this on a cumulative basis. At least half of the funding allocated under SB 1107 and collected under AB 923 will be awarded to projects in disproportionately impacted areas. The Carl Moyer Guidelines also require that at least 50 percent of all funding available for

the Carl Moyer Program and the SOON Provision, including roll-over funds from previous years and any returned funds from projects that fall through, be allocated to projects that will reduce emissions in disproportionately impacted areas.

Staff will utilize the latest version of CalEnviroScreen for identification of projects in disadvantaged and/or low-income communities as well as identification of projects that are located within half a mile of a disadvantaged or low-income community, pursuant to the provisions of AB 1550, which in 2016 amended California Climate Investments for disadvantaged communities and established new investment minimums for low-income communities and households. A detailed distribution list of the recommended projects and a description of South Coast AQMD's outreach efforts during the solicitation period will be provided to the Board at the time of the awards recommendations.

Outreach

In accordance with South Coast AQMD's Procurement Policy and Procedure, a public notice advertising the PAs and inviting bids will be published in the Los Angeles Times, the Orange County Register, the San Bernardino Sun, and Riverside County's Press Enterprise newspapers to leverage the most cost-effective method of outreach to the South Coast Basin.

Additionally, potential bidders may be notified utilizing South Coast AQMD's own electronic listing of certified minority vendors. Notice of the PAs will be emailed to the Black and Latino Legislative Caucuses and various minority chambers of commerce and business associations, and placed on the Internet at South Coast AQMD's website (<http://www.aqmd.gov>) where it can be viewed by making menu selection "Grants & Bids."

Program Guidelines

At its July 8, 2005 meeting, the Board approved a long-term Program Guidelines for the implementation of the Carl Moyer Program in the South Coast Air Basin. The proposed funding distribution for different equipment categories in this Board letter is made according to the criteria outlined in that Guideline with emphasis on the following priorities in order to achieve the highest emissions reductions:

- Goods Movement (40 percent allocation);
- Environmental Justice (50 percent allocation);
- Cost-Effectiveness;
- Low Emission Engine/Vehicle Preference;
- Early Commercialization of Advanced Technologies/Fuels;
- Fleet Rules; and
- School Buses.

Benefits to South Coast AQMD

The South Coast AQMD has supported a number of activities directed to the advancement of new technologies that will support progress in meeting air quality goals for the region. The successful implementation of the Carl Moyer Program and the SOON Provision are direct results of these technology advancement activities. The vehicles and equipment funded under these Program Announcements will operate for many years, providing long-term emissions reductions.

Resource Impacts

CARB has tentatively allocated \$36,223,063 to the South Coast AQMD for implementation of the FY 2019-20 “Year 22” Carl Moyer Program. Of this amount, \$33,959,122 is designated for project funding and \$2,263,941 for administrative and outreach efforts. These funds will be recognized into the Carl Moyer Program SB 1107 Fund (32). In addition, \$5,433,459, which will be provided from AB 923 funds, is required as the local match from the South Coast AQMD.

The transfer from the Carl Moyer Program AB 923 Special Revenue Fund (80) to the Voucher Incentive Program Fund (59) will not exceed \$3 million.

Attachments

1. Resolution
2. Carl Moyer Program Announcement #PA2020-04
3. SOON Provision Program Announcement #PA2020-03

RESOLUTION NO. 20-

**A Resolution of the South Coast Air Quality Management District Board
Recognizing Funds and Accepting the Terms and Conditions of the
FY 2019-20 Carl Moyer Grant Award**

WHEREAS, under Health & Safety Code §40400 *et seq.*, the South Coast Air Quality Management District (South Coast AQMD) is the local agency with the primary responsibility for the development, implementation, monitoring and enforcement of air pollution control strategies, clean fuels programs and motor vehicle use reduction measures; and

WHEREAS, the South Coast AQMD is authorized by Health & Safety Code §§40402, 40440, and 40448.5 as well as the Carl Moyer Memorial Air Quality Standards Attainment Program (§44275, *et seq.*) to implement programs to reduce transportation emissions, including programs to encourage the use of alternative fuels and zero and low-emission vehicles; to develop and implement other strategies and measures to reduce air contaminants and achieve the state and federal air quality standards; and

WHEREAS, the Governing Board has adopted several programs to reduce emissions from on-road and off-road vehicles, as well as emissions from other equipment, including the Lower Emission School Bus Program and the Carl Moyer Program; and

WHEREAS, the South Coast AQMD is designated as an extreme non-attainment area for ozone and as such is required to utilize all feasible means to meet national ambient air quality standards.

THEREFORE, BE IT RESOLVED that the Governing Board, in regular session assembled on March 6, 2020, does hereby authorize the Executive Officer to accept the terms and conditions of the FY 2019-20 (Year 22) Carl Moyer Program grant award and recognizes up to \$37 million from CARB to administer and implement the Year 22 Carl Moyer Program.

BE IT FURTHER RESOLVED that the Executive Officer is authorized and directed to take all steps necessary to carry out this Resolution.

Date

Faye Thomas, Clerk of the Boards



2020
CARL MOYER MEMORIAL
AIR QUALITY STANDARDS ATTAINMENT PROGRAM
PROGRAM ANNOUNCEMENT
“Year 22”

SOUTH COAST AQMD PROGRAM ANNOUNCEMENT
PA2020-04

The South Coast Air Quality Management District (South Coast AQMD) is pleased to announce the availability of funds for the Carl Moyer Memorial Air Quality Standards Attainment Program (hereafter “CMP”). The CMP has played a significant role in incentivizing equipment owners to purchase cleaner-than-required engines, vehicles and equipment. This year marks South Coast AQMD’s 22nd year of CMP implementation.

The CMP is intended to obtain “surplus” emission reductions of Nitrogen Oxides (NO_x), Particulate Matter (PM₁₀) and Reactive Organic Gases (ROG) from heavy-duty vehicles and other equipment operating in California as early and as cost-effectively as possible. The CMP provides financial incentives to equipment owners to repower, retrofit or replace in-use heavy-duty vehicles and equipment with cleaner-than-required engine and equipment technologies that will achieve emission reductions that are real, surplus, quantifiable and enforceable.

COMPLIANCE WITH LABOR LAWS

If an application is deemed eligible, the applicant will be required to provide any labor violations that have occurred within the last three years to be further considered for an award. If awarded, the contractor will be required to notify South Coast AQMD in writing if they have been found by a court or federal or state agency to have violated labor laws. The contractor will complete a yearly certification in which they will either state that they have not been found by a court or federal or state agency to have violated labor laws or, if such violations have been found, the contractor will give South Coast AQMD details about those violations in the certification. If the contractor has previously provided that information to the South Coast AQMD, they will be required to reattach that previous notification to the certification and provide any additional details about those violations that have not previously been provided. The contractor’s yearly certification will be due at the same time as the annual progress reports. South Coast AQMD reserves the right to terminate the contract with a contractor that has been found to have violated labor laws, and the contractor may be required to return any and all contract funds, as determined by South Coast AQMD. The contractor will also ensure that these requirements are included in all subcontracts.

SECTION I – OVERVIEW

PURPOSE

The purpose of this Program Announcement (PA) is to solicit project applications for the 2020 Carl Moyer Memorial Air Quality Standards Attainment Program (CMP). **The budget for this PA will be approximately \$34 million from the CMP and AB 923 Funds. The South Coast AQMD expects to receive additional funds for this year’s CMP, which may include funds in support of AB 617-**



Community Air Protection Program and the Funding Agricultural Replacement Measures for Emission Reductions (FARMER) Program.

All applications will be evaluated based on the criteria set forth in this PA, the CMP Guidelines, and any subsequent updates and modifications/advisories to the Guidelines. This PA was prepared based on the latest version of the CMP Guidelines approved by the California Air Resources Board (CARB) on April 27, 2017, which are available online at: <http://www.arb.ca.gov/msprog/moyer/guidelines/current.htm>.

This PA will identify the equipment categories, project options and eligibility criteria to qualify for grant funding under this year's CMP. Any tax obligation associated with an award is the responsibility of the grantee.

The detailed requirements for projects can be found in the CMP Guidelines. Applicants are encouraged to review the CMP Guidelines to confirm eligibility and understand the funding "caps" that may apply to certain types of projects. The South Coast AQMD will conduct workshops that provide additional opportunity for applicants to ask questions and seek clarification. The schedule of workshops is provided below.

In the preparation of this PA, the words "Applicant" and "Contractor" are used interchangeably. South Coast AQMD staff will evaluate all qualified applications and make recommendations to the Governing Board for final selection of project(s) to be funded. All eligible projects will be ranked based on the cost effectiveness of NO_x, PM₁₀ and ROG emissions reduced. Please note that depending upon the number of applications received in response to this PA, South Coast AQMD may prioritize the selection of projects to reduce emissions in and around DAC and low-income communities. While South Coast AQMD encourages all eligible applications, this means that some projects may not be selected based on their domicile address, regardless of their cost-effectiveness ranking.

At least 50 percent of South Coast AQMD's CMP funds will be targeted for projects that meet the criteria of a disadvantaged or low-income community projects. Other non-CMP funding sources may have DAC and/or low-income status requirements that may limit South Coast AQMD's ability to award such funding to projects that do not meet applicable geographic or income requirements. The Office of Environmental Health Hazard Assessment (OEHHA) in the California Environmental Protection Agency (CalEPA) has developed the California Communities Environmental Health Screening Tool: CalEnviroScreen Version 3.0 (CalEnviroScreen 3.0). The CalEnviroScreen 3.0 tool will be used by South Coast AQMD to identify projects that qualify as a DAC, which is defined as scoring in the top 25th percentile, and will strive to maximize the benefits to these communities from this PA. All applications will be assessed with the CalEnviroScreen tool to identify and verify if the project will benefit a DAC. This tool is available at: <https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30>

Be aware that there is a possibility that due to program priorities, cost effectiveness or funding category limitations (i.e., caps), project applicants may be offered only partial funding, and not all applications that meet the cost-effectiveness criteria may be funded.



FUNDING CATEGORIES

Below are the specific project categories identified for funding under this PA:

- On-Road Heavy-Duty Vehicles, including transit fleet vehicles, drayage trucks, solid waste vehicles, public agency/utility vehicles and emergency vehicles (fire apparatus)
- Off-Road Equipment, including:
 - Marine Engine Repower
 - Shore Power (if project is not subject to CARB's At-Berth Regulation)
 - Construction Equipment
 - Agricultural Mobile Equipment (loaders, tractors, water pulls, etc.)
 - Locomotives
 - Cargo Handling Equipment
- Infrastructure to fuel or power a zero or near zero emission, heavy-duty vehicle or equipment, including but not limited to: on-road heavy-duty vehicles, cargo handling equipment, and marine vessels (shore power).

On-Road Heavy-Duty Vehicles

Below are the key requirements for on-road, heavy-duty vehicle projects:

- Fleets must be fully compliant with all applicable fleet regulations.
- Eligible project types include vehicle replacement and repower/conversion projects; on-road retrofit projects will be considered on a case-by-case basis.
- For on-road vehicles, a project's new engines may not be diesel-fueled (with the exception of Emergency Apparatus).
- Eligible engine model years are from 2007 to 2010 for vehicles subject to the Statewide Truck & Bus Regulation, Drayage Truck Regulation, and Fleet Rule for Public Agencies and Utilities. Only vehicles with a compliance deadline of January 1, 2023 or later are eligible for funding.
- Eligible vehicle types include heavy-duty trucks and buses, transit buses, solid waste collection vehicles, public agency and utility fleet vehicles and emergency vehicles (however, emergency vehicles are only eligible under the replacement project type).
- In addition to the cost-effectiveness limit(s) prescribed by the CMP Guidelines, each vehicle/engine is also subject to a funding cap¹ based on various factors including weight class (i.e., gross vehicle weight rating (GVWR)), vehicle type, and the proposed technology. The maximum grant award will be based on the allowable cost effectiveness and the applicable funding cap(s), whichever is less.
- Projects must include commercially available technologies that are certified or verified by CARB.

Off-Road Heavy-Duty Equipment/Engines

Below are the key requirements for the off-road equipment category:

- Fleets must be fully compliant with all applicable regulations.
- Eligible project types include equipment replacement, engine repower and retrofit devices.
- Eligible equipment types include, but are not limited to, construction equipment, marine engines, shore power, locomotives, agricultural tractors, zero-emission rubber-tired gantry (RTG) cranes and other cargo handling equipment.

¹ Funding caps are provided in Tables 4-2 through 4-7 in the CMP Guidelines.



- Large fleets are no longer eligible for CMP funding after December 31, 2019. However, large fleets that have received prior Carl Moyer Program funding after January 1, 2017, are only eligible for zero-emission project funding.

Infrastructure

Infrastructure projects that enable the deployment of alternative, advanced, and cleaner technologies to support the State's air quality goals are also eligible for CMP funding. Depending upon the number of applications received, the South Coast AQMD may have to limit the available CMP funding that will be allocated to infrastructure projects. Specifically, projects in this category involve the installation of fueling or energy infrastructure that will be used to fuel or power zero or near-zero emission, heavy-duty vehicles or equipment. Infrastructure designed to exclusively fuel or charge light-duty vehicles is not eligible for CMP funding.

Infrastructure projects will be selected on a competitive basis with consideration for location within a disadvantaged or low-income community, renewable fuel source, public access, site availability for the life of the project, fleet commitments to utilize the infrastructure, cost-share and other factors that will determine the level of utilization of the infrastructure. The priority for project selection may change based on technology development/commercialization and requirements of any additional funds that may become available. Infrastructure projects are not subject to a cost-effectiveness limit. Applicants must provide a minimum of two bids from qualified installers for the infrastructure project as part of the application, and if applicable, justification for selection of the higher of the two bids. Applicants shall describe the process used or that will be used to solicit and select the final bid. Infrastructure projects may also require a case by case review by CARB. Applicants must demonstrate that they either own the land on which the project will be located, or control it through a long-term lease, easement or other legal arrangement, for the duration of the project life.

Eligible infrastructure projects include, but are not limited to:

- Battery charging stations: New, conversion of existing, and expansion to existing battery charging stations for heavy-duty vehicles and equipment (not for light-duty vehicles)
- Alternative Fueling Station: New, conversion of existing, or expansion of existing hydrogen or natural gas fueling station for heavy duty vehicles and equipment
- Stationary Agricultural Station: Pump electrification
- Shore Power: Shore-side electrification for projects not subject to CARB's shore power regulation. Only a port authority, terminal operator, or marine vessel owner is eligible for this type of infrastructure project.

A vehicle or equipment project is not required to be submitted as a condition of eligibility for infrastructure funding, however, priority will be given to such projects.

Purchase orders or other purchase commitments to design and install the proposed infrastructure shall not be placed until after the date of award approval by the South Coast AQMD Governing Board. Further, any purchase commitments placed after South Coast AQMD Governing Board approval but in advance of a fully executed contract are placed at the applicant's own risk.



Regulatory Compliance

All applicants must be fully compliant with all applicable regulations in order to be eligible for consideration for CMP funding. Refer to CARB's fleet rule Web pages that provide detailed information on compliance with these regulations. These web links are listed below in Section VI.

GENERAL PROGRAM INFORMATION

The CMP award amount shall not exceed the project's incremental cost, applicable funding caps and/or cost-effectiveness limit(s). The "Step 1" cost-effectiveness limit, \$30,000 per weighted ton of emissions reduced, applies to projects that bring vehicles and equipment up to current standards. The "Step 2" cost-effectiveness limit, \$100,000 per weighted ton of emissions reduced, applies to projects that are zero-emission or meet the cleanest certified optional standard applicable (by source category).

All projects must meet the criteria stated in this PA and the CMP Guidelines in effect at the time of contract execution. A project's cost effectiveness is determined based on the annualized cost of the project and the amount of NOx, ROG and PM10 emission reductions that will be achieved by the project. Project cost effectiveness is currently calculated according to the following formula:

$$\frac{\text{Annualized Cost (\$/year)}}{[\text{NOx reduction} + 20 (\text{combustion PM10 reduction}) + \text{ROG reduction}] (\text{tons/year})}$$

For projects that involve advanced technologies, the cost effectiveness will be calculated using the CMP's two-step calculation approach.²

All projects are expected to be operational within eighteen (18) months of contract execution or by May 20, 2022, whichever is earlier. Some projects may have earlier in-service operational date requirements, if they are subject to CARB regulations.

It is the applicant's responsibility to ensure that the most current information and requirements are reflected in a submitted project application. Applicants should check the CARB website for updates and advisories to the guidelines (www.arb.ca.gov/msprog/moyer/moyer.htm).

In cases of conflict between CARB guidelines and South Coast AQMD criteria, the more stringent criteria will prevail. South Coast AQMD will post any new information and requirements on its CMP Web page at www.aqmd.gov/moyer.

Projects subject to CARB regulations must submit a copy of the most recent CARB compliance report(s) or other documentation that provides South Coast AQMD with clear understanding of the fleet's compliance status.

All emission reductions resulting from funded projects will be credited to the Carl Moyer Program. A grant shall not be made that provides the applicant with funds in excess of the maximum eligible amount, in accordance with CMP guidelines.

² Detailed guidance for the new two-step calculation approach, as well as all CMP emissions reduction and cost effectiveness calculations is available at:

https://www.arb.ca.gov/msprog/moyer/guidelines/2017gl/2017_gl_appendix_c.pdf



A project may be leveraged with other funding sources. The applicant must disclose all funding sources at the time of application and will be required to report all funding sources prior to invoice payment. Other funding sources may include but are not limited to: federal funding programs that reduce greenhouse gas (GHG) emissions, funding provided by the Alternative and Renewable Fuel and Vehicle Technology Program, Air Quality Improvement Program, or CARB's Low Carbon Transportation Investment funds to reduce GHG emissions. The sum of all grants and other funds applied toward the project shall (1) not exceed the total project cost for public agency applicants and (2) not exceed 85% of the total project cost for non-public agency applicants. In other words, the grantee³ must pay at least 15 percent of the project cost from non-public sources.

The emission reductions paid for by the CMP shall not be claimed by the other funding sources.

ELIGIBILITY INFORMATION

Emission reductions obtained through CMP projects must be real, surplus, quantifiable and enforceable. The emission reductions must not be required by any federal, state or local regulation, memorandum of agreement/understanding, settlement agreement, mitigation requirement or other legal mandate.

Engines operating under a regulatory compliance extension granted by CARB, an air district or the United States Environmental Protection Agency (U.S. EPA) are not eligible for funding.

Key program requirements for on- and off-road equipment categories are highlighted below; however, applicants are responsible for consulting the CMP guidelines for additional program limitations/requirements. For repower and replacement projects, the replacement engine must result in a minimum of 15 percent NOx reduction.

ON-ROAD VEHICLES

For purposes of the CMP, the following on-road vehicle classifications are used:

Vehicle Classification	GVWR
Light Heavy-Duty (LHD)	14,001 to 19,500 pounds
Medium Heavy-Duty (MHD)	19,501 to 33,000 pounds
Heavy Heavy-Duty (HHD)	Over 33,000 pounds

The proposed vehicle must be in the same weight class as the existing vehicle (LHD, MHD or HHD). The engine must be certified to the applicable heavy-duty intended service class as shown on the engine certification Executive Order. However, the following cases may be allowed: 1) MHD engines may be installed in HHD vehicles with GVWR up to 36,300 lbs. (10 percent higher than 33,000 lbs. GVWR) with written warranty verification by engine and chassis manufacturer, or 2) HHD engines may be installed in MHD vehicles if necessary for vocational purposes but only if the GVWR are within 10 percent of the HHD intended service class (i.e., GVWR of 29,701 lbs. or greater).

³ Public agencies are exempt from this requirement.



Executive Orders for on-road vehicles may be downloaded at: <http://www.arb.ca.gov/msprog/onroad/cert/cert.php>.

Project emission reductions will be based on the lower of two 12-month periods of California usage during the previous twenty-four months. Fleet averages cannot be used.

Replacement

This project type involves the replacement of an older, in-use vehicle with a newer, cleaner vehicle. The replacement engine must be 2013 or newer engine model year certified by CARB at or below the optional low NO_x standard of 0.10 g/bhp-hr and PM emission standard of 0.01 g/bhp-hr. In alignment with South Coast AQMD's 2016 AQMP, all on-road projects under the CMP must select the optional low-NO_x, hybrid or zero-emission technologies for fleet sizes of greater than 10 vehicles. Fleet size is determined based on the number of vehicles with a GVWR of 14,001 lbs or greater.

The South Coast AQMD requires that all on-road projects be operated within the South Coast AQMD jurisdiction for at least 75% of the time. Applicants must clearly demonstrate their compliance status with the applicable CARB regulation (i.e., Statewide Truck & Bus Regulation, Drayage Truck Regulation, Fleet Rule for Public Agencies & Utilities, Transit Bus Regulation, TRU ATCM, etc.) at the time of application submittal.

Please note that if you are an owner of a fleet with 10 or fewer vehicles (greater than 14,000 lbs. GVWR), you may be eligible for funding through the On-Road Voucher Incentive Program (VIP). Please refer to the South Coast AQMD's VIP Web page to explore funding opportunities for replacement at: www.aqmd.gov/vip.

In addition, the following on-road projects will be considered on a case-by-case basis:

- On-road vehicles with a GVWR between 8,501 and 14,000 pounds,
- Retrofits that reduce NO_x by at least 15 percent; for engines that are certified above 0.01 g/bhp-hr PM, the retrofit must also reduce PM emissions by 85 percent,
- Zero-emission transport refrigeration units (TRUs). Hybrid TRU projects are not eligible.

Emergency Vehicles

Authorized emergency vehicles, as described in California Vehicle Code 165, including but not limited to fire apparatus, pumpers, ladder trucks, water tenders, and prisoner transport buses, are exempt from CARB regulations and therefore eligible for CMP funding. Eligible emergency vehicle projects are those in which an older, more polluting emergency vehicle is replaced with a new or used replacement vehicle with an engine meeting the current model year California emission standards. The older, replaced vehicle must be destroyed. Emergency vehicles are eligible for up to 80 percent of the eligible costs as outlined in the program guidelines.

A fire truck reuse option is also available on a case-by-case basis. The fire truck reuse option allows fire departments to give away the existing old vehicle and destroy another older vehicle in its place.

Repowers

This project type involves the repower of an existing, in-use engine with a new, cleaner engine. The replacement engine must be CARB-certified at or below the optional low-NO_x emissions level of 0.10



g/bhp-hr NO_x and 0.01 g/bhp-hr PM₁₀. Repowers may be funded in various applications. However, due to technological constraints presented with the limited feasibility of newer engines with advanced emissions control equipment fitting into older chassis and maintaining durability, repowers with diesel engines are not eligible for on-road vehicles.

To ensure durability, certain repower projects may require prototype testing. If the project has been previously completed by the manufacturer, prototype testing is not required. The prototype testing must comply with the engine manufacturer quality assurance process that is equivalent to an Original Equipment Manufacturer (OEM) package. In these cases, a prototype vehicle (or vehicles) is thoroughly reviewed and tested to ensure that the installation meets OEM requirements, and the successful prototype installation is then replicated in other vehicles with the same chassis and engine combination. Per the CMP guidelines, air districts may approve repower projects that meet the OEM quality assurance process described above, subject to the following:

- Moyer Program funding may not be used for any costs associated with the prototype vehicle or vehicles.
- Repower contracts may not be executed until the prototype testing specified by the engine manufacturer is successfully completed.
- Written documentation from the engine manufacturer confirming that the prototype was successful must be maintained in the project file.
- If the proposed repower has been done previously by the manufacturer on the same chassis/engine configuration, prototype testing is not required. The manufacturer must provide written confirmation that the previous work was performed successfully and met OEM requirements.

Conversions

Conversions involve the replacement or modification of the original engine or vehicle to include either a cleaner engine or other system that provides motive power and change of the fuel type used. Hybrid conversion systems using internal combustion engines must be certified according to “California Certification and Installation Procedures for Medium-and Heavy-Duty Vehicle Hybrid Conversion Systems.” The baseline engine model year for hybrid conversions must be 2010 or newer. The conversion system manufacturer must provide written confirmation that the funded vehicle would not exceed the certified allowable limit. All-electric conversion systems must receive an exemption Executive Order per Vehicle Code section 27156.

OFF-ROAD COMPRESSION-IGNITION EQUIPMENT

This category includes off-road, mobile compression ignition equipment with engines greater than 25 horsepower. Off-road heavy-duty equipment/engines include, but are not limited to, construction equipment, agricultural tractors, marine engines, shore power and locomotive equipment. Portable equipment is not eligible for CMP funding. The following off-road equipment projects may be eligible for funding:

- Repower: The replacement of an existing engine with a newer emission-certified engine, or zero-emission system, instead of rebuilding the existing engine to its original specifications.
- Retrofit: The installation of a CARB-verified emission control system on an existing engine. Examples include, but are not limited to, particulate filters and diesel oxidation catalysts.



- **Equipment Replacement:** The purchase of new or used equipment with an engine certified to the current emission standard (Tier 4 Final) or zero-emission technology to replace an older, fully functional piece of equipment that is to be scrapped.

For off-road replacement and repower projects (excluding marine engines), the CMP guidelines specify that the horsepower rating of the new (or replacement) engine must not be greater than 125 percent of the original manufacturer rated horsepower of the old (or existing) engine. If the new engine is greater than 125 percent, then the eligible funding amount will be based on the cost of an engine or equipment with a horsepower rating that is no higher than 125 percent of the existing engine horsepower rating. The applicant must pay the additional costs associated with the higher horsepower engine and obtain a price quote for an engine or equipment that is within the 125 percent range for the funding determination. In addition, verifiable records on the existing engine must be provided with the application to accurately identify the engine manufacture year and horsepower (e.g., photographs of engine labels, statement from engine manufacturers, etc.).

Construction Equipment

Fleets must be in compliance with CARB's In-Use Off-Road Diesel Vehicle Regulation (Off-Road Regulation) in order to be eligible for funding. Large fleets are no longer eligible for new diesel engine funding after December 31, 2019. However, large fleets that have received prior Carl Moyer Program funding after January 1, 2017, are only eligible for zero-emission project funding.

Applicants must submit information regarding fleet size and compliance status. **This must include the Diesel Off-Road On-line Reporting System (DOORS) ID of the fleet, the DOORS Compliance Snapshot, the DOORS equipment list, and the DOORS Equipment Identification Number (EIN) of the funded equipment.** All documentation submitted must be signed and dated by the applicant and include language certifying that the fleet list provided is accurate and complete.

Off-road projects fall into three distinct categories: 1) repower existing equipment with an emission-certified engine, 2) retrofit with a verified-diesel emission control strategy (VDECS), and 3) replacement of an older, fully functional piece of equipment (that is to be scrapped) by equipment with an engine certified as meeting the current off-road emission standards, or cleaner.

Marine Vessel Projects

Marine vessel project types include engine repower and shore power. Only existing engines on a marine vessel with a fully functioning non-resettable hour meter are eligible for CMP funding.

Marine Engine Repower

Vessels not subject to the in-use compliance requirements of CARB's Commercial Harbor Craft (CHC) Regulation such as fishing vessels, pilot boats and work boats are eligible. Vessels subject to the in-use compliance requirements of CARB's Commercial Harbor Craft (CHC) regulation (i.e., barge, crew/supply, dredge, excursion, ferry, towboat and tugboats) are also eligible as long as the vessel is fully compliant with the CHC Regulation (i.e., engines meet Tier 2 standards). Based on the vessel's operation, the newer engine's emissions must be surplus to the currently required U.S. EPA marine engine emission standard (i.e., Tier 3, Tier 4, etc.). Remanufacture kits, which are comprised of engine component parts that, when installed, reduce the engine's emissions, are subject to the same



requirements as engine repower projects. For all marine engine repower projects, the replacement engine must provide at least a 15 percent NOx reduction relative to the baseline engine.

Shore Power Projects

Limited CMP funding opportunities remain for shore power projects due to the applicability of CARB's At-Berth Regulation. Applicants must submit their CARB-approved Initial Terminal Plan to document compliance with CARB's Shore Power regulation. The proposed projects must provide emission reductions that are surplus to regulatory requirements. Projects not subject to CARB's regulation are eligible.

Locomotives

All new locomotives and replacement engines must be certified to Tier 4 standards or cleaner to be eligible for CMP funding. There are very limited CMP funding opportunities for Class 1 freight railroads. Such a project will be subject to a case-by-case approval by CARB. Class 3 freight railroads and passenger railroads are not subject to any CARB fleet regulations and are therefore eligible for CMP funding.

The following project types are eligible for CMP funding:

1. Locomotive replacement (the reuse and/or recycling of the baseline chassis is allowed if the baseline engine is destroyed)
2. U.S. EPA-certified engine remanufacture kit or repower
3. Head-end power (HEP) unit (apply as an off-road engine project).

DEFINITIONS

Alternative Fuel

Alternative fuels include compressed natural gas (CNG), liquefied natural gas (LNG), hydrogen (H2), methanol, ethanol, propane (LPG) and electric technologies. Experimental technologies and fuels will be referred to CARB for evaluation and possible eligibility in the Program.

Equipment Replacement

Equipment replacement means the replacement of an older vehicle or piece of equipment that still has remaining useful life with a newer, cleaner vehicle or piece of equipment. For this project type, applicant must have owned and operated the old equipment in California for the previous two years.

Repower

Vehicle repower means the replacement of an in-use engine with another, cleaner engine (more than 15 percent cleaner).

Retrofit

An emission control system employed exclusively with an in-use engine, vehicle or piece of equipment. CARB guidance requires the applicant to select the highest level technology certified for that engine that provides the most emission reductions. For many projects, this includes a diesel emission control device that reduces both PM and NOx emissions. In order to be eligible for CMP funding, the retrofit device must be verified for the specific engine family found on the equipment and



achieve the highest level emission reductions when compared to other verified retrofit devices. If a specific device reduces both NO_x and PM, but the PM reduction from a retrofit is required by a regulation, only the NO_x reduction may be eligible for funding.

South Coast AQMD Jurisdiction

The 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 area of 10,743 square miles is home to approximately 17 million people—about half the population of the whole state of California. It is the second most populated urban area in the United States and one of the smoggiest.

Visit <http://www.aqmd.gov/nav/about/jurisdiction> for more information.

IMPORTANT PROGRAM INFORMATION

- Applicants **must** provide proof of ownership with their application. This may include vehicle/equipment title, bill of sale, or in the case of marine vessel projects, the U.S. Coast Guard registration documentation.
- Project equipment must operate a minimum of 75% of the time within the boundaries of the South Coast Air Basin (SCAB). An exemption is provided to line-haul locomotives, which are allowed an operational minimum of 51% operation within the SCAB.
- Applicants **must** provide vendor quotes with their application to document the cost of the low- or zero-emission vehicle/equipment project. Applicants may be awarded up to the designated percentage of total cost for the specified type of project (new purchase, repower replacement and/or retrofit), subject to funding caps and program cost-effectiveness limits. Eligible costs include installation labor and sales tax. **All quotes must have been obtained within 90 days prior to the application submittal date.**
- Applicants must provide legible engine tag photos of the baseline engine(s) or manufacturer specifications that document the engine serial number, horsepower, model year and engine family number, emissions certification level and CARB Executive Order (if controlled).
- A number of the CARB fleet rules and air quality regulations impact CMP eligibility. Compliance with existing CARB regulations is a pre-requisite for CMP funding. Only emission reductions in excess of regulatory requirements can be considered for CMP funding. If applicants are applying for CMP funds to reduce emissions before the required compliance date (i.e., early reductions), the equipment must demonstrate sufficient years of operation before the regulatory compliance deadline. Applicants are responsible for ensuring that they are in full compliance with all applicable regulations and that vehicle/equipment requests under the CMP provide surplus emission reductions. As noted earlier, applicants must provide documentation of their regulatory compliance status.
- Any **tax obligation** associated with the award is the responsibility of the grantee.
- All projects must be operational within eighteen (18) months of contract execution or May 20, 2022, whichever is earlier.



- All project invoices must be submitted for payment no later than May 20, 2022. Projects which have not invoiced by the applicable date may forfeit their funding.
- No third-party contracts will be executed.
- Pre- and post-inspection of all vehicles/engines/equipment approved for funding will be conducted, as required. Applicants must make all equipment available **locally (i.e., within the South Coast AQMD boundaries)** for inspections unless specified during contract preparation. Documentation of compliance with existing regulatory requirements is required at the time of pre-inspection.
- **Local** destruction of the engine and/or equipment being replaced is required for repower or replacement projects.
- The project's cost effectiveness will be based on the historical usage of the existing equipment for the previous two years. The usage for off-road equipment projects will be based on hours (except for locomotive projects, which require annual fuel consumption), and the usage for on-road vehicle projects will be based on mileage. The applicant must provide the historical usage records for the equipment as part of the application. If historical usage documentation is not available, the proposed annual usage provided by the applicant will be used to determine the project's cost effectiveness and specified as a requirement in the contract. For on-road projects, the emission reductions will be based on the lower of the two 12-month periods of California usage during the previous twenty-four months. Fleet averages cannot be used.

PROGRAM ADMINISTRATION

The CMP will be administered locally by the South Coast AQMD through its Technology Advancement Office. The South Coast AQMD reserves the right to allocate the CMP funds among the program categories or to specific projects in accordance with South Coast AQMD priorities. Additionally, the South Coast AQMD reserves the right to partially fund a project, such as the case where a project is found to exceed the cost effectiveness limit.

All qualified applications submitted in response to this PA will first be evaluated for completeness. South Coast AQMD staff will notify each applicant of an incomplete application and request the additional information within thirty (30) business days of the application submittal due date. South Coast AQMD will send letters to applicants regarding missing information. Applicants will have at least seven (7) business days to provide any missing information requested in the letter. It will be the applicant's responsibility to submit the missing or incomplete information within the time specified by South Coast AQMD staff. Only completed applications can move forward in the evaluation process; applications that remain incomplete after the seven-day response period will be rejected and will not be evaluated or further considered under the CMP.

Each project will be evaluated for its status as a Disadvantaged Community (DAC) or low-income community, as discussed in Section IV below. Each project will also be evaluated for cost effectiveness and ranked accordingly, except for infrastructure projects. Infrastructure projects are not subject to a cost-effectiveness limit, but instead will be evaluated on a competitive basis using metrics



that include, but are not limited to: fleet usage commitments, public access, project type (i.e., public, private, solar, wind, renewable natural gas), expected vehicle usage/throughput and cost share. Funding category allocations will be determined based on the evaluation and selection criteria in Section IV and subject to approval by the South Coast AQMD Governing Board.

Applications for fuel and engine technologies that are not certified, verified or approved by CARB, or falling outside the categories specifically discussed in this PA, may be referred to CARB for determination of CMP eligibility on a case-by-case basis. Please discuss these projects with South Coast AQMD staff prior to application submittal. Projects submitted for CARB case-by-case review will require the applicant to provide additional justification and documentation regarding the project and the applicant's justification for such consideration.

SCHEDULE OF EVENTS

Issue PA2020-04	March 6, 2020
Workshops	April – May 2020
All Applications Due by 1:00 pm	Tuesday, June 2, 2020
Awards Consideration by the Board	November 2020
Contract Execution	February - March 2021

**ALL APPLICATIONS MUST BE RECEIVED ELECTRONICALLY OR ON PAPER AT THE
SOUTH COAST AQMD HEADQUARTERS
NO LATER THAN 1:00 P.M. ON TUESDAY, JUNE 2, 2020**

Electronic submission using South Coast AQMD's new CMP Online Application Program (OAP) is preferred and is available at: www.aqmd.gov/moyer.

If a paper copy application is being submitted, postmarks will not be accepted as compliant with the deadline; the paper copy applications must be received at the South Coast AQMD Headquarters reception desk by the above deadline. Fax or email applications will not be accepted. Applicants may hand deliver applications to the South Coast AQMD by submitting the application to the South Coast AQMD reception desk. The application will be date and time-stamped and the person delivering the application will be given a receipt.

Paper applications must be legible. Illegible applications will be rejected.

South Coast AQMD will hold workshops during the application period to provide background and assistance with program requirements, eligibility and a tutorial for the OAP. These workshops are scheduled as follows:

**ON-ROAD HEAVY-DUTY VEHICLE/INFRASTRUCTURE/MARINE VESSEL/SHORE POWER /CHE
ELECTRIFICATION WORKSHOP**

- **Wednesday, April 8, 2020 – 10 a.m. to Noon**



Port of Los Angeles Board Room
425 South Palos Verdes Street
San Pedro, CA 90731

OFF-ROAD AGRICULTURAL EQUIPMENT/ENGINES WORKSHOP

- **Wednesday, April 15, 2020 – 10 a.m. to 1 p.m.**
Coachella Valley Mosquito & Vector Control District, Board Room
43420 Trader Place
Indio, CA 92201

ON-ROAD HEAVY-DUTY VEHICLE/INFRASTRUCTURE/OFF-ROAD HEAVY-DUTY EQUIPMENT WORKSHOP

- **Wednesday, April 22, 2020 – 10 a.m to 1 p.m.**
Resurrection Church, Parish Hall
3324 E. Opal Street
Los Angeles, CA 90023

ON-ROAD HEAVY-DUTY VEHICLE/INFRASTRUCTURE/OFF-ROAD HEAVY-DUTY EQUIPMENT WORKSHOP

- **Thursday, May 7, 2020 – 9 a.m to Noon**
Salt Lake Park, The Lounge
3401 E. Florence Avenue
Huntington Park, CA 90255

ON-ROAD HEAVY-DUTY VEHICLE/INFRASTRUCTURE/OFF-ROAD HEAVY-DUTY EQUIPMENT WORKSHOP

- **Tuesday, May 12, 2020 – 5:30 p.m. to 8:30 p.m.**
San Bernardino Valley College, Building B100
701 South Mount Vernon Avenue
San Bernardino, CA 92410

SCHEDULE OF CMP GENERAL WORKSHOPS:

- **Wednesday, April 29, 2020 - 9 a.m. to Noon**
South Coast AQMD Headquarters, Conference Room CC6
21865 Copley Drive
Diamond Bar, CA 91765
- **Wednesday, May 6, 2020 – 9 a.m. to Noon**
South Coast AQMD Headquarters, Conference Room CC6
21865 Copley Drive
Diamond Bar, CA 91765

Training and assistance with the online application system will be included in these workshops.



STATEMENT OF COMPLIANCE

Government Code Section 12990 and California Administrative Code, Title II, Division 4, Chapter 5, require employers to agree not to unlawfully discriminate against any employee or applicant because of race, religion, color, national origin, ancestry, physical handicap, medical condition, marital status, sex, or age. A statement of compliance with this clause is included in all South Coast AQMD contracts.

CONTACT FOR ADDITIONAL INFORMATION

Questions regarding the content or intent of this PA, procedural matters or locations of workshops should be addressed to:

Walter Shen
Science and Technology Advancement
South Coast Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765
Phone (909) 396-2487/FAX (909) 396-3252
wshen@aqmd.gov

SECTION II - WORK STATEMENT/SCHEDULE OF DELIVERABLES

Applicants must sign the Application form indicating their understanding of the requirements for submittal of additional project information to finalize a contract and that all vehicles, engines or equipment must be in operation within eighteen (18) months of contract execution or by May 20, 2022, whichever is earlier. **Unsigned applications may be deemed ineligible and may NOT be considered for funding.**

WORK STATEMENT

The scope of work involves a series of tasks and deliverables that demonstrate compliance with the requirements of the CMP as administered by CARB and the South Coast AQMD. The project applicant is responsible for developing detailed project plans and ordering equipment that complies with the program criteria and guideline requirements. In addition, alternative fuel project applicants must discuss their plan for refueling the proposed vehicles/equipment, and if appropriate, should provide a letter of agreement from their fuel provider (see Application forms).

At a minimum, any contract for funding the proposed project must meet the following criteria:

- Provide emission reductions that are real, surplus, quantifiable and enforceable in accordance with CMP guideline requirements.
- Meet the cost-effectiveness limit, as described in this PA and the CMP Guidelines, and subsequent CMP Advisories.
- For repower and replacement projects, the replacement engine must achieve an annual NOx emissions benefit of at least 15 percent to receive any funding for NOx reductions.
- Commit that project engines or equipment operate in service for the full project life, a minimum of three years⁴, and at least 75 percent of annual operation must occur within the

⁴ On-road projects may have a one-year minimum life, though it is difficult to qualify for meaningful grant funding with



South Coast AQMD except for line-haul locomotives. The line-haul locomotives may be eligible for funding with a minimum of 51% annual operation within the South Coast AQMD.

- The cost-effectiveness calculation is based on the percent operation within the South Coast AQMD boundary. Project life is the number of years used to determine the cost effectiveness and is equal to the contract term. The contract will include the percent operation as a minimum requirement (75% for all projects, except line-haul locomotives, which are allowed a 51% minimum).
- Commit that all vehicles/engines/equipment are in operation within 18 months of contract execution or by May 20, 2022, whichever is earlier.
- Provide for appropriate recordkeeping during the project life (i.e., annual mileage, fuel consumption and/or hours of operation), including submission of annual reports as detailed below.
- Ensure that the project complies with all applicable rules and regulations, and the resulting emission reductions from the project are not required as a mitigation measure to reduce adverse environmental impacts that are identified in an environmental document prepared in accordance with the California Environmental Quality Act or the National Environmental Policy Act.
- If requested, contractor must provide a financial statement and bank reference, or other evidence of financial ability to fulfill contract requirements.
- If requested, contractor must make all equipment and records available to the South Coast AQMD or CARB for audit and inspections.

DELIVERABLES

The contract will describe how the project will be monitored and what type of information must be submitted as part of the reporting requirements. At a minimum, the South Coast AQMD expects to receive an annual report for each year during the full contract term, or project life, which provides the annual miles or hours of operation⁵, where the vehicle or equipment was operated, and operational and maintenance issues encountered and how they were resolved. South Coast AQMD reserves the right to verify the information provided.

Reporting forms are available online at: www.aqmd.gov/moyer.

SECTION III - APPLICATION SUBMITTAL REQUIREMENTS

Applicants are encouraged to apply for CMP funding using the South Coast AQMD's new CMP Online Application Program at: www.aqmd.gov/moyer. Applicants may also complete and submit a paper application with the appropriate application forms, which are listed in Appendix A. In addition, all Business Information Forms⁶, including Conflict of Interest and Project Cost information, as described below, must also be submitted with the application. It is the responsibility of the applicant to ensure that all information submitted is accurate and complete.

such a short project life. In addition, off-road projects for small fleets may have a two-year minimum project life.

⁵ Locomotive projects shall report annual fuel consumption.

⁶ www.aqmd.gov/moyer



Submit the original plus three (3) complete paper copies and one digital copy of the entire application package. Do not include a copy of this PA in your application.

CONFLICT OF INTEREST

Applicant must address any potential conflicts of interest with other clients affected by actions performed by the firm on behalf of the South Coast AQMD. Although the applicant will not be automatically disqualified by reason of work performed for such firms, the South Coast AQMD reserves the right to consider the nature and extent of such work in evaluating the application.

Conflicts of interest will be screened on a case-by-case basis by the South Coast AQMD General Counsel's Office. Conflict of interest provisions of the state law, including the Political Reform Act, may apply to work performed pursuant to this contract. Please discuss potential conflicts of interest on the Application Statement Form in Appendix A.

PROJECT COST

Applicants must provide cost information that specifies the amount of funding requested and the basis for that request by attaching vendor quotes to the application. The vendor quotes must be dated within 90 days of the application submittal date. Applicants need to inform vendors of the time frame of the award process so that they can estimate prices based on the future/projected order/purchase date.

Purchase orders or other purchase commitments shall not be placed until after the date of award approval by the South Coast AQMD Governing Board. Purchase orders may be placed after South Coast AQMD Governing Board approval and in advance of a fully executed contract, but these orders/commitments are placed at the applicant's own risk⁷.

The CMP will fund only a percentage of the cost of the low emission or zero-emission technology based on the type of project. The proposed low-emission or zero-emission technology must be certified, verified or approved by CARB in most cases⁸. No administrative or operational costs will be funded.

All project costs must be clearly indicated in the application. In addition, applicants must disclose all sources of co-funding, including the name of the funding source and amount of funding in the application. **Applicants are cautioned that the project life period used in calculating emissions reductions will be used to determine the length of their annual reporting obligation.** In other words, a project applicant using a ten-year life for the emissions reduction calculations will be required to operate, track and report activity for the project vehicle for the full ten years. The contract term will also be ten years.

Applicants are not required to calculate a project's cost effectiveness. Methodologies for calculating cost effectiveness are provided in the CARB Moyer Guidelines

at: https://www.arb.ca.gov/msprog/moyer/guidelines/2017gl/2017_gl_appendix_c.pdf.

⁷ Any purchase order/purchase commitment placed prior to the South Coast AQMD Governing Board approval of the project are prohibited by the CMP. However, orders/commitments placed after South Coast AQMD Governing Board approval but in advance of a fully executed contract are at the purchaser's own risk.

⁸ Note that an experimental permit from CARB may be considered, but the project will require special CARB approval.



APPLICATION SUBMISSION

All applications must be submitted according to specifications set forth herein. Failure to adhere to these specifications may be cause for rejection of the application without evaluation.

Staff Contact Information: South Coast AQMD staff contacts for each category are listed in Table 1 below. Applicants are strongly encouraged to contact South Coast AQMD staff to discuss their project prior to submitting an application to ensure program eligibility.

For Paper Copy Applications - Application Forms: *(This section does not pertain to applicants using the South Coast AQMD's CMP Online Application System.)* The application forms are identified in Appendix A. These must be completed and submitted with other required documents (i.e., Business Information Forms, activity documentation, project quotes, ownership records, registration, etc.) discussed in the application and below.

A separate Form A-1 is required for each category (i.e., on-road, marine, off-road, locomotive, etc.). For example, if an applicant is requesting funding for marine engine repowers and off-road construction equipment, then two (2) separate Form A-1 applications must be submitted – one for each category. In addition to each Form A-1, the applicable category Form is required for each piece of equipment for which grant funding is requested (i.e., B-1, C-1, etc.). For example:

Example Application Package:

Applicant X plans to submit a request for CMP funding to replace three vehicles and two locomotives. The forms required are:

- Form A-1 (General Application Form), which includes:
 - Application Checklist
 - Application Statement
 - Business Information Forms (see details below)
- Complete a Form B-1 (On-Road Heavy-Duty Vehicle Replacement), one for each vehicle to be replaced
- Complete a Form E-1 (Locomotive Replacement), one for each locomotive to be replaced

Business Information Forms: Consists of business information forms that **must** be completed and submitted with the Application. Please note, if recommended for an award, you will be required to submit an updated Campaign Contribution Disclosure form at a later date. Download these forms at www.aqmd.gov/moyer.

Submit the original plus three (3) complete paper copies and one digital copy of all the entire application package.

Methods for Delivery:

1. **Electronic Submittal:** The preferred method of delivery for this solicitation is through South Coast AQMD's CMP Online Application Program (OAP), available at: www.aqmd.gov/moyer. This online system allows applicants to submit applications electronically to the South Coast



AQMD prior to the date and time specified below. South Coast AQMD “Business Information Forms” requiring signatures must be scanned and uploaded to the electronic application in PDF format. The system will not allow applications to be submitted after the due date and time.

First-time users must register as a new user to access the system. Applicants will receive a confirmation email after all required documents have been successfully uploaded. A tutorial of the system will be provided at the pre-application workshops and you may contact the Project Officer listed in Table 1 if you would like additional assistance.

2. Paper Copy Submittals – Although not preferred, an applicant may deliver the application in person or via a courier service or U.S. Mail. Applicants **shall submit the original plus three (3) complete signed copies of the application package (all forms and documents), as well as an electronic copy of the application and its supporting documents on a CD or flash drive**, in a sealed envelope, plainly marked in the upper left-hand corner with the name and address of the applicant and the words "**Program Announcement PA2020-04**". All paper copy applications shall be submitted in an environmentally friendly format: stapled, not bound, black and white print; no three-ring, spiral or plastic binders, and no card stock or colored paper. All application forms may be accessed from the South Coast AQMD’s Carl Moyer Program homepage at www.aqmd.gov/moyer.

Due Date - All applications must be received, either via the OAP or on paper, no later than **1:00 p.m., on Tuesday, June 2, 2020**. Postmarks are not accepted as proof of deadline compliance. **Faxed or emailed applications will not be accepted**. Applications must be directed to:

Procurement Unit
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Any correction or resubmission done by the applicant will not extend the submittal due date.

Grounds for Rejection - An application may be immediately rejected if:

- It is not prepared in the format described
- It is not signed by an individual authorized to represent the firm
- Does not include current cost quotes, Contractor Statement Forms and other forms required in this PA.

Missing Information – Within thirty (30) business days of the application submittal due date of June 2, 2020, South Coast AQMD will email letters to applicants regarding the missing or incomplete information. Applicants will have seven (7) business days to provide any missing information requested in the letter. It will be the applicant’s responsibility to submit the missing or incomplete information within the time specified by South Coast AQMD staff. Only complete applications can move forward in the evaluation process.

Disposition of Applications - The South Coast AQMD reserves the right to reject any or all applications. All responses become the property of the South Coast AQMD. One copy of each



application not selected for funding shall be retained for one year. Additional copies and materials will be returned only if requested and at the applicant's expense.

SECTION IV - APPLICATION EVALUATION/CONTRACTOR SELECTION CRITERIA

South Coast AQMD staff will evaluate all qualified applications and make recommendations to the Governing Board for final selection of project(s) to be funded. Each project will be evaluated based on two primary criteria: (1) the cost effectiveness of NOx, PM10 and ROG reduced, and (2) the project’s status with respect to the disadvantaged community and low-income criteria prescribed by CARB.

Note: Infrastructure projects are not subject to a cost-effectiveness limit but instead will be evaluated on a competitive basis using metrics that include, but are not limited to: fleet usage commitments, public access, project type (i.e., public, private, solar, wind, renewable), expected vehicle usage/throughput and cost share.

Be aware that there is a possibility that due to program priorities, cost effectiveness or funding category limitations (i.e., caps), project applicants may be offered only partial funding, and not all applications that meet the cost-effectiveness criteria may be funded.

At least 50 percent of South Coast AQMD’s CMP funds are targeted for projects that meet the criteria of a disadvantaged or low-income community. The Office of Environmental Health Hazard Assessment (OEHHA) in the California Environmental Protection Agency (CalEPA) has developed the California Communities Environmental Health Screening Tool: CalEnviroScreen Version 3.0 (CalEnviroScreen 3.0). The CalEnviroScreen 3.0 tool will be used by South Coast AQMD to identify projects that qualify as a DAC, which is defined as scoring in the top 25th percentile, and will strive to maximize the benefits to these communities from this PA. All applications will be assessed with the CalEnviroScreen tool to identify and verify if the project will benefit a DAC. This tool is available at: <https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30>

SECTION V - PAYMENT TERMS

For all projects except shore power projects, full payment will be made upon installation and commencement of operation of the funded equipment. For shore power projects, a progress payment schedule may be established that allows payment upon completion of key milestones, as delineated in the contract.

SECTION VI: SOUTH COAST AQMD STAFF CONTACTS AND ADDITIONAL RESOURCES

The South Coast AQMD staff contacts are listed in Table 1 by project category. Copies of the Program Announcement, Application Forms and a sample South Coast AQMD CMP contract may be accessed at: www.aqmd.gov/moyer.

Table 1: CMP Staff Contacts

Project Category	Staff Contact	Phone Number	Email
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On-Road Heavy-Duty Vehicles	Tom Lee	(909) 396-2270	tlee@aqmd.gov
Off-Road Equipment	Walter Shen Greg Ushijima	(909) 396-2487 (909) 396-3301	wshen@aqmd.gov gushijima@aqmd.gov
Cargo Handling Equipment Electrification	Greg Ushijima	(909) 396-3301	gushijima@aqmd.gov
Marine Vessels	Ping Gui	(909) 396-3187	pgui@aqmd.gov
Shore Power	Greg Ushijima	(909) 396-3301	gushijima@aqmd.gov
Locomotives	Greg Ushijima Walter Shen	(909) 396-3301 (909) 396-2487	gushijima@aqmd.gov wshen@aqmd.gov
Infrastructure	Yuh Jiun Tan Tom Lee	(909) 396-2463 (909) 396-2270	ytan@aqmd.gov tlee@aqmd.gov

WEBSITE LINKS TO CARB RULES THAT AFFECT CMP ELIGIBILITY

On-Road Private (truck and bus) @ <http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm>

Drayage Truck Regulatory @ <https://www.arb.ca.gov/msprog/onroad/porttruck/porttruck.htm>

Public/Utility Fleets @ <http://www.arb.ca.gov/msprog/publicfleets/publicfleets.htm>

In-Use Off-Road @ <http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm>

Harbor Craft @ <http://www.arb.ca.gov/ports/marinevess/harborcraft.htm>

Cargo Handling Equipment @ <http://www.arb.ca.gov/ports/cargo/cargo.htm>

Shore Power @ <http://www.arb.ca.gov/ports/shorepower/shorepower.htm>



APPENDIX A

Table of Contents

South Coast AQMD encourages applicants to utilize the CMP Online Application Program to submit applications to the Year 21 CMP. The CMP Online Application Program is available at the South Coast AQMD Carl Moyer Program website at www.aqmd.gov/moyer. If you choose to submit a paper application, please utilize the application forms and other documents identified below. Each document listed below is available on South Coast AQMD's CMP website for download.

1. Application Checklist – one per applicant.
2. Form A-1: General Application (includes Checklist and Application Statement). Provide a complete set of Form A-1 documents for each equipment category (i.e., locomotive, marine, off-road, etc.). Read the Application Statement carefully – it is a certification of the applicant's understanding for each item listed.
3. Category Application Form specific to your project category (one per unit, or use excel templates referenced in the form for multiple unit projects)
 - a) Form B-1: On-Road Heavy-Duty Vehicles, Replacement
 - b) Form B-2: On-Road Heavy-Duty Vehicles, Repower
 - c) Form B-3: Emergency Vehicles (Fire Apparatus)
 - d) Form C-1: Off-Road Equipment Replacement
 - e) Form C-2: Off-Road Equipment (Repower, Repower with Retrofit)
 - f) Form C-3: Off-Road Equipment Retrofit
 - g) Form C-4: Cargo Handling Equipment (CHE) Electrification
 - h) Form D-1: Marine Vessels, Repower
 - i) Form D-2: Marine Vessels, Shore Power
 - j) Form E-1 through E-3: Locomotives
 - Form E-1: Locomotive Replacement
 - Form E-2: US Engine Remanufacture Kit or Repower/Refurbishment
 - Form E-3: Head-end power (HEP) Unit
 - k) Form F-1: Infrastructure
4. Business Information Forms – complete, sign and submit all of these forms with your application.



APPLICATION CHECKLIST

Applicants are encouraged to submit their application using South Coast AQMD's online system. If you are applying in person, use this checklist to organize your paper copy application. Each of the following application sections is required to be submitted if you submit a paper application:

- A cover letter stating your grant request, how many pieces of equipment and/or engines included in the proposed project, and the funding amount being requested (per engine equipment/vehicle/vessel and for the total overall project). For applications covering more than one category, organize this information by project category (i.e., marine, locomotive, on-road, etc.)
- This Application Checklist (signed below).
- General Application Form A-1. Provide a separate Form A-1 for each category (i.e., marine, locomotive, etc.) for which grant funding is requested. Form A-1 also includes the Application Statement (signed and initialed, as applicable)
- Completed and **signed** Business Information Forms.⁹ Ensure that these forms use consistent business/company name that is aligned with how the applicant files taxes for the project equipment. Contracts awarded under the CMP rely on these forms to establish the contract parties.
- Category Application Form specific to your project category (i.e., locomotive, off-road, marine, etc.), along with the following attachments/enclosures:
 - For multiple unit applications, applicants have the option to provide the information required by the applicable application form/category using an Excel spreadsheet.
 - Vendor quotes that have been obtained within 90 days prior to the application submittal date.
 - CARB Executive Orders for each engine. Download at (for the zero-emission vehicle or equipment, please provide a CARB's Approval Letter):
On-road: <http://www.arb.ca.gov/msprog/onroad/cert/cert.php>
Off-road: <http://www.arb.ca.gov/diesel/cv.htm>
 - Previous two years of historical records documenting equipment usage, retroactive to the date of application.

⁹ These forms may be downloaded at: www.aqmd.gov/moyer.



Once completed, submit the original plus three (3) complete signed copies of the application package (all forms and documents), as well as an electronic copy of the application and its supporting documents on a CD or flash drive, in accordance with the Application Submittal Instructions. I understand that all documents, as listed above, are required in order to have a complete application package in order to be considered for funding under the Carl Moyer Program.

Signature

Date



Carl Moyer and SOON Application
 Form A-1
 General Application Form (page 1 of 3)

The SCAQMD is accepting applications for projects throughout its jurisdiction. All applications will be evaluated based on their cost-effectiveness and their disproportionate impact score as discussed in Section IV "Application Evaluation/ Contractor Selection Criteria" contained in Program Announcement. For additional information about SCAQMD's policies and application information, visit: www.aqmd.gov/moyer. In general, this program will follow CARB Carl Moyer Program guidelines, which are available at: <http://www.arb.ca.gov/msprog/moyer/moyer.htm>.

The submittal of an application does not guarantee approval for funding, but will be used to determine the potential emission reductions and eligible grant funding amount for the proposed project. Any equipment purchased prior to project approval by the SCAQMD Governing Board will not be eligible for funding. Applicant may, at their own risk, issue a purchase order for approved equipment prior to contract execution. Other than a purchase order, **no other work shall proceed** until a fully executed contract, i.e. signed by the applicant and SCAQMD Board Chairman and a pre-inspection, is completed.

Organization Information

Legal Name of Organization *

The legal organization name must be that of the legal equipment owner.

Organization Address

Mailing Address *
 Street Address/P.O. Box
 City *
 State *
 Zip *
 County *

Primary Contact Name and Information

First Name
 Last Name
 Email Address
 (A valid Email address is required. Eg. john@gmail.com)
 Phone Number
 Fax Number

Person Authorized to Sign Application and Execute Grant Agreement

First Name
 Last Name
 Email Address
 (A valid Email address is required. Eg. john@gmail.com)
 Phone Number
 Fax Number

Third Party Information

Name of Person Who Completed the Application
 What is Your Position?
 How much are you being paid to complete this application for the owner or to assist in the proposed project?
 What is the source of funds being used to pay you?
 Signature of Third Party Person Who Completed the Application:

 Date:



**Carl Moyer and SOON Application
Form A-1
General Application Form (page 2 of 3)**

All information provided in this application will be used by SCAQMD staff to evaluate the eligibility of this application to receive program funds. SCAQMD staff reserves the right to request additional information and can deny the application if such requested information is not provided by the requested deadline. Incomplete or illegible applications will be returned to applicant or vendor, without evaluation. An incomplete application is an application that is missing information critical to the evaluation of the project.

Please read and check each item below to indicate understanding and agreement:

I understand that this application is for evaluation purposes only and does not guarantee project funding. Only a fully executed Grant Agreement between the equipment owner and the District constitutes an obligation to fund a project.

I certify to the best of my knowledge and under penalty of perjury that the information contained in this application is true and accurate.

I understand that all vehicles/equipment, both existing and new, must be made available within the SCAQMD boundaries for inspection, unless otherwise approved by SCAQMD's Project Officer.

The vehicle/engine will be used within the SCAQMD boundaries (with the emission reduction system operating) for at least the projected usage shown in this application, and no less than 75 percent of the time.

I understand that it is my responsibility to ensure that all technologies are either verified or certified by the California Air Resources Board (CARB) to reduce NOx and/or PM pollutants. CARB Verification Letters and/or Executive Orders are attached, as applicable.

I understand that for repower projects, I am required to install the highest level available verified diesel emission control device (VDECS), and that the costs of this device and associated installation are a CMP eligible expense. These costs may be included in the project grant request up to the maximum cost-effectiveness limit.

I understand that there may be conditions placed upon receiving a grant and agree to refund the grant (or pro-rated portion thereof) if it is found that at any time I do not meet those conditions and if directed by the SCAQMD in accordance with the contract agreement.

I understand that, for this equipment, I am required to disclose if I have applied for or received incentive funding from another entity or program. Failure to do so will disqualify me from Carl Moyer Program Funding.

In the event that the vehicle(s)/equipment do not complete the minimum term of any agreement eventually reached from this application, I agree to ensure the equivalent project emissions reductions, or to return grant funds to the SCAQMD as required by the contract.

I understand that all on-road engines in my fleet that are eligible for a low-NOx software upgrade (reflash) must be reflashed within 60 days of receipt of contract execution. I may self-certify that the reflash has been performed by submitting a receipt of the completed reflash or a picture of the "Low NOx Reflash Label" from the reflashed engine to SCAQMD.

I understand that third party contracts are not permitted. A third party may, however complete an application on an owner's behalf. Third parties are required to list how much compensation, if any, they are receiving to prepare the application(s), and to certify that no Carl Moyer Program funds are being used for this compensation.

I understand that off-road equipment applicants subject to CARB's In-Use Off-Road Diesel Vehicle Regulation (Off-Road Regulation) must submit information regarding fleet size and compliance status. This must include the Diesel Off-Road On-line Reporting System (DOORS) ID of the fleet and the DOORS Equipment Identification Number (EIN) of the funded equipment.

I understand that additional project information may be requested during project review and must be submitted prior to final evaluation.

I understand that all vehicles, engines or equipment funded by this program must be operational within eighteen (18) months of contract execution, or by the vehicle in service date as specified in the Statement of Work, whichever is earlier.

All project applicants must submit documentation that supports the activity claimed in the application (i.e., fuel receipts, mileage logs and/or hour-meter readings covering the last two years). This documentation is attached.

The grant contract language cannot be modified without the written consent of all parties. I have reviewed and accept the sample contract language.

I understand that an IRS Form 1099 may be issued to me for incentive funds received under the Moyer Program. I understand that it is my



Carl Moyer and SOON Application
Form A-1
General Application Form (page 3 of 3)

responsibility to determine the tax liability associated with participating in the Moyer Program.

I understand that an SCAQMD-funded Global Positioning System (GPS) unit will be installed on vehicles/equipment not operating within SCAQMD boundaries full time. I will submit data as requested and otherwise cooperate with all data reporting requirements. I also understand that the additional cost of the GPS unit will be added to the project cost when calculating cost-effectiveness, though the SCAQMD will pay for this system directly.

I understand that the SCAQMD has the right to conduct unannounced inspections for the full project life to ensure the project equipment is fully operational at the activity level committed to by the contract.

I understand that all emission reductions resulting from Carl Moyer funded projects will be retired and the Carl Moyer Program claims all emission reductions from its funded projects. I also understand that there is no double counting or splitting of emission reductions if I receive additional incentive funding.

I understand that a tamper proof, non-resettable digital hour meter/odometer must be installed on all vehicles/equipment and that the digital hour meter/odometer will record the hours/miles accumulated within the SCAQMD boundaries. This cost is my responsibility.

I understand that any tax credits claimed must be deducted from the CMP request.
Please check one:

- I do not plan to claim a tax credit or deduction for costs funded by the CMP.
- I do plan to claim a tax credit or deduction for costs funded by the CMP.

If so please indicate amount here: \$

- I plan to claim a tax credit or deduction only for the portion of incremental costs not funded by the CMP.

If so please indicate amount here: \$

I have checked this box to indicate that there are no potential conflicts of interest with other clients affected by actions performed by the firm on behalf of SCAQMD. If I have not checked this box, I have attached a description to this application of the potential conflict of interest, which will be screened on a case-by-case basis by the SCAQMD District Counsel's Office.

I understand and certify that I am currently in compliance with all federal, state and local air quality rules and regulations at the time of application submittal, and I am not aware of any outstanding or pending enforcement actions.

Please indicate the Total Funding Requested (for the entire project, including all equipment/vehicle replacements, repowers, etc.): \$ _____

By signing below, I certify under penalty of perjury that the information provided in this application is accurate and true.

Please print the name of the signing authority (first and last name)

Signature of signing authority:

Please enter the application submission date:

APPLICATION CHECKLIST

Applicants are encouraged to submit their application using SCAQMD's online system. If you are applying in person, use this checklist to organize your paper copy application. Each of the following application sections is required to be submitted if you submit a paper application:

- A cover letter stating your grant request, how many pieces of equipment and/or engines included in the proposed project, and the funding amount being requested (per engine and for the total project). For applications covering more than one category, organize this information into project category (i.e., marine, locomotive, on-road, etc.)
- This Application Checklist (signed below).
- General Application Form A-1. Provide a separate Form A-1 for each category (i.e., marine, locomotive, etc.) for which grant funding is requested. Form A-1 also includes the following documents:
 - Application Statement (signed and initialed as applicable)
 - Completed and **signed** Business Information Forms¹
- Category Application Form specific to your project category (i.e., locomotive, off-road, marine, etc.), along with the following attachments/enclosures:
 - Optional Excel Worksheet associated with applicable application form/category (you may use this form for multiple unit projects, if desired)
 - Vendor quotes dated no earlier than 90 days prior to the date of application submittal
 - CARB Executive Orders for each engine. Download at:
 - On-road: <http://www.arb.ca.gov/msprog/onroad/cert/cert.php>
 - Off-road: <http://www.arb.ca.gov/diesel/cv.htm>
 - Previous two years of historical records documenting equipment usage, retroactive to the date of application.

Once completed, please submit one original plus three (3) complete signed copies of the application package (all forms and documents), as well as an electronic copy of the application and its supporting documents on a CD or flash drive.

I understand that all documents, as listed above, are required in order to have a complete application package in order to be considered for funding under the Carl Moyer Program.

Signature

Date

¹ These forms may be downloaded at: www.aqmd.gov/moyer



Carl Moyer Program Application Form B-1 On-Road Heavy-Duty Vehicle Replacement

If you have any questions regarding this program or the application process, please contact Tom Lee at (909) 396-2270, tlee@aqmd.gov.

Existing Vehicle Information

Registered Owner:

Does the vehicle have a clean title (no lienholder on the title)? Yes No

Is this a public vehicle? Yes No

Has this equipment received Carl Moyer Program funds in the past? Yes No

Is the vehicle location the same as the applicant address? Yes No

If not, provide vehicle domiciling address:

Provide the vocation of the vehicle:

Vehicle Identification Number
(VIN)

License Plate #

Vehicle Fleet/Unit Number (If
applicable)

Vehicle Model Year

Vehicle Make

Vehicle Gross Weight Rating
(GVWR)

Vehicle Model

Existing Engine Information

Engine Fuel Type

Engine Model

Engine Make

ARB Engine Family
Number

Engine Model Year

Engine Serial Number

Engine Executive Order
(EO) Number



Carl Moyer Program Application Form B-1 On-Road Heavy-Duty Vehicle Replacement

Project Information

ARB Fleet Regulation this vehicle is subject (Drayage, Truck and Bus Reg
Solid Waste Collection Vehicles, Public Fleet, Transit, etc.)

Provide TRUCRS ID Number or DTR number

Amount requested from SCAQMD for this vehicle (\$)

Total Vehicle/Project Cost (From Quote: must equal)

What is your current fleet size? (Should reflect all diesel fuel vehicles with
a GVWR greater than 14,000 lbs.)

If applicable did you register your fleet through ARB's TRUCRS Database by
January 31, 2019? A Compliance Certificate will be required if the fleet is
subject to Truck and Bus Reg. Yes No

Identify other funding sources to be used for this project

Applicant Co-Funding Amount

Operation Information

Percent operation in California (%)

Percent Operation in District (%)
SCAQMD District Boundaries

<http://www.aqmd.gov/home/about/jurisdiction>

Proposed Project Life (this is the number of years that the equipment must operate as specified in your SCAQMD
contract)

Maximum Project Life for On-Road Projects:

Replacements	7 Years
Transit Bus Replacements	12 Years
Repowers	7 Years
School Bus Replacements	10 Years
Electric Conversions	5 Years
Emergency Vehicles	14 Years
Other on-Road Projects	3 Years



Carl Moyer Program Application

Form B-1

On-Road Heavy-Duty Vehicle Replacement

Replacement Vehicle and Vendor Information

Replacement Vehicle Cost (including taxes)	Is this a public fleet vehicle?	<input type="radio"/> Yes	<input type="radio"/> No
Replacement Vehicle Make	Replacement Vehicle Model		
Replacement Vehicle Model Year	Replacement Vehicle GVWR		
Vendor	Vendor Contact Name		
Vendor Address	Vendor Phone Number		
Vendor City	Vendor State		
Vendor Zip			

Replacement Engine Information

Engine Fuel Type	Engine Make
Engine Model	Engine Model Year
Engine Family Number	ARB Certification Executive Order (EO) Number (if zero-emission, attach ARB Approval Letter)

Download the EO at: <http://www.arb.ca.gov/msprog/onroad/cert/cert.php>

The proposed engine for the project must be consistent with the Intended Service Class per the EO (MHD Intended Service Class engines cannot be used for projects which have the HHD vehicle classifications). Applicant must ATTACH a copy of the referenced Executive Order with the application. Download the EO at: <http://www.arb.ca.gov/msprog/onroad/cert/cert.php>



Carl Moyer Program Application Form B-1

On-Road Heavy-Duty Vehicle Replacement Engine Activity Information

Please provide projected annual usage for the new equipment over the proposed life of the project. This projection should be based on actual usage data for the baseline, or existing, equipment. Applicants requesting evaluation based on fuel consumption MUST provide both mileage and fuel records from the past 24 months. Supporting documentation may be in the form of maintenance records, fuel receipts, logs, or other paperwork for each piece of baseline equipment covering at least the past 24 months. No such documentation is required for project evaluations based solely on mileage.

Activity Information

Existing Engine - Annual operation details for the past 24-months

March 2020 Mileage March 2019 Mileage March 2018 Mileage

Odometer Reading

Miles Travelled – List the cities/zip codes the vehicle typically travels:

--



**Carl Moyer Program Application
Form B-1
On-Road Heavy-Duty Vehicle Replacement
Attachments**

The following attachments must be submitted for this proposal:

- Insurance Documentation (showing coverage from March 2017 through March 2019)
- Photo of the vehicle GVWR and VIN
- Photo of the engine model year, engine serial number and the engine family number
- Vehicle California DMV registration (showing continuous coverage from March 2017 through March 2019)
 - *For seasonal drivers: vehicle must have been registered in California for three to six continuous months per 12 month period for the previous 24 months.*
- Engine Executive Order(s) and Retrofit Device Executive Order(s) (For both the current and proposed new equipment)
- Quotes (must be within 90 days of application submittal and include applicable taxes and fees)
- Equipment Usage Documentation (for past 24 – months: must support the readings listed under activity Information)
- ARB Approval Letter (for Zero-Emission projects)
- Business Information Request Form
- Campaign Contribution Disclosure
- W-9 Form Direct
- Deposit Form
- Business Status Certification
- Certification of Debarment, Suspension and Other Responsibility Matters
- ARB's Compliance Certificate or Printout from Drayage Truck Registry with vehicle VIN listed
- Vehicle Title



Carl Moyer Program Application Form B-2 On-Road Heavy-Duty Equipment Repower Only : Vehicle Information

If you have any questions regarding this program or the application process, please contact Tom Lee at (909) 396-2270, tlee@aqmd.gov.

Existing Vehicle Information

Registered Owner

Has this equipment received Carl Moyer Program funds in the past? Yes No

Is the vehicle location address the same as the applicant address? If not, please complete below. Yes No

Street Address (if no address, please provide intersection) City

County State

Zip Vehicle Type

If other, please describe:

Vehicle Identification Number (VIN) Vehicle Make

Vehicle Model Vehicle Model Year

Gross Vehicle Weight Rating (GVWR) License Plate #

Unit Number



Carl Moyer Program Application Form B-2 On-Road Heavy-Duty Equipment Repower Only : Project Details

Name of California State Fleet Regulation this vehicle is subject to

Provide TRUCRS ID or DTR Number

Amount requested from SCAQMD for the project (includes all vehicles in proposal)

What is your current fleet size? (Should reflect all diesel fuel vehicles with a GVWR greater than 14,000 lbs.)

If applicable did you register your fleet through ARB's TRUCRS Database by January 31, 2019?

Yes

No

Total Funding Requested

Identify other funding sources to be used for this project:

Total Project Cost (From Quote: MUST EQUAL QUOTE)

Applicant Co-Funding Amount

Operation Information

Percent operation in California (%)

Percent Operation in District (%)

SCAQMD District Boundaries <http://www.aqmd.gov/home/about/jurisdiction>

Proposed Project Life (this is the number of years that the equipment must operate as specified in your SCAQMD contract)

Maximum Project Life for On-Road Projects

Replacements	7 years
Transit Bus Replacements	12 years
Repowers	7 Years
School Bus Replacements	10 years
Electric Conversions	5 years
Emergency Vehicles	14 years
Other On-Road Projects	3 years



**Carl Moyer Program Application
Form B-2
On-Road Heavy-Duty Equipment
Repower Only : Engine Information**

Baseline Engine Information

Engine Fuel Type	<input type="text"/>	Engine Model	<input type="text"/>
Engine Make	<input type="text"/>	Engine Serial Number	<input type="text"/>
Engine Model Year	<input type="text"/>	ARB Engine Family Number	<input type="text"/>

New Engine Information

New Engine Fuel Type	<input type="text"/>		
New Engine Make	<input type="text"/>	New Engine Model	<input type="text"/>
New Engine Model Year	<input type="text"/>		<input type="text"/>
New Engine ARB Engine Family Number	<input type="text"/>		

ARB Certification Executive Order (EO) Number
(if zero-emission, attach ARB Approval Letter)

Funding Information

New Engine Cost (Including Tax)	<input type="text"/>	New Engine Installation Cost	<input type="text"/>
Grant Request Amount for this Repower	<input type="text"/>		
Vendor	<input type="text"/>	Vendor Contact Name	<input type="text"/>
Vendor Phone Number	<input type="text"/>	Vendor Address	<input type="text"/>
Vendor City	<input type="text"/>	Vendor State	<input type="text"/>
Vendor Zip	<input type="text"/>		

The proposed engine for the project must be consistent with the Intended Service Class per the EO (MHD Intended Service Class engines cannot be used for projects which have the HHD vehicle classifications). Applicant must ATTACH a copy of the referenced Executive Order with the application. Download the EO at: <http://www.arb.ca.gov/msprog/onroad/cert/cert.php>



Carl Moyer Program Application
Form B-2
On-Road Heavy-Duty Equipment
Repower Only : Engine Activity Information

Please provide projected annual usage for the new equipment over the proposed life of the project. This projection should be based on actual usage data for the baseline, or existing, equipment. Applicants requesting evaluation based on fuel consumption **MUST** provide both mileage and fuel records from the past 24 months. Supporting documentation may be in the form of maintenance records, fuel receipts, logs, or other paperwork for each piece of baseline equipment covering at least the past 24 months. No such documentation is required for project evaluations based solely on mileage.

Activity Information

Baseline Engine - Annual operation details for the past 24-months

	March 2020	March 2019	March 2018
Odometer Reading	<input type="text"/>	<input type="text"/>	<input type="text"/>
Fuel Use (gallons/year)	<input type="text"/>	<input type="text"/>	<input type="text"/>

Mile Traveled - List the cities/ zip codes the vehicle typically travels:



Carl Moyer Program Application Form B-2

On-Road Heavy-Duty Equipment
Repower Only : Attachments

The following attachments must be submitted for this proposal:

- Insurance Documentation (showing coverage from March 2017 through March 2019)
- Photo of the vehicle GVWR and VIN
- Photo of the engine model year, engine serial number and the engine family number
- Vehicle California DMV registration (showing continuous coverage from March 2017 through March 2019)
 - *For seasonal drivers: vehicle must have been registered in California for three to six continuous months per 12 month period for the previous 24 months.*
- Engine Executive Order(s) and Retrofit Device Executive Order(s)(For both the current and proposed new equipment)
- Quotes (must be within 90 days of application submittal and include applicable taxes and fees)
- Equipment Usage Documentation (for past 24 – months: must support the readings listed under activity Information)
- ARB Approval Letter (for Zero-Emission projects)
- Business Information Request Form
- Campaign Contribution Disclosure
- W-9 Form Direct
- Deposit Form
- Business Status Certification Certification of Debarment, Suspension and
- Other Responsibility Matters
- ARB's Compliance Certificate or Printout from Drayage Truck Registry with vehicle VIN listed



Carl Moyer Program Application
 Form B-3
 On-Road Emergency Equipment (Fire Apparatus)
 New Only : Equipment Information

If you have any questions regarding this program or the application process, please contact Tom Lee at (909) 396-2270, tlee@aqmd.gov.

Existing Vehicle Information

Registered Owner

Has this equipment received Carl Moyer Program funds in the past? Yes No

Is the vehicle location address the same as the applicant address? If not, please complete below. Yes No

Street Address (if no address, please provide intersection) City

County State

Zip Vehicle Type

If other, please describe:

Is the vehicle an Authorized Emergency Vehicle?
 (Authorized emergency vehicles as described in the California Vehicle Code, sections 27156.2 and 165? including, but not limited to pumpers, ladder trucks, and water tenders) Yes No

Proposed Project Life (in years)
 This is the number of years that the equipment must operate as specified in your SCAQMD contract. (The maximum project life available for fire apparatus is 14 years and represents the average remaining useful life of the vehicle.)

Vehicle Identification Number (VIN) Vehicle Make

Vehicle Model Vehicle Model Year

Gross Vehicle Weight Rating (GVWR)

License Plate # Unit Number

I have attached proof of California registration for the past 24-months and a copy of the Title, proving ownership (without lien holder) for each project vehicle. Yes No

Is 2 to 1 Replacement Applied? Yes No

Replacement Vehicle and Vendor Information

New Vehicle Make New Vehicle Model

New Vehicle Model Year New Vehicle Cost

New Vehicle GVWR

Vendor Vendor Contact Name

Vendor Phone Number Vendor Address

Vendor City Vendor State



Carl Moyer Program Application
Form B-3
On-Road Emergency Equipment (Fire Apparatus)
New Only : Project Details

Describe type of apparatus:

Are the project vehicle(s) being submitted for funding under this category exempt from ARB Regulations?
Authorized emergency vehicle(s) are described under California Vehicle Code Sections 27156.2 and 165.

Yes No

Is this a public fleet vehicle?

Yes No

Grant Request Amount

Total Funding Requested

Identify other funding sources to be used for this project

Total Project Cost (From Quote: MUST EQUAL QUOTE)

Applicant Co-Funding Amount

Operation Information

Percent operation in California (%)

Percent Operation in District (%)



Carl Moyer Program Application
Form B-3
On-Road Emergency Equipment (Fire Apparatus)
New Only : Engine Information

Baseline Engine Information

Engine Fuel Type	<input type="text"/>	Engine Model	<input type="text"/>
Engine Make	<input type="text"/>	Engine Serial Number	<input type="text"/>
Engine Model Year	<input type="text"/>	ARB Engine Family Number	<input type="text"/>

ARB Certification Executive Order (EO) Number (if zero-emission, attach ARB Approval Letter)

Download the EO at: <http://www.arb.ca.gov/msprog/onroad/cert/cert.php>

New Engine Information

Engine Fuel Type	<input type="text"/>	Engine Model	<input type="text"/>
Engine Make	<input type="text"/>		
Engine Model Year	<input type="text"/>		
ARB Engine Family Number	<input type="text"/>	ARB Certification Executive Order (EO) Number (if zero-emission, attach ARB Approval Letter)	<input type="text"/>

The proposed engine for the project must be consistent with the Intended Service Class per the EO (MHD Intended Service Class engines cannot be used for projects which have the HHD vehicle classifications). Applicant must ATTACH a copy of the referenced Executive Order with the application. Download the EO at: <http://www.arb.ca.gov/msprog/onroad/cert/cert.php>



Carl Moyer Program Application Form B-3

On-Road Emergency Equipment (Fire Apparatus) New Only : Engine Activity Information

Please provide projected annual usage for the new equipment over the proposed life of the project. This projection should be based on actual usage data for the baseline, or existing, equipment. Applicants requesting evaluation based on fuel consumption MUST provide both mileage and fuel records from the past 24 months. Supporting documentation may be in the form of maintenance records, fuel receipts, logs, or other paperwork for each piece of baseline equipment covering at least the past 24 months. No such documentation is required for project evaluations based solely on mileage.

Activity Information

Baseline Engine - Annual operation details for the past 24-months. If fuel based evaluation you must also provide mileage.

	March 2020	March 2019	March 2018	Estimated Annual Future Usage
Odometer Reading	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Fuel Use (gallons/year)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



Carl Moyer Program Application Form B-3

On-Road Emergency Equipment (Fire Apparatus)
New Only : Attachments

The following attachments may be submitted for this proposal:

- Vehicle Registration
- Vehicle Title
- Equipment Usage Documentation (for past 24 – months: must support the readings listed under activity Information)
- ARB Approval Letter (for Zero-Emission)
- Fuel/Mileage Logs
- Engine Executive Order(s) and Retrofit Device Executive Order(s)
- Quotes (must be within 90 days of application submittal)
- Business Information Request Form
- Campaign Contribution Disclosure
- W-9 Form
- Direct Deposit Form
- Miscellaneous Documents
- Business Status Certification
- Certification of Debarment, Suspension and Other Responsibility Matters



Carl Moyer and SOON Application Form C-1 Off-Road Equipment Replacement Equipment Information (page 1 of 2)

If you have any questions regarding this program or the application process, please contact Walter Shen by phone at (909) 396-2487 or by email at wshen@aqmd.gov.

Large Off-Road Fleets have limited eligibility for Carl Moyer Program funding, but may apply for SOON Program funding using this application. For more information, please visit www.aqmd.gov/SOON.

Please complete **ONE (1) Form** for each piece of equipment.

Existing Equipment Information

Are you applying under Carl Moyer Program OR the Surplus Off-Road NOx Program?

Has this equipment received Carl Moyer Program funds in the past? Yes No

For Large Fleets Only - have you received Carl Moyer funding after January 1, 2017? Yes No

What is the primary function of this equipment?

Is the vehicle location address the same as the applicant address? If not, please complete below. Yes No

Street Address (if no address, provide intersection) City

County State

Zip Vehicle Type

If other, please describe:

Equipment Category

Equipment Type

If other equipment type, please describe

Equipment Make Equipment Model

Equipment Model Year Equipment Serial Number or VIN

Unit Number or EIN#(for non-Ag Operations)

Is 2 to 1 Replacement Applied? Yes No

Number of Main Engines Number of Auxiliary Engines

Is this equipment used in Agricultural operations? Yes No

What percentage of equipment operations are in Agriculture?



Carl Moyer and SOON Application Form C-1 Off-Road Equipment Replacement Equipment Information (page 2 of 2)

New Equipment and Vendor Information

Unit Number	<input type="text"/>	Equipment Category	<input type="text"/>
Equipment Type	<input type="text"/>		
If other equipment type, please describe			
<input type="text"/>			
Equipment Make	<input type="text"/>	Equipment Model	<input type="text"/>
Equipment Model Year	<input type="text"/>		
Vendor	<input type="text"/>	Vendor Contact Name	<input type="text"/>
Vendor Phone Number	<input type="text"/>	Vendor Address	<input type="text"/>
Vendor City	<input type="text"/>	State	<input type="text"/>
Vendor Zip	<input type="text"/>		

All cost estimates must be based on quotes that have been obtained within 90 days prior to the closing date of the Program Announcement. Attach all quotes to the application.

Number of engines for this New Equipment Unit:

Main (Front) Engine(s)	<input type="text"/>	Auxiliary (Rear) Engine(s)	<input type="text"/>
New Replacement Unit Cost \$	<input type="text"/>	Tax \$	<input type="text"/>
Total Cost for this Replacement \$	<input type="text"/>	Applicant Co-Funding Amount (If Any) \$	<input type="text"/>
Applicant Grant Request (If Any) \$	<input type="text"/>		



Carl Moyer and SOON Application Form C-1 Off-Road Equipment Replacement Project Details

Is equipment currently subject to CARB's Off-Road Regulation?

Yes No

What is the total horsepower of all vehicles in the fleet?

Enter DOORS Fleet Number

All Off-Road equipment applicants subject to CARB's In-Use Off-Road Diesel Vehicle Regulation must submit their DOORS fleet compliance snapshot and fleet vehicle list.

You may contact the DOORS hotline at (877) 593-6677 for assistance.

SOON applications must also submit the fleet average calculation. Please visit <https://arb.ca.gov/msprog/ordiesel/fac.htm> for more information.

Total Funding Requested (for this Replacement ONLY)

Identify other funding sources to be used for this project

Total Project Cost (From Quote: MUST EQUAL QUOTE)

Applicant Co-Funding Amount

Operation Information

Is existing equipment in operable condition?

Yes No

How many years has the applicant owned the existing equipment?

Does this vehicle have a functioning, non-resettable hour meter?

Yes No

Percent Operation in California

Percent Operation in District

Note: See <http://www.aqmd.gov/home/about/jurisdiction> for a jurisdiction map.

Proposed Project Life (this is the number of years that the equipment must operate as specified in your SCAQMD contract)



Carl Moyer and SOON Application
Form C-1
Off-Road Equipment Replacement
Engine Information

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Existing/Baseline Engine Information

Baseline Engine Type Main Auxiliary

Baseline Engine Fuel Type

Baseline Engine Make

Baseline Engine Model

Baseline Engine Model Year

Baseline Engine Serial Number

Baseline Engine Horsepower

Baseline Engine Family Number

Old Engine (Baseline) Emissions Tier

New Engine Information

New Engine Fuel Type

New Engine Make

New Engine Model

New Engine Model Year

New Engine Serial Number

New Engine Horsepower

New Engine Family Number

New Engine (Reduced) Emissions Tier



Carl Moyer and SOON Application
Form C-1
Off-Road Equipment Replacement
Engine Activity Information

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Project application must include documentation of existing equipment usage for the previous 24 months prior to the application date.

Baseline Engine - Annual operation details for the past 24-months

	Jan - Date of Application Submittal 2020	Jan - Dec 2019	Mar - Dec 2018	Estimated Annual Future Usage
Hours	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



Carl Moyer and SOON Application
Form C-1
Off-Road Equipment Replacement
Attachments

The following attachments must be submitted for this application:

- Insurance Documentation
- Engine Executive Order(s) and Retrofit Device Executive Order(s)
- Quotes (must be within 90 days of application submittal)
- Equipment Usage Documentation (for past 24 – months including, but not limited to, maintenance records, hour meter readings)
- Photo showing the baseline engine (old) engine model year, engine serial #, HP, engine family # (if available)
- Equipment Ownership (Bill of Sale)
- SOON Fleet Average Calculation (please go to <https://arb.ca.gov/msprog/ordiesel/fac.htm>)
- only for applicants applying for SOON funding (only if applying under SOON Program)
- DOORS Fleet Compliance Snapshot including vehicle list
- Business Information Request Form
- Campaign Contribution Disclosure
- Business Status Cert
- W-9 Form
- Direct Deposit Form
- Certification of Debarment, Suspension and Other Responsibility Matters



Carl Moyer and SOON Application

Form C-2

Off-Road Equipment Repower Equipment Information

If you have any questions regarding this program or the application process, please contact Walter Shen by phone at (909) 396-2487 or by email at: wshen@aqmd.gov

Large Off-Road Fleets have limited eligibility for Carl Moyer Program funding, but may apply for SOON Program funding using this application. For more information, please visit www.aqmd.gov/SOON.

Please complete ONE (1) form for each piece of equipment.

Existing Equipment Information

Are you applying under Carl Moyer Program OR the Surplus Off-Road NOx Program?

Has this equipment received Carl Moyer Program funds in the past? Yes No

For Large Fleets Only - have you received Carl Moyer funding after January 1, 2017? Yes No

What is the primary function of this equipment?

Is the vehicle location address the same as the applicant address? If not, please complete below. Yes No

Street Address (if no address, provide intersection) City

County State

Zip Vehicle Type

If other, please describe:

Equipment Category

Equipment Type

If other equipment type, please describe

Equipment Make Equipment Model

Equipment Model Year Equipment Serial Number or VIN

Unit Number or EIN# (for non-Ag Operations)

Number of Main Engines Number of Auxiliary Engines

Is this equipment used in Agricultural operations? Yes No



Carl Moyer and SOON Application Form C-2 Off-Road Equipment Repower Project Details

Is equipment currently subject to CARB's Off-Road Regulation?

Yes No

What is the total horsepower of all vehicles in the fleet?

Enter DOORS Fleet Number

All Off-Road equipment applicants subject to CARB's In-Use Off-Road Diesel Vehicle Regulation must submit their DOORS fleet compliance snapshot and fleet vehicle list.

You may contact the DOORS hotline at (877) 593-6677 for assistance.

SOON applications must also submit the fleet average calculation. Please visit <https://arb.ca.gov/msprog/ordiesel/fac.htm> for more information.

Total Funding Requested (including Retrofit cost, if applicable)

Identify other funding sources to be used for this project

Total Project Cost (From Quote: MUST EQUAL QUOTE - incl. Retrofit if applicable)

Applicant Co-Funding Amount

Operation Information

Is existing equipment in operable condition?

Yes No

How many years has the applicant owned the existing equipment?

Does this vehicle have a functioning, non-resettable hour meter?

Yes No

Percent Operation in California

Percent Operation in District

Proposed Project Life (this is the number of years that the equipment must operate as specified in your SCAQMD contract)



**Carl Moyer and SOON Application
Form C-2
Off-Road Equipment Repower
Engine Information (page 1 of 2)**

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Existing/Baseline Engine Information

Baseline Engine Type Main Auxiliary

Baseline Engine Fuel Type

Baseline Engine Make Baseline Engine Model

Baseline Engine Model Year Baseline Engine Serial Number

Baseline Engine Horsepower Baseline Engine Family Number

Old Engine (Baseline) Emissions Tier

Method proposed for rendering the baseline engine(s) inoperable

New Engine Information

New Engine Fuel Type

New Engine Make New Engine Model

New Engine Model Year New Engine Serial Number

New Engine Horsepower New Engine Family Number

New Engine (Reduced) Emissions Tier

Is the New Engine a Family Emissions Limit (FEL) engine? Yes No

New Engine Cost Information

New Engine Unit Cost Cost of Installation/Labor

Cost of New Engine Tax Total Cost of Repower

Applicant Co-Funding Amount (if any) Grant Request Amount for this Repower

All cost estimates must be based on quotes that have been obtained within 90 days prior to the closing date of the Program Announcement. Attach all quotes to the application.

New Engine Vendor Information

Vendor Vendor Contact Name

Vendor Phone Number Vendor Address

Vendor City Vendor State

Vendor Zip



Carl Moyer and SOON Application
Form C-2
Off-Road Equipment Repower
Engine Information (page 2 of 2)

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Engine Retrofit Information

Will a retrofit device be added to this engine as part of this project?

Yes No

Retrofit Device Make

Retrofit Device Model

% PM Reduction

% NOX Reduction

% ROG Reduction

Retrofit Device ARB Executive
Order Number

Project Life

Retrofit Cost Information

Retrofit Device System Cost

Retrofit Device Installation
Cost

Total Cost of Retrofit

Amount requested for this
retrofit \$



Carl Moyer and SOON Application
Form C-2
Off-Road Equipment Repower
Engine Activity Information

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Project application must include documentation of existing equipment usage for the previous 24 months prior to the application date.

Baseline Engine - Annual operation details for the past 24-months

	Jan - Date of Application Submittal 2020	Jan - Dec 2019	Mar - Dec 2018	Estimated Annual Future Usage
Hours	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



Carl Moyer and SOON Application
Form C-2
Off-Road Equipment Repower
Attachment

The following attachments must be submitted for this application:

- Insurance Documentation
- Engine Executive Order(s) and Retrofit Device Executive Order(s)
- Quotes (must be within 90 day of application submittal)
- Equipment Usage Documentation (for past 24 – months including, but not limited to, maintenance records, hour meter readings)
- Photo showing the baseline (old) engine model year, engine serial #, horsepower, engine family # (if available)
- SOON Fleet Average Calculation (please go to <https://arb.ca.gov/msprog/ordiesel/fac.htm>)
- only for applicants applying for SOON funding (only if applying under SOON Program)
- DOORS Fleet Compliance Snapshot - including vehicle list
- Business Information Request Form
- Campaign Contribution Disclosure
- W-9 Form
- Direct Deposit Form
- Business Status Certification
- Certification of Debarment, Suspension and Other Responsibility Matters



Carl Moyer and SOON Application Form C-3 Off-Road Equipment Retrofit Equipment Information

If you have questions regarding this program or the application process, please contact Walter Shen by phone at (909) 396-2487 or by email at: wshen@aqmd.gov.

Existing Equipment Information

Are you applying under Carl Moyer Program OR the Surplus Off-Road NOx Program?

Has this equipment received Carl Moyer Program funds in the past? Yes No

What is the primary function of this equipment?

Is the vehicle location address the same as the applicant address? If not, please complete below. Yes No

Street Address (if no address, provide intersection) City

County State

Zip Vehicle Type

If other, please describe:

Equipment Category

Equipment Type

If other equipment type, please describe

Equipment Make Equipment Model

Equipment Model Year Equipment Serial Number or VIN

Unit Number

Number of Main Engines Number of Auxiliary Engines

Is this equipment used in Agricultural operations? Yes No



Carl Moyer and SOON Application Form C-3 Off-Road Equipment Retrofit Project Details

Is equipment currently subject to CARB's Off-Road Regulation?

Yes No

What is the total horsepower of all vehicles in the fleet?

Enter DOORS Fleet Number

All Off-Road equipment applicants subject to CARB's In-Use Off-Road Diesel Vehicle Regulation must submit their DOORS fleet compliance snapshot and fleet vehicle list.

You may contact the DOORS hotline at (877) 593-6677 for assistance.

SOON applications must also submit the fleet average calculation. Please visit <https://arb.ca.gov/msprog/ordiesel/fac.htm> for more information.

Total Funding Requested

Identify other funding sources to be used for this project

Total Project Cost (From Quote: MUST EQUAL QUOTE)

Applicant Co-Funding Amount

Operation Information

Is existing equipment in operable condition?

Yes No

How many years has the applicant owned the existing equipment?

Does this vehicle have a functioning, non-resettable hour meter?

Yes No

Percent Operation in California

Percent Operation in District

See <http://www.aqmd.gov/home/about/jurisdiction> for a jurisdiction map.

Proposed Project Life (this is the number of years that the equipment must operate as specified in your SCAQMD contract)



Carl Moyer and SOON Application
Form C-3
Off-Road Equipment Retrofit
Engine & Retrofit Information

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Existing/Baseline Engine Information

Baseline Engine Type	<input type="radio"/> Main	<input type="radio"/> Auxiliary		
Baseline Engine Fuel Type	<input type="text"/>			
Baseline Engine Make	<input type="text"/>	Baseline Engine Model	<input type="text"/>	
Baseline Engine Model Year	<input type="text"/>	Baseline Engine Serial Number	<input type="text"/>	
Baseline Engine Horsepower	<input type="text"/>	Baseline Engine Family Number	<input type="text"/>	
Old Engine (Baseline) Emissions Tier	<input type="text"/>			

Engine Retrofit Information

Retrofit Device Make	<input type="text"/>	Retrofit Device Model	<input type="text"/>
Verification Level	<input type="text"/>	Project Life	<input type="text"/>
Verified % PM Reduction	<input type="text"/>	Verified % NOX Reduction	<input type="text"/>
Verified % ROG Reduction	<input type="text"/>	Retrofit Device ARB Executive Order Number	<input type="text"/>
Retrofit Device Serial Number	<input type="text"/>		

Retrofit Cost Information

Retrofit Device System Cost	<input type="text"/>	Retrofit Device Installation Cost	<input type="text"/>
Tax Amount for Retrofit	<input type="text"/>	Total Cost of Retrofit	<input type="text"/>
Maintenance Cost	<input type="text"/>	Amount requested for this retrofit	<input type="text"/>
Retrofit Dealer Vendor	<input type="text"/>		

All cost estimates must be based on quotes that have been obtained within 90 days prior to the closing date of the Program Announcement. Attach all quotes to the application. The data-logging cost of a retrofit project cannot be included in the eligible project cost.



Carl Moyer and SOON Application
Form C-3
Off-Road Equipment Retrofit
Engine Activity Information

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Project application must include documentation of existing equipment usage for the previous 24 months prior to the application date.

Baseline Engine - Annual operation details for past 24 months

	Jan - Date of Application Submittal 2020	Jan - Dec 2019	Mar - Dec 2018	Estimated Annual Future Usage
Hours	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



Carl Moyer and SOON Application
Form C-3
Off-Road Equipment Retrofit
Attachments

The following attachments must be submitted for this application:

- Insurance Documentation
- Engine Executive Order(s) and Retrofit Device Executive Order(s)
- Quotes (must be within 90 days of application submittal)
- Equipment Usage Documentation (for past 24 – months)
- Other misc. attachments
- DOORS Vehicle List
- SOON Fleet Average Calculation (please go to <https://arb.ca.gov/msprog/ordiesel/fac.htm>) (only if applying under SOON Program)
- DOORS Fleet Compliance Snapshot
- Business Information Request Form
- Campaign Contribution Disclosure
- W-9 Form
- Business Status Certification
- Direct Deposit Form
- Certification of Debarment, Suspension and Other Responsibility Matters



Carl Moyer Program Application

Form C-4

Off-Road Cargo Handling Equipment Electrification : Equipment Information

If you have any questions regarding this program or the application process, please contact Greg Ushijima by phone at (909) 396-3301 or by email at: gushijima@aqmd.gov.

Please complete ONE form for each piece of equipment.

Existing Equipment Information

Has this equipment received Carl Moyer Program funds in the past? Yes No

Is equipment currently subject to CARB's Cargo Handling Equipment regulation?

Note: If you are unable to document that project equipment is not subject to the CARB regulation, then the project is ineligible. Yes No

What is the primary function of this equipment?

Is the vehicle location address the same as the applicant address? If not, please complete below. Yes No

Street Address (if no address, provide intersection)

City

County

State

Zip

Vehicle Type

If other, please describe:

Project Type

Equipment Category

Equipment Type

If other equipment type, please describe

Equipment Make

Equipment Model

Equipment Model Year

Equipment Serial Number or VIN

Unit Number



Carl Moyer and SOON Application Form C-4

Off-Road Cargo Handling Equipment Electrification : Project Details

Total Funding Requested

Identify other funding sources to be used for this project

Total Project Cost (From Quote: MUST EQUAL QUOTE)

Applicant Co-Funding Amount

Operation Information

Is existing equipment in operable condition?

Yes No

How many years has the applicant owned the existing equipment (must be greater than 2 years)?

Does the existing equipment have a functioning, non-resettable hour meter?

Yes No

Proposed Project Life (this is the number of years that the equipment must operate as specified in your SCAQMD contract)

Please provide a full description of the proposed project. Include specifications for the equipment electrification and associated infrastructure. *SEE ATTACHMENTS*



Carl Moyer and SOON Application Form C-4

Off-Road Cargo Handling Equipment Electrification : Engine & Retrofit Information

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Existing/Baseline Engine Information

Baseline Engine Type	<input type="radio"/> Main	<input type="radio"/> Auxiliary	
Baseline Engine Fuel Type	<input type="text"/>		
Baseline Engine Make	<input type="text"/>	Baseline Engine Model	<input type="text"/>
Baseline Engine Model Year	<input type="text"/>	Baseline Engine Serial Number	<input type="text"/>
Baseline Engine Horsepower	<input type="text"/>	Baseline Engine Family Number	<input type="text"/>
Old Engine (Baseline) Emissions Tier	<input type="text"/>		

Please provide a full description of the proposed project. Include specifications for the equipment electrification and associated infrastructure. *SEE ATTACHMENTS*

Electrification Vendor /Contractor Information

Vendor	<input type="text"/>	Vendor Contact Name	<input type="text"/>
Vendor Phone Number	<input type="text"/>	Vendor Address	<input type="text"/>
Vendor City	<input type="text"/>	Vendor State	<input type="text"/>
Vendor Zip	<input type="text"/>		

Retrofit Cost Information

Total Project Materials Cost	<input type="text"/>	Total Project Labor Cost	<input type="text"/>
Total Project Cost	<input type="text"/>		
Applicant Co-Funding Amount (if any)	<input type="text"/>	Grant Request Amount	<input type="text"/>

Funding/Cost Information for this Electrification Project - You MUST attach a written estimate from the equipment vendor/contractor documenting the cost of the device; this quote must be obtained within 90 days prior to the closing date of the Program Announcement. Quote must itemize material costs and labor costs separately and must provide explanatory details on each line item. *SEE ATTACHMENTS*



Carl Moyer and SOON Application Form C-4

Off-Road Cargo Handling Equipment Electrification : Engine Activity Information

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Project application must include documentation of existing equipment usage for the previous 24 months prior to the application date.

Baseline Engine - Annual operation details for the past 24 months

	Jan - Date of Application Submittal 2020	Jan - Dec 2019	Mar - Dec 2018	Estimated Annual Future Usage*
Hours	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

*Please note: Estimated annual usage is only necessary if actual usage is not known. Approved projects will require the applicant to meet the estimated annual usage for the duration of the contract.



Carl Moyer and SOON Application Form C-4

Off-Road Cargo Handling Equipment Electrification :
Attachments

The following attachments must be submitted for this proposal:

- CARB's Cargo Handling Equipment Regulation
- DOORS Vehicle List
- SOON Fleet Average Calculation (please go to <https://arb.ca.gov/msprog/ordiesel/fac.htm>)
- Project Description
- Written Estimate for Project
- Business Information Request Form
- Campaign Contribution Disclosure
- W-9 Form
- Direct Deposit Form
- Business Status Certification
- Certification of Debarment, Suspension and Other Responsibility Matters
- Photo of Equipment, Equipment Tag, Current Hour Meter and Engine Tag



Carl Moyer Program Application
Form D-1
Marine Vessels
Repower : Equipment Information

If you have any questions regarding this program or the application process, please contact Ping Gui at (909) 396-3187 or pgui@aqmd.gov.

All Commercial Harbor Craft are currently subject to CARB's Commercial Harbor Craft regulation. Attach a copy of your most recent CARB Commercial Harbor Craft Initial Report, and all updates.

Existing Equipment Information

Has this equipment received Carl Moyer Program funds in the past? Yes No

Contract #	<input type="text"/>	Amount Received	<input type="text"/>
Vessel Name	<input type="text"/>	Port/Harbor	<input type="text"/>
Terminal	<input type="text"/>	Pier	<input type="text"/>

Physical Address of the Vessel (including City, State, Zip)

Vessel berth/slip number	<input type="text"/>	Primary Vessel Use	<input type="text"/>
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If other vessel type, please describe

Secondary Vessel Use

If other secondary vessel type, please describe

Primary Vessel Hours per Year	<input type="text"/>	Secondary Vessel Hours per Year	<input type="text"/>
Vessel Make	<input type="text"/>	Vessel Model	<input type="text"/>
Vessel Model Year	<input type="text"/>		
Total number of main engines on the vessel	<input type="text"/>	Total number of aux engines on the vessel	<input type="text"/>

U.S. Coast Guard Documentation Number (IMO Lloyd's Number if oceangoing vessel, or CF# AND CA Department of Fish & Game license for fishing vessels manufactured out of the United States or less than five net tons displacement)

Does the project vessel utilize a wet exhaust system? Yes No



Carl Moyer Program Application
Form D-1
Marine Vessels
Repower : Project Details

Total Funding Requested (for Engine Repower(s) on This Marine Vessel)

Identify other funding sources to be used for this project

Total Project Cost (From Quote: MUST EQUAL QUOTE)

Applicant Co-Funding Amount

Operation Information

Percent Operation in California

Percent Operation in District

Note: For SCAQMD Marine Jurisdiction Map, please see next page.

Purchasing new transmission (if applicable)

Yes No

Justification For Purchasing
New Transmission

New Transmission Cost

Electronic Monitoring Unit: I understand that a new Electronic Monitoring Unit (EMU) will be installed as part of this Project. (This is a program requirement.)

Yes No

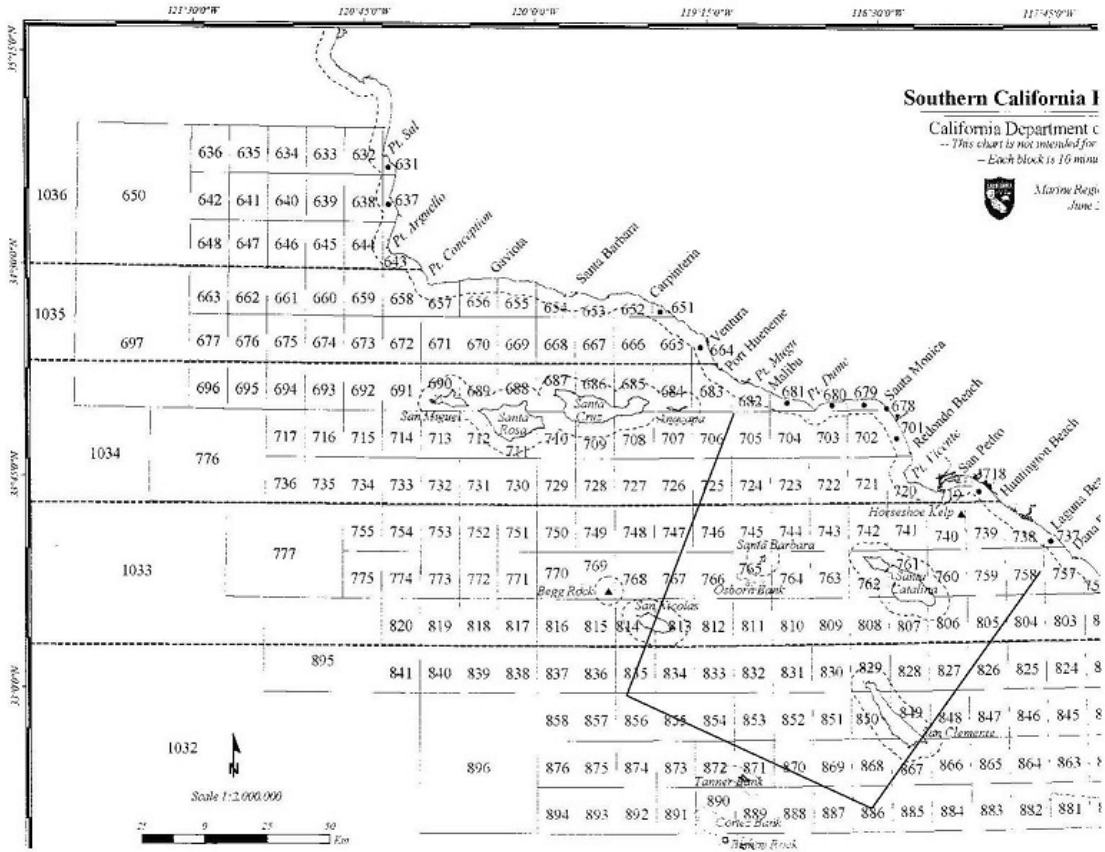
The vessel is required to have a functioning non-resettable hour meter for the full project life. Select YES to indicate understanding and compliance:

Yes No

Proposed Project Life (this is the number of years that the vessel must operate as specified in your SCAQMD contract)



Carl Moyer Program Application
 Form D-1
 Marine Vessels
 Repeater : SCAQMD Boundary Lines



Boundary points for the Box:

Southern Coastal Boundary - San Diego - Orange County Border
 Northern Coastal Boundary - Ventura - Los Angeles County Border

Northern Tip: 33° N and 119° 30' W
 Southern Tip: 32° 30' N and 118° 30' W

Distance between northern coastal point and northern tip: 80 miles approx.
 Distance between southern coastal point and southern tip: 74 miles approx.



Carl Moyer Program Application
Form D-1
Marine Vessels
Repower : Engine Information

If you have more than one engine for your marine vessel, please make copies of this page and use one form for each engine.

Existing/Baseline Engine Information

Engine Fuel Type	<input type="text"/>	Old Engine (Baseline) Emissions Tier	<input type="text"/>
Engine Make	<input type="text"/>	Engine Model	<input type="text"/>
Engine Model Year	<input type="text"/>	Engine Horsepower	<input type="text"/>
Engine Type	<input type="radio"/> Main <input type="radio"/> Auxiliary	Engine Serial Number	<input type="text"/>
EPA Engine Family Number	<input type="text"/>	Method proposed for rendering the replaced engine inoperable:	<input type="text"/>
Number of Cylinders	<input type="text"/>	Liters	<input type="text"/>
Does the existing engine have a functioning hour meter?		<input type="radio"/> Yes <input type="radio"/> No	

New Reduced-Emission Engine Information

Engine Fuel Type	<input type="text"/>	Engine Model	<input type="text"/>
Engine Make	<input type="text"/>	Engine Horsepower	<input type="text"/>
Engine Model Year	<input type="text"/>	Engine Serial Number	<input type="text"/>
Engine Type	<input type="radio"/> Main <input type="radio"/> Auxiliary	Engine Serial Number	<input type="text"/>
EPA Engine Family Number	<input type="text"/>		
Emissions Tier Type	<input type="radio"/> Off Road <input type="radio"/> Marine		
New Engine (Reduced) Emissions Tier	<input type="text"/>	Liters	<input type="text"/>
Number of Cylinders	<input type="text"/>	New Engine Installation/Labor Cost	<input type="text"/>
New Engine Cost (Including Tax)	<input type="text"/>		

NOTE: You MUST attach a written estimate or quotation from the equipment vendor documenting the cost of the new equipment. This quote must be obtained within 90 days prior to the closing date of the Program Announcement. The quote must indicate the certification level of the new, replacement engine (i.e., Tier 3 or cleaner).

Vendor	<input type="text"/>	Vendor Contact Name	<input type="text"/>
Vendor Address	<input type="text"/>	Vendor City	<input type="text"/>
Vendor Zip	<input type="text"/>	Vendor State	<input type="text"/>
Vendor Phone Number	<input type="text"/>		



Carl Moyer Program Application
Form D-1
Marine Vessels
Repower : Engine Activity Information

If you have more than one engine for your marine vessel, please make copies of this page and use one form for each engine.

Project application must include documentation of existing equipment usage for the previous 24 months prior to the application date.

Activity Information

Engine Specific Usage - Annual Operation Details for the Past 24-months

	Jan - Date of Application Submittal in 2020	Jan - Dec 2019	Mar - Dec 2018	Estimated Annual Future Usage
Hours	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



Carl Moyer Program Application

Form D-1

Marine Vessels

Repower : Attachments

The following attachments must be submitted for this application:

- Insurance Documentation
- Harbor Craft Regulation Initial Report
- Quotes (must be within 90 days of application submittal) Equipment Usage
- Documentation (for past 24 – months)
- Other Miscellaneous Attachments (optional and as required by the project officer)
- Business Information Request Form
- Campaign Contribution Disclosure
- W-9 Form
- Direct Deposit Form
- Business Status Cert
- Certification of Debarment, Suspension and Other Responsibility Matters



**Carl Moyer Program Application
Form D-2
Marine Vessels
Shore Power : Equipment Information**

If you have any questions regarding this program or the application process, please contact Greg Ushijima by phone at (909) 396-3301 or by email at: gushijima@aqmd.gov. Please complete one form for each Shore Power project.

Type of Project

Please note that if you are applying for the Purchase of Transformer and Associated Infrastructure ("Shore Side"), please use the Infrastructure application.

Vessel Retrofit to
Accept Electrical
Power
("Ship-Side")

Type Of Applicant

Existing Equipment Information

Complete one equipment section for each vessel to be retrofitted. For transformer only projects please provide a detailed description of the vessels that typically use this terminal.

If your vessel type is a refrigerated cargo ship, container-ship or passenger ship, please attach your Vessel Plan as required by the ARB shore power regulation: <http://www.arb.ca.gov/ports/shorepower/shorepower.htm>

Vessel Name	<input type="text"/>	Port/Harbor	<input type="text"/>
Terminal	<input type="text"/>	Pier	<input type="text"/>
Vessel berth/slip number	<input type="text"/>	Primary Vessel Function	<input type="text"/>

If other vessel type, please describe

Vessel Make	<input type="text"/>	Vessel Model	<input type="text"/>
Vessel Model Year	<input type="text"/>		
Total number of main engines on the vessel	<input type="text"/>	Total number of aux engines on the vessel	<input type="text"/>
Lloyds Register or IMO Ship ID	<input type="text"/>	US Coast Guard Documentation Number	<input type="text"/>

If you are leasing the terminal, what is the time left on the current lease?

Average berthing time (hours) of the vessel, per visit (include time needed to connect and disconnect the vessel to shore power)

Vessel power (kW) requirements while at berth Average Power Requirement

Vessel power (kW) requirements while at berth Maximum Power Requirement



Carl Moyer Program Application
 Form D-2
 Marine Vessels
 Shore Power : Project Details

Total Funding Requested

Total number of vessels in the fleet

Identify other funding sources to be used for this project

Total Project Cost (From Quote: MUST EQUAL QUOTE)

Applicant Co-Funding Amount

Identify other potential project partners (ex. Port)

Power supplier (ex. PG&E)

Where does the electrical power infrastructure begin, and end? *

Operation Information

Total number of annual vessel visits expected to use shore power

Total number of annual visits to the terminal

Total number of annual hours of usage for vessels expecting to use shorepower

Project Funding Information

You **MUST** attach a written estimate from the equipment vendor documenting the cost of the device; this quote must be obtained within 90 days prior to the closing date of the Program Announcement. **See Attachments Section.**

Transformer Project Cost	<input type="text"/>	Associated Infrastructure Cost	<input type="text"/>
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Retrofit Equip. Cost (incl. tax)	<input type="text"/>	Retrofit Equip. Installation Cost	<input type="text"/>
----------------------------------	----------------------	-----------------------------------	----------------------

Total Project Costs

You **MUST** attach a detailed written estimate/quote from the equipment vendor for the cost of the equipment and labor.

REQUEST : MAXIMUM ALLOWABLE

Shore Power Vessel Retrofit ("ship-side"): 100% of retrofit cost & 50% of transformer cost.

REQUEST : OTHER

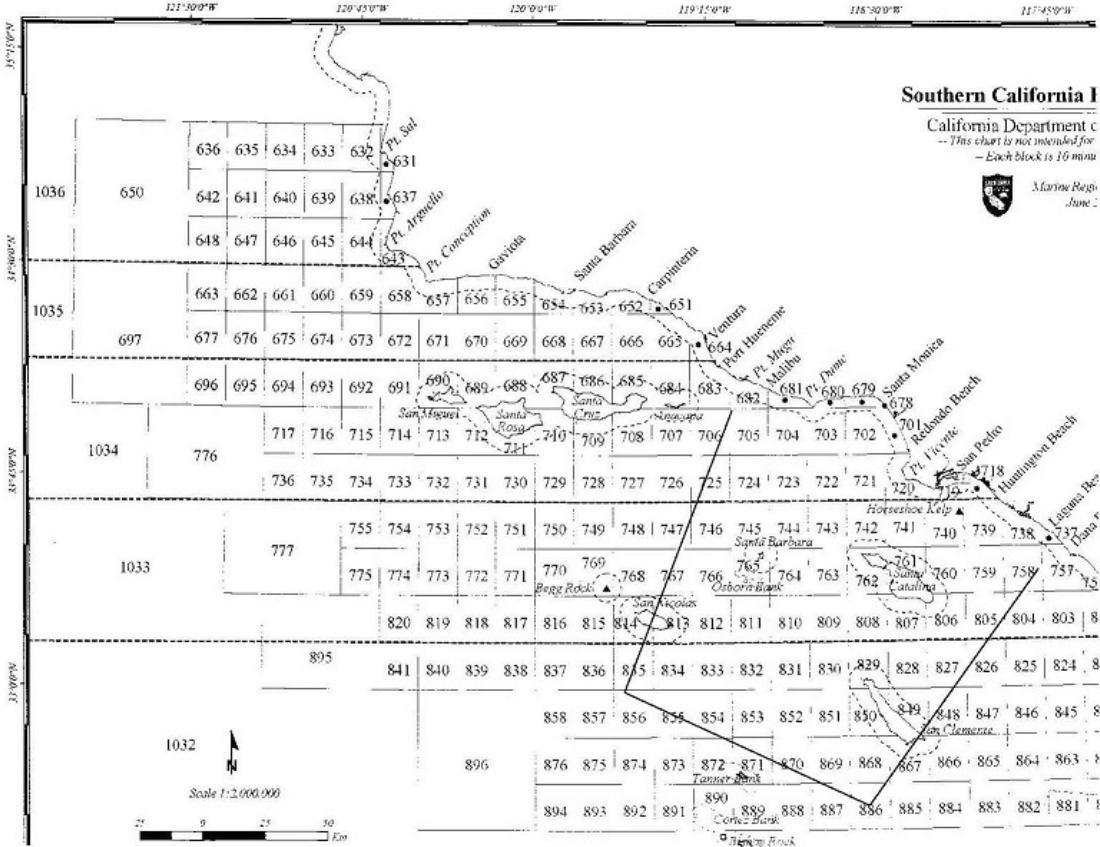
(You may request less than the maximum allowable funding amount to improve cost-effectiveness of your project.)

Anticipated Project Completion Date

Please attach a detailed project schedule. **SEE ATTACHMENTS PAGE**



Carl Moyer Program Application
 Form D-2
 Marine Vessels
 Shore Power : SCAQMD Boundary Lines



Southern California I
 California Department of Transportation
 -- This chart is not intended for --
 -- Each block is 16 miles --
 Marine Boats
 June 2

Boundary points for the Box:

Southern Coastal Boundary - San Diego - Orange County Border
 Northern Coastal Boundary - Ventura - Los Angeles County Border

Northern Tip: 33° N and 119° 30' W
 Southern Tip: 32° 30' N and 118° 30' W

Distance between northern coastal point and northern tip: 80 miles approx.
 Distance between southern coastal point and southern tip: 74 miles approx.



Carl Moyer Program Application
Form D-2
Marine Vessels
Shore Power : Engine Information

Existing/Baseline Engine Information

Please attach a detailed description of the vessels that will be using the shore power equipment. This description should include:

- Vessel type
- Ship size (in 20-foot equivalent units (TEU) capacity)
- Number and type of engines
- Power demand (total auxiliary power (kW) – not hotelling load)
- The number of auxiliary engines typically operating while at berth per vessel
- Number of annual visits
- Average berthing time (hours) of the vessel, per visit (include time needed to connect and disconnect the vessel to shore power). Be sure to consider the maximum time the auxiliary engines are in use.



Carl Moyer Program Application
Form D-2
Marine Vessels
Shore Power : Engine Activity Information

If you have more than one engine for your project, please make copies of this page and use one form for each engine.

Project application must include documentation of existing equipment usage for the previous 24 months prior to the application date.

Activity Information

Expected annual hours

Expected annual fuel use

"Current Berth Activity" Number of annual ship visits to the berth (attach the log of vessel visits for each of the specified years): For last 3 years

Last Year Vessel Visits

Prior Year Vessel Visits

2 Years Prior Year Vessel Visits

Predicted (Future) Berth Activity:

Estimated annual ship visits using shore power:

2020

2021 and beyond

Estimated monthly hours of operation:

2020

2021 and beyond

Estimated monthly megawatt (MW) usage:

2020

2021 and beyond



Carl Moyer Program Application
Form D-2
Marine Vessels
Shore Power : Attachments

The following attachments must be submitted for this application:

- Detailed Project Proposal
- Other Miscellaneous Attachments (optional and as required by the project officer)
- ARB Shore Power Vessel Plan
- Vessel Logs
- Vessel Activity Information
- Written Estimate Or Quote
- Proposed Project Schedule
- Business Information Request Form
- Campaign Contribution Disclosure
- W-9 Form
- Direct Deposit Form
- Business Status Certification Form
- Certification of Debarment, Suspension and Other Responsibility Matters



Carl Moyer Program Application Form E-1 Locomotive Replacement Equipment Information

For project criteria please refer to the locomotive chapter in the Carl Moyer Program Guidelines. If you have any questions regarding this program or the application process, please contact Greg Ushijima by phone at (909) 396-3301 or by email at: gushijima@aqmd.gov.

If you have more than one equipment for your project, please make copies of this form and use one form for each equipment.

Existing Locomotive Information

Has this locomotive received Carl Moyer Program funds in the past? Yes No

Equipment Location Address

Is the equipment location address the same as the applicant address? If not, please complete section below Yes No

Street Address

If no address, provide intersection

City

County

State

Zip

Vehicle Type

If other, please describe:

Locomotive type

Locomotive Make

Locomotive Model

Locomotive Model Year

Locomotive Serial Number

Unit number or other identifier

New Locomotive Information

Locomotive Make

Locomotive Model

Locomotive Model Year

Equipment Type

Locomotive Serial Number (If Available)

Will the locomotive have a functioning idle limit device (ILD) installed?

Yes No

If other equipment type, please describe

of Main Engines

of Auxiliary Engines

New Locomotive Cost (\$)

Locomotive Vendor Name

All cost estimates must be based on quotes that have been obtained within 90 days prior to the closing date of the Program Announcement. Attach all quotes to the application.



Carl Moyer Program Application
Form E-1
Locomotive Replacement
Project Details

Railroad Class

All cost estimates must be based on quotes that have been obtained within 90 days prior to the closing date of the Program Announcement. Attach all quotes to the application.

Total Funding Requested (California 675E A 8)

Identify other funding sources to be used for this project

Total Project Cost (From Quote: MUST EQUAL QUOTE)

Applicant Co-Funding Amount

Operation Information

Future/Projected Locomotive Activity Annual Fuel Usage (gallons per year)

If fuel usage is not available, please provide the future/projected locomotive activity in Megawatt Hour (MWh) per year.

Percent Operation in California

Percent Operation in District

Proposed Project Life (this is the number of years that the equipment must operate as specified in your SCAQMD contract)



Carl Moyer Program Application Form E-1 Locomotive Replacement Engine Information

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Existing/Baseline Engine Information

Engine Fuel Type	<input type="text"/>		
Engine Make	<input type="text"/>	Engine Model	<input type="text"/>
Engine Model Year	<input type="text"/>	Engine Serial Number	<input type="text"/>
Engine Type	<input type="radio"/> Main <input type="radio"/> Auxiliary	Engine Horsepower	<input type="text"/>
Existing Engine (Baseline) Emissions Tier	<input type="text"/>		
Baseline Engine Family	<input type="text"/>	US EPA Certificate of Conformity No	<input type="text"/>
CARB Executive Order No	<input type="text"/>		

US EPA Certificate of Conformity MUST BE ATTACHED – SEE ATTACHMENTS SECTION

CARB Executive Order MUST BE ATTACHED – SEE ATTACHMENTS SECTION

Reduced Emission Replacement Engine Information

Engine Fuel Type	<input type="text"/>		
Engine Make	<input type="text"/>	Engine Model	<input type="text"/>
Engine Model Year	<input type="text"/>		
Engine Serial Number	<input type="text"/>	Engine Horsepower	<input type="text"/>
EPA Engine Family Name	<input type="text"/>	New Engine (Reduced) Emissions Tier	<input type="text"/>
Engine Cost	<input type="text"/>	Installation Cost	<input type="text"/>
Has this engine been certified by U.S. EPA?	<input type="radio"/> Yes <input type="radio"/> No	U.S. EPA certified locomotive NOx emission rate (g/bhp-hr)	<input type="text"/>
U.S. EPA certified locomotive HC emission rate (g/bhp-hr)	<input type="text"/>	U.S. EPA certified locomotive PM emission rate (g/bhp-hr)	<input type="text"/>



Carl Moyer Program Application
Form E-1
Locomotive Replacement
Engine Activity Information

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Project application must include documentation of existing equipment usage for the previous 24 months prior to the application date.

Please attach documentation to support the reported usage per year.

Annual Fuel Usage - Annual Operation Details for the Past 24-months

	Jan - Date of Application Submittal in 2020	Jan - Dec 2019	Mar - Dec 2018	Estimated Annual Future Usage
Fuel Use (gallons/year)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

If fuel usage is not available, please attach documentation of the megawatt hours used during the previous 24 months.



**Carl Moyer Program Application
Form E-1
Locomotive Replacement
Attachments**

The following attachments must be submitted for this application:

- Insurance Documentation
- Emissions certification documentation
- Quotes (must be within 90 days of application submittal)
- Equipment Usage Documentation (for past 24-months)
- Other Miscellaneous Attachments (optional and as required by the project officer)
- Engine Executive Order(s) and Retrofit Device Executive Order(s)
- Fuel Documentation
- Business Information Request Form
- Campaign Contribution Disclosure
- W-9 Form
- Direct Deposit Form
- Business Status Cert
- Certification of Debarment, Suspension and Other Responsibility Matters



Carl Moyer Program Application
Form E-2
Locomotive Engine Repower
Equipment Information

For project criteria please refer to the locomotive chapter in the Carl Moyer Program Guidelines.

If you have any questions regarding this program or the application process, please contact Greg Ushijima by phone at (909) 396-3301 or by email at gushijima@aqmd.gov.

If you have more than one equipment for your project, please make copies of this form and use one form for each equipment.

Existing Locomotive Information

Has this locomotive received Carl Moyer Program funds in the past? Yes No

Equipment Location Address

Is the equipment location address the same as the applicant address? If not, complete below: Yes No

Street Address (if no address, provide intersection) City

County State

Zip Vehicle Type

If other, please describe:

Locomotive type

If other locomotive type, please describe

Locomotive Make Locomotive Model

Locomotive Model Year Locomotive Serial Number

Unit number or other identifier



Carl Moyer Program Application
Form E-2
Locomotive Engine Repower
Project Details

Railroad Class

All cost estimates must be based on quotes that have been obtained within 90 days prior to the closing date of the Program Announcement. Attach all quotes to the application.

Total Funding Requested from SCAQMD

Identify other funding sources to be used for this project

Total Project Cost (From Quote: MUST EQUAL QUOTE)

Applicant Co-Funding Amount

Operation Information

Percent Operation in California

Percent Operation in District

Proposed Project Life (this is the number of years that the equipment must operate as specified in your SCAQMD contract):



Carl Moyer Program Application
Form E-2
Locomotive Engine Repower
Engine Information

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Existing/Baseline Engine Information

Engine Fuel Type	<input type="text"/>		
Engine Make	<input type="text"/>	Engine Model	<input type="text"/>
Engine Model Year	<input type="text"/>	Engine Serial Number	<input type="text"/>
Engine Type	<input type="radio"/> Main <input type="radio"/> Auxiliary	Engine Horsepower	<input type="text"/>
Existing Engine (Baseline) Emissions Tier	<input type="text"/>		
Baseline Engine Family	<input type="text"/>	US EPA Certificate of Conformity No	<input type="text"/>
CARB Executive Order No	<input type="text"/>		

US EPA Certificate of Conformity MUST BE ATTACHED – SEE ATTACHMENTS SECTION

CARB Executive Order MUST BE ATTACHED – SEE ATTACHMENTS SECTION

New Engine Information

Engine Fuel Type	<input type="text"/>		
Engine Make	<input type="text"/>	Engine Model	<input type="text"/>
Engine Model Year	<input type="text"/>		
Engine Serial Number	<input type="text"/>	Engine Horsepower	<input type="text"/>
EPA Engine Family Name	<input type="text"/>	U.S. EPA Certified Locomotive Emission Level	<input type="text"/>
Engine Cost	<input type="text"/>	Installation Cost	<input type="text"/>

All cost estimates must be based on quotes that have been obtained within 90 days prior to the closing date of the Program Announcement. Attach all quotes to the application.

Vendor Information

Vendor	<input type="text"/>	Vendor Contact Name	<input type="text"/>
Vendor Address	<input type="text"/>	Vendor City	<input type="text"/>
Vendor Zip	<input type="text"/>	Vendor State	<input type="text"/>
Vendor Phone Number	<input type="text"/>		



Carl Moyer Program Application
Form E-2
Locomotive Engine Repower
Engine Activity Information

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Project application must include documentation of existing equipment usage for the previous 24 months prior to the application date

Please attach documentation to support the reported gallons per year

Annual Fuel Usage - Annual Operational Details for the Past 24-months

	Jan - Date of Application Submittal in 2020	Jan - Dec 2019	Mar - Dec 2018	Estimated Annual Future Usage
Fuel Use (gallons/year)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



Carl Moyer Program Application
Form E-2
Locomotive Engine Repower
Attachments

The following attachments must be submitted for this application:

- Insurance Documentation
- Emissions certification documentation
- Quotes (must be within 90 days of application submittal)
- Equipment Usage Documentation (for past 24-months)
- Other Miscellaneous Attachments (optional and as required by project officer)
- Engine Executive Order(s) and Retrofit Device Executive Order(s)
- Fuel Documentation
- Business Information Request Form
- Campaign Contribution Disclosure
- W-9 Form
- Business Status Cert
- Direct Deposit Form
- Certification of Debarment, Suspension and Other Responsibility Matters



**Carl Moyer Program Application
Form E-3
Locomotive - Head End Power Unit
Equipment Information**

For project criteria please refer to the locomotive chapter in the Carl Moyer Program Guidelines.

If you have any questions regarding this program or the application process, please contact Greg Ushijima by phone at (909) 396-3301 or by email at: gushijima@aqmd.gov.

If you have more than one equipment for your project, please make copies of this form and use one form for each equipment.

Existing Locomotive Information

Has this locomotive received Carl Moyer Program funds in the past? Yes No

Equipment Location Address

Is the equipment location address the same as the applicant address? Yes No

Street Address (if no address, provide intersection) City

County State

Zip Vehicle Type

If other, please describe:

Locomotive Make

Locomotive Model

Locomotive Model Year

Locomotive Serial Number

Unit number or other identifier



Carl Moyer Program Application
Form E-3
Locomotive - Head End Power Unit
Project Details

Railroad Class

All cost estimates must be based on quotes that have been obtained within 90 days prior to the closing date of the Program Announcement. Attach all quotes to the application.

Total Funding Requested from the SCAQMD

Identify other funding sources to be used for this project

Total Project Cost (From Quote: MUST EQUAL QUOTE)

Applicant Co-Funding Amount

Operation Information

Percent Operation in California

Percent Operation in District

Proposed Project Life (this is the number of years that the equipment must operate as specified in your SCAQMD contract)



Carl Moyer Program Application
Form E-3
Locomotive - Head End Power Unit
Engine Activity Information

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Project application must include documentation of existing equipment usage for the previous 24 months prior to the application date.

Please attach documentation to support the reported gallons per year.

Annual Fuel Usage

Contact the SCAQMD Staff Lead to discuss your project and appropriate assumptions for this projection:

	Jan - Date of Application Submittal in 2020	Jan - Dec 2019	Mar - Dec 2018	Annual Fuel Usage (gallons per year)
Fuel Use (gallons/year)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

If fuel usage is not available, please attach documentation of the megawatt hours used during the previous 24 months.

ADDITIONAL PROJECT INFORMATION: Please provide a full description of the proposed project. Include an explanation of any project elements that are not adequately covered in the Application. SEE ATTACHMENTS PAGE.



**Carl Moyer Program Application
Form E-3
Locomotive - Head End Power Unit
Engine Information**

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Existing/Baseline Engine Information

Engine Fuel Type	<input type="text"/>			
Engine Make	<input type="text"/>	Engine Model	<input type="text"/>	
Engine Model Year	<input type="text"/>	Engine Serial Number	<input type="text"/>	
Engine Type	<input type="radio"/> Main <input type="radio"/> Auxiliary		Engine Horsepower	<input type="text"/>
Existing Engine (Baseline) Emissions Tier	<input type="text"/>			
Baseline Engine Family	<input type="text"/>	US EPA Certificate of Conformity No	<input type="text"/>	
CARB Executive Order No	<input type="text"/>			
Is the engine certified to off road or locomotive standards?		<input type="radio"/> Off Road <input type="radio"/> Locomotive		

CARB Executive Order MUST BE ATTACHED – SEE ATTACHMENTS SECTION

US EPA Certificate of Conformity MUST BE ATTACHED – SEE ATTACHMENTS SECTION

Reduced Emission Replacement Engine Information

Engine Fuel Type	<input type="text"/>	Engine Type	<input type="radio"/> Main <input type="radio"/> Auxiliary	
Engine Make	<input type="text"/>	Engine Model	<input type="text"/>	
Engine Model Year	<input type="text"/>			
Engine Serial Number	<input type="text"/>	Engine Horsepower	<input type="text"/>	
EPA Engine Family Name	<input type="text"/>	New Engine (Reduced) Emissions Tier	<input type="text"/>	
Engine Cost	<input type="text"/>			
Does this Engine Have a US EPA Certificate of Conformity (PLEASE ATTACH THE CERTIFICATE IN THE ATTACHMENTS SECTION)	<input type="radio"/> Yes <input type="radio"/> No		U.S. EPA certified locomotive NOx emission rate (g/bhp-hr)	<input type="text"/>
U.S. EPA certified locomotive HC emission rate (g/bhp-hr)	<input type="text"/>	U.S. EPA certified locomotive PM emission rate (g/bhp-hr)	<input type="text"/>	
Does this engine have a CARB Executive Order?	<input type="radio"/> Yes <input type="radio"/> No		CARB Executive Order Number	<input type="text"/>

All cost estimates must be based on quotes that have been obtained within 90 days prior to the closing date of the Program Announcement. Attach all quotes to the application.



**Carl Moyer Program Application
Form E-3
Locomotive - Head End Power Unit
Attachments**

The following attachments must be submitted for this application:

- Additional Project Information (optional and as required by the project officer)
- US EPA Certificate of Conformity
- Insurance Documentation
- Emissions certification documentation
- Quotes (must be within 90 days of application submittal)
- Equipment Usage Documentation (for past 24-months)
- Other Miscellaneous Attachments (optional and as required by the project officer)
- Business Information Request Form
- Campaign Contribution Disclosure
- W-9 Form
- Business Status Cert
- Direct Deposit Form
- Certification Regarding Debarment, Suspension, and other Responsibility Matters



Carl Moyer Program – Application for Infrastructure

If you have any questions regarding this program or the application process, please contact Tom Lee by phone at (909) 396-2270 or by email at: tlee@aqmd.gov. Information on the eligible projects and cost for the program can be obtained from Carl Moyer Program Guidelines, Volume 1 Chapter 10¹.

Part 1: Applicant Information

Applicant Name:	Business Name:
Phone Number:	Email:
Address:	
City:	Zip Code:
Is the project location the same as the applicant address? <input type="checkbox"/> Yes <input type="checkbox"/> No (If not, please provide project location address below): Street Address: _____ City: _____ Zip Code: _____	

Part 2: Infrastructure Project Information

Eligible infrastructure projects are those that provide fuel or power to Carl Moyer Program (CMP) eligible vehicles and equipment (i.e., no light-duty vehicle charging stations). Note that a vehicle or equipment application is not required in order to be considered for infrastructure funding. Eligible projects include, but are not limited to, battery charging stations, alternative fuel stations, stationary agricultural stations and shore-side shore power projects.

Eligible costs are limited to the purchase and installation of the equipment for power delivery or fueling directly related to the infrastructure project and must utilize commercially available technologies. Eligible project costs include:

- Cost of design and engineering (i.e., labor, site preparation, Americans with Disabilities Act accessibility, signage).
- Cost of equipment (e.g., charging/fueling units, parts for electrical upgrade, energy storage equipment, materials).
- Cost of insulation directly related to the construction of the station.
- Meter/data loggers.
- On-site power generation system that fuels or powers covered sources (i.e., solar and wind power generation equipment).

Table 1. Maximum Percentage of Eligible Cost for Moyer Program Infrastructure Projects

Maximum Percentage of Eligible Cost	Infrastructure Projects
50%	All Projects
60%	Publicly Accessible Projects
65%	Projects with Solar/Wind Power Systems ²
75%	Publicly Accessible Projects with Solar/Wind Power Systems ²
100%	Public School Buses- Battery Charging and Alternative Fueling



¹ https://www.arb.ca.gov/msprog/moyer/guidelines/2017gl/2017_gl_chapter_10.pdf

² At least 50 percent of the energy provided to covered sources by the project must be generated from solar or wind.

Project Type:

Battery Charging Station (e.g. airport, distribution centers, warehouses, ports)

Number of charging units _____

New Station

Expansion of existing non-residential charging stations to add capacity Other

Alternative Fuel Station

Number of dispensers _____ dual hose Yes No

Hydrogen / Natural Gas / Renewable Natural Gas

New Station

Expansion of existing fueling stations

Other

Stationary Agricultural Pump (Pump Electrification)

Shore Power (Shore-Side Electrification)

Shore-side electrification for projects not subject to CARB's Shore Power Regulation. Only a port authority, terminal operator, or marine vessel owner may apply.

Infrastructure for Transport Refrigeration Unit

Number of plugs _____

Truck Stop Electrification

Please select the following if applicable:

Publicly Accessible Project Yes No

Solar/Wind Power System Yes No

Public School Buses -Battery Charger or Alternative Fuel



Project Description

Please fully describe your project below including, but not limited to:

- A. Annual usage projection such as expected usage- in kWhr per month, standard cubic feet natural gas per month, kg Hydrogen per month.
- B. Technical specification, including a complete listing of all infrastructure equipment, hardware, and components, including (as applicable) component manufacturer and model number if known. In addition, the specification must provide minimum fuel storage capacities, compression and dispenser ratings, as well as number, make, and model of dispensers, hoses and card readers, etc. if known.
- C. Chargers must be certified by a nationally recognized testing laboratory (i.e., Underwriter’s Laboratories, Intertek) and provide design specifications including voltage, amperage, wattage, efficiency, compressor size, number of dispensers,, number of fuel nozzles or charge connections, dispensing rate, storage capacity, etc. D. An estimate of the annual connections to the chargers and average connection time.
- E. For stations expanding to accommodate new load, provide information on the base load and justify the need for and amount of the new load that is needed to accommodate the growth in vehicles or equipment using the infrastructure.
- F. Fleet commitment information, including number of vehicles/equipment planning to fuel or power at the new infrastructure, including the engine model year and certification level of each vehicle.
- G. A site plan depicting the infrastructure location, including at a minimum the adjacent streets, entrance and exit locations, locations of dispenser islands or chargers, canopies, fuel storage tanks, compressors, walls and/or spill containment areas as appropriate.
- H. A description of other project elements, including site amenities such as private access/public access islands, card reader payment options, overhead canopies, signage, traffic circulation plan, landscaping, fencing, security lighting, etc.

Project Description (Attach extra pages as necessary):



Part 3: Project Installer and Vendor Information

In the section below, please provide information for each installer and vendor that will be involved with the infrastructure project:

Name of the Vendor:	Vendor Contact Name:
Phone Number:	Email:
Address:	City:
State:	Zip Code:
What is the scope of work for this installer/vendor?	
Name of the Vendor:	Vendor Contact Name:
Phone Number:	Email:
Address:	City:
State:	Zip Code:
What is the scope of work for this installer/vendor?	
Name of the Vendor:	Vendor Contact Name:
Phone Number:	Email:
Address:	City:
State:	Zip Code:
What is the scope of work for this installer/vendor?	
Is there another installer/vendor for your infrastructure project? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Is yes, please attach vendor information as an Attachment to this page.	



Part 4: Project Cost and Funding Request

All cost estimates must be based on quotes/bids. A minimum of two quotes/bids from licensed installers for the project is required. In addition, the applicant should summarize their solicitation and selection process (i.e., how will the winning bidder be selected by the applicant) in an attachment.

Attach all quotes/bids to the application. Provide the name of the vendor for the costs listed below.

Design and Engineering Cost \$ _____ Vendor _____

Total Equipment Cost \$ _____ Vendor _____

Installation Cost \$ _____ Vendor _____

Other Cost \$ _____ Vendor _____

For other costs, please describe and provide the cost for each item:

Total Cost \$ _____ (From Quote: MUST EQUAL QUOTE)

Applicant Grant Request (total grant funds requested for the project): \$ _____

Proposed Project Life: _____

This is the number of years that the equipment must operate as specified in your SCAQMD contract (must be at least 3 years and no longer than 15 years, subject to CMP Guidelines).

Part 5: Disclosure of Amounts of Other Funding

Applicant must disclose all sources of funding (private, local, other State, Federal funding sources, etc.) for the project at the time of application.

Name of Funding Entity:	Program Description:	Funding Amount:	Status (Planned, Application Submitted or Application Granted):
<i>(Example: EPA)</i>	<i>(DERA)</i>	<i>(\$25,000)</i>	<i>(Application Submitted)</i>

Supporting documentation:

Please identify and label all attached documents on the top of the page.

- Quotes/bids (At least two quotes/bids from licensed installers)
- Local Permits Obtained for the Project (if not yet obtained, please submit a plan)
- Land Ownership/Lease agreement (applicants must document that they either own the land on which the project will be located, or control it through a long-term lease for the duration of the project life)
- Documentation that sufficient power or fuel is being provided to the site (e.g. application, payment to the local utility company for power installation, or contract)
- Project Timeline/Schedule/Plan



- If public access, provide aerial map (i.e. Satellite view from an internet based map or city/county map)
- For Shorepower projects, provide the “Initial Terminal Plan”



South Coast Air Quality Management District

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

Business Information Request

Dear South Coast AQMD Contractor/Supplier:

South Coast Air Quality Management District (South Coast AQMD) is committed to ensuring that our contractor/supplier records are current and accurate. If your firm is selected for award of a purchase order or contract, it is imperative that the information requested herein be supplied in a timely manner to facilitate payment of invoices. In order to process your payments, we need the enclosed information regarding your account. **Please review and complete the information identified on the following pages, remember to sign all documents for our files, and return them as soon as possible to the address below:**

**Attention: Accounts Payable, Accounting Department
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4178**

If you do not return this information, we will not be able to establish you as a vendor. This will delay any payments and would still necessitate your submittal of the enclosed information to our Accounting department before payment could be initiated. Completion of this document and enclosed forms would ensure that your payments are processed timely and accurately.

If you have any questions or need assistance in completing this information, please contact Accounting at (909) 396-3777. We appreciate your cooperation in completing this necessary information.

Sincerely,

Sujata Jain
Chief Financial Officer

DH:tm

Enclosures: Business Information Request
Disadvantaged Business Certification
W-9
Form 590 Withholding Exemption Certificate
Federal Contract Debarment Certification
Campaign Contributions Disclosure
Direct Deposit Authorization



South Coast Air Quality Management District

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

BUSINESS INFORMATION REQUEST

Business Name	
Division of	
Subsidiary of	
Website Address	
Type of Business <i>Check One:</i>	<input type="checkbox"/> Individual <input type="checkbox"/> DBA, Name _____, County Filed in _____ <input type="checkbox"/> Corporation, ID No. _____ <input type="checkbox"/> LLC/LLP, ID No. _____ <input type="checkbox"/> Other _____

REMITTING ADDRESS INFORMATION

Address			
City/Town			
State/Province		Zip	
Phone	() - Ext	Fax	() -
Contact		Title	
E-mail Address			
Payment Name if Different			

All invoices must reference the corresponding Purchase Order Number(s)/Contract Number(s) if applicable and mailed to:

**Attention: Accounts Payable, Accounting Department
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4178**

BUSINESS STATUS CERTIFICATIONS

Federal guidance for utilization of disadvantaged business enterprises allows a vendor to be deemed a small business enterprise (SBE), minority business enterprise (MBE) or women business enterprise (WBE) if it meets the criteria below.

- is certified by the Small Business Administration or
- is certified by a state or federal agency or
- is an independent MBE(s) or WBE(s) business concern which is at least 51 percent owned and controlled by minority group member(s) who are citizens of the United States.

Statements of certification:

As a prime contractor to South Coast AQMD, _____ (name of business) will engage in good faith efforts to achieve the fair share in accordance with 40 CFR Section 33.301, and will follow the six affirmative steps listed below **for contracts or purchase orders funded in whole or in part by federal grants and contracts.**

1. Place qualified SBEs, MBEs, and WBEs on solicitation lists.
2. Assure that SBEs, MBEs, and WBEs are solicited whenever possible.
3. When economically feasible, divide total requirements into small tasks or quantities to permit greater participation by SBEs, MBEs, and WBEs.
4. Establish delivery schedules, if possible, to encourage participation by SBEs, MBEs, and WBEs.
5. Use services of Small Business Administration, Minority Business Development Agency of the Department of Commerce, and/or any agency authorized as a clearinghouse for SBEs, MBEs, and WBEs.
6. If subcontracts are to be let, take the above affirmative steps.

Self-Certification Verification: Also for use in awarding additional points, as applicable, in accordance with South Coast AQMD Procurement Policy and Procedure:

Check all that apply:

- | | |
|---|--|
| <input type="checkbox"/> Small Business Enterprise/Small Business Joint Venture | <input type="checkbox"/> Women-owned Business Enterprise |
| <input type="checkbox"/> Local business | <input type="checkbox"/> Disabled Veteran-owned Business Enterprise/DVBE Joint Venture |
| <input type="checkbox"/> Minority-owned Business Enterprise | <input type="checkbox"/> Most Favored Customer Pricing Certification |

Percent of ownership: _____ %

Name of Qualifying Owner(s): _____

State of California Public Works Contractor Registration No. _____ . MUST BE INCLUDED IF BID PROPOSAL IS FOR PUBLIC WORKS PROJECT.

I, the undersigned, hereby declare that to the best of my knowledge the above information is accurate. Upon penalty of perjury, I certify information submitted is factual.

NAME

TITLE

TELEPHONE NUMBER

DATE

Definitions

Disabled Veteran-Owned Business Enterprise means a business that meets all of the following criteria:

- is a sole proprietorship or partnership of which is at least 51 percent owned by one or more disabled veterans, or in the case of any business whose stock is publicly held, at least 51 percent of the stock is owned by one or more disabled veterans; a subsidiary which is wholly owned by a parent corporation but only if at least 51 percent of the voting stock of the parent corporation is owned by one or more disabled veterans; or a joint venture in which at least 51 percent of the joint venture's management and control and earnings are held by one or more disabled veterans.
- the management and control of the daily business operations are by one or more disabled veterans. The disabled veterans who exercise management and control are not required to be the same disabled veterans as the owners of the business.
- is a sole proprietorship, corporation, partnership, or joint venture with its primary headquarters office located in the United States and which is not a branch or subsidiary of a foreign corporation, firm, or other foreign-based business.

Joint Venture means that one party to the joint venture is a DVBE and owns at least 51 percent of the joint venture. In the case of a joint venture formed for a single project this means that DVBE will receive at least 51 percent of the project dollars.

Local Business means a business that meets all of the following criteria:

- has an ongoing business within the boundary of South Coast AQMD at the time of bid application.
- performs 90 percent of the work within South Coast AQMD's jurisdiction.

Minority-Owned Business Enterprise means a business that meets all of the following criteria:

- is at least 51 percent owned by one or more minority persons or in the case of any business whose stock is publicly held, at least 51 percent of the stock is owned by one or more minority persons.
- is a business whose management and daily business operations are controlled or owned by one or more minority person.
- is a business which is a sole proprietorship, corporation, partnership, joint venture, an association, or a cooperative with its primary headquarters office located in the United States, which is not a branch or subsidiary of a foreign corporation, foreign firm, or other foreign business.

“Minority” person means a Black American, Hispanic American, Native American (including American Indian, Eskimo, Aleut, and Native Hawaiian), Asian-Indian American (including a person whose origins are from India, Pakistan, or Bangladesh), Asian-Pacific American (including a person whose origins are from Japan, China, the Philippines, Vietnam, Korea, Samoa, Guam, the United States Trust Territories of the Pacific, Northern Marianas, Laos, Cambodia, or Taiwan).

Small Business Enterprise means a business that meets the following criteria:

- a. 1) an independently owned and operated business; 2) not dominant in its field of operation; 3) together with affiliates is either:
 - **A service, construction, or non-manufacturer with 100 or fewer employees, and average annual gross receipts of ten million dollars (\$10,000,000) or less over the previous three years, or**
 - A manufacturer with 100 or fewer employees.
- b. Manufacturer means a business that is both of the following:
 - 1) Primarily engaged in the chemical or mechanical transformation of raw materials or processed substances into new products.
 - 2) Classified between Codes 311000 to 339000, inclusive, of the North American Industrial Classification System (NAICS) Manual published by the United States Office of Management and Budget, 2007 edition.

Small Business Joint Venture means that one party to the joint venture is a Small Business and owns at least 51 percent of the joint venture. In the case of a joint venture formed for a single project this means that the Small Business will receive at least 51 percent of the project dollars.

Women-Owned Business Enterprise means a business that meets all of the following criteria:

- is at least 51 percent owned by one or more women or in the case of any business whose stock is publicly held, at least 51 percent of the stock is owned by one or more women.
- is a business whose management and daily business operations are controlled or owned by one or more women.
- is a business which is a sole proprietorship, corporation, partnership, or a joint venture, with its primary headquarters office located in the United States, which is not a branch or subsidiary of a foreign corporation, foreign firm, or other foreign business.

Most Favored Customer as used in this policy means that the South Coast AQMD will receive at least as favorable pricing, warranties, conditions, benefits and terms as other customers or clients making similar purchases or receiving similar services.

**Request for Taxpayer
Identification Number and Certification**

Give Form to the
requester. Do not
send to the IRS.

▶ Go to www.irs.gov/FormW9 for instructions and the latest information.

Print or type. See Specific Instructions on page 3.	1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.	
	2 Business name/disregarded entity name, if different from above	
	3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only one of the following seven boxes. <input type="checkbox"/> Individual/sole proprietor or single-member LLC <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____ <small>Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is not disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.</small> <input type="checkbox"/> Other (see instructions) ▶ _____	4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3): Exempt payee code (if any) _____ Exemption from FATCA reporting code (if any) _____ <small>(Applies to accounts maintained outside the U.S.)</small>
	5 Address (number, street, and apt. or suite no.) See instructions.	Requester's name and address (optional)
6 City, state, and ZIP code		
7 List account number(s) here (optional)		

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number	
or	
Employer identification number	

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person (defined below); and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here	Signature of U.S. person ▶	Date ▶
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General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to www.irs.gov/FormW9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (Interest earned or paid)

- Form 1099-DIV (dividends, including those from stocks or mutual funds)
 - Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
 - Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
 - Form 1099-S (proceeds from real estate transactions)
 - Form 1099-K (merchant card and third party network transactions)
 - Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
 - Form 1099-C (canceled debt)
 - Form 1099-A (acquisition or abandonment of secured property)
- Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See *What is backup withholding, later*.

By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting*, later, for further information.

Note: If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien;
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States;
- An estate (other than a foreign estate); or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.

In the cases below, the following person must give Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States.

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity;
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust; and
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Pub. 515, *Withholding of Tax on Nonresident Aliens and Foreign Entities*).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items.

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

Backup Withholding

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 24% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the instructions for Part II for details),
3. The IRS tells the requester that you furnished an incorrect TIN,
4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or
5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code*, later, and the separate instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships*, earlier.

What is FATCA Reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code*, later, and the instructions for the Requester of Form W-9 for more information.

Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account; for example, if the grantor of a grantor trust dies.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account (other than an account maintained by a foreign financial institution (FFI)), list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9. If you are providing Form W-9 to an FFI to document a joint account, each holder of the account that is a U.S. person must provide a Form W-9.

a. **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

Note: ITIN applicant: Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040/1040A/1040EZ you filed with your application.

b. **Sole proprietor or single-member LLC.** Enter your individual name as shown on your 1040/1040A/1040EZ on line 1. You may enter your business, trade, or "doing business as" (DBA) name on line 2.

c. **Partnership, LLC that is not a single-member LLC, C corporation, or S corporation.** Enter the entity's name as shown on the entity's tax return on line 1 and any business, trade, or DBA name on line 2.

d. **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on line 2.

e. **Disregarded entity.** For U.S. federal tax purposes, an entity that is disregarded as an entity separate from its owner is treated as a "disregarded entity." See Regulations section 301.7701-2(c)(2)(iii). Enter the owner's name on line 1. The name of the entity entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner's name is required to be provided on line 1. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on line 2, "Business name/disregarded entity name." If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, you may enter it on line 2.

Line 3

Check the appropriate box on line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box on line 3.

IF the entity/person on line 1 is a(n) . . .	THEN check the box for . . .
• Corporation	Corporation
• Individual • Sole proprietorship, or • Single-member limited liability company (LLC) owned by an individual and disregarded for U.S. federal tax purposes.	Individual/sole proprietor or single-member LLC
• LLC treated as a partnership for U.S. federal tax purposes, • LLC that has filed Form 8832 or 2553 to be taxed as a corporation, or • LLC that is disregarded as an entity separate from its owner but the owner is another LLC that is not disregarded for U.S. federal tax purposes.	Limited liability company and enter the appropriate tax classification. (P= Partnership; C= C corporation; or S= S corporation)
• Partnership	Partnership
• Trust/estate	Trust/estate

Line 4, Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space on line 4 any code(s) that may apply to you.

Exempt payee code.

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys' fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space in line 4.

- 1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2)
- 2—The United States or any of its agencies or instrumentalities
- 3—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities
- 4—A foreign government or any of its political subdivisions, agencies, or instrumentalities
- 5—A corporation
- 6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or possession
- 7—A futures commission merchant registered with the Commodity Futures Trading Commission
- 8—A real estate investment trust
- 9—An entity registered at all times during the tax year under the Investment Company Act of 1940
- 10—A common trust fund operated by a bank under section 584(a)
- 11—A financial institution
- 12—A middleman known in the investment community as a nominee or custodian
- 13—A trust exempt from tax under section 664 or described in section 4947

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over \$600 required to be reported and direct sales over \$5,000 ¹	Generally, exempt payees 1 through 5 ²
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

¹ See Form 1099-MISC, Miscellaneous Income, and its instructions.

² However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

Exemption from FATCA reporting code. The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) written or printed on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)

B—The United States or any of its agencies or instrumentalities

C—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i)

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i)

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state

G—A real estate investment trust

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940

I—A common trust fund as defined in section 584(a)

J—A bank as defined in section 581

K—A broker

L—A trust exempt from tax under section 664 or described in section 4947(a)(1)

M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

Note: You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns. If this address differs from the one the requester already has on file, write NEW at the top. If a new address is provided, there is still a chance the old address will be used until the payor changes your address in their records.

Line 6

Enter your city, state, and ZIP code.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN.

If you are a single-member LLC that is disregarded as an entity separate from its owner, enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note: See *What Name and Number To Give the Requester*, later, for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at www.SSA.gov. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at www.irs.gov/Businesses and clicking on Employer Identification Number (EIN) under Starting a Business. Go to www.irs.gov/Forms to view, download, or print Form W-7 and/or Form SS-4. Or, you can go to www.irs.gov/OrderForms to place an order and have Form W-7 and/or SS-4 mailed to you within 10 business days.

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note: Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if item 1, 4, or 5 below indicates otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code*, earlier.

Signature requirements. Complete the certification as indicated in items 1 through 5 below.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), ABLE accounts (under section 529A), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account) other than an account maintained by an FFI	The actual owner of the account or, if combined funds, the first individual on the account ¹
3. Two or more U.S. persons (joint account maintained by an FFI)	Each holder of the account
4. Custodial account of a minor (Uniform Gift to Minors Act)	The minor ²
5. a. The usual revocable savings trust (grantor is also trustee) b. So-called trust account that is not a legal or valid trust under state law	The grantor-trustee ¹ The actual owner ¹
6. Sole proprietorship or disregarded entity owned by an individual	The owner ³
7. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulations section 1.671-4(e)(2)(i)(A))	The grantor ⁴
For this type of account:	Give name and EIN of:
8. Disregarded entity not owned by an individual	The owner
9. A valid trust, estate, or pension trust	Legal entity ⁴
10. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
11. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
12. Partnership or multi-member LLC	The partnership
13. A broker or registered nominee	The broker or nominee

For this type of account:	Give name and EIN of:
14. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
15. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulations section 1.671-4(b)(2)(i)(B))	The trust

¹ List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

² Circle the minor's name and furnish the minor's SSN.

³ You must show your individual name and you may also enter your business or DBA name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

⁴ List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships*, earlier.

*Note: The grantor also must provide a Form W-9 to trustee of trust.

Note: If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records From Identity Theft

Identity theft occurs when someone uses your personal information such as your name, SSN, or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Pub. 5027, Identity Theft Information for Taxpayers.

Victims of identity theft who are experiencing economic harm or a systemic problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes. Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to phishing@irs.gov. You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration (TIGTA) at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at spam@uce.gov or report them at www.ftc.gov/complaint. You can contact the FTC at www.ftc.gov/idtheft or 877-IDTHEFT (877-438-4338). If you have been the victim of identity theft, see www.IdentityTheft.gov and Pub. 5027.

Visit www.irs.gov/identitytheft to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.

2019 Withholding Exemption Certificate**590**

The payee completes this form and submits it to the withholding agent. The withholding agent keeps this form with their records.

Withholding Agent Information

Name _____

Payee Information

Name _____

 SSN or ITIN FEIN CA Corp. no. CA SOS file no.

Address (apt./sta., room, PO box, or PMB no.) _____

City (If you have a foreign address, see instructions.) _____

State _____

ZIP code _____

Exemption Reason**Check only one box.**

By checking the appropriate box below, the payee certifies the reason for the exemption from the California income tax withholding requirements on payment(s) made to the entity or individual.

 Individuals — Certification of Residency:

I am a resident of California and I reside at the address shown above. If I become a nonresident at any time, I will promptly notify the withholding agent. See instructions for General Information D, Definitions.

 Corporations:

The corporation has a permanent place of business in California at the address shown above or is qualified through the California Secretary of State (SOS) to do business in California. The corporation will file a California tax return. If this corporation ceases to have a permanent place of business in California or ceases to do any of the above, I will promptly notify the withholding agent. See instructions for General Information D, Definitions.

 Partnerships or Limited Liability Companies (LLCs):

The partnership or LLC has a permanent place of business in California at the address shown above or is registered with the California SOS, and is subject to the laws of California. The partnership or LLC will file a California tax return. If the partnership or LLC ceases to do any of the above, I will promptly inform the withholding agent. For withholding purposes, a limited liability partnership (LLP) is treated like any other partnership.

 Tax-Exempt Entities:

The entity is exempt from tax under California Revenue and Taxation Code (R&TC) Section 23701 _____ (Insert letter) or Internal Revenue Code Section 501(c) _____ (Insert number). If this entity ceases to be exempt from tax, I will promptly notify the withholding agent. Individuals cannot be tax-exempt entities.

 Insurance Companies, Individual Retirement Arrangements (IRAs), or Qualified Pension/Profit-Sharing Plans:

The entity is an insurance company, IRA, or a federally qualified pension or profit-sharing plan.

 California Trusts:

At least one trustee and one noncontingent beneficiary of the above-named trust is a California resident. The trust will file a California fiduciary tax return. If the trustee or noncontingent beneficiary becomes a nonresident at any time, I will promptly notify the withholding agent.

 Estates — Certification of Residency of Deceased Person:

I am the executor of the above-named person's estate or trust. The decedent was a California resident at the time of death. The estate will file a California fiduciary tax return.

 Nonmilitary Spouse of a Military Servicemember:

I am a nonmilitary spouse of a military servicemember and I meet the Military Spouse Residency Relief Act (MSRRA) requirements. See instructions for General Information E, MSRRA.

CERTIFICATE OF PAYEE: Payee must complete and sign below.To learn about your privacy rights, how we may use your information, and the consequences for not providing the requested information, go to ftb.ca.gov/forms and search for 1131. To request this notice by mail, call 800.852.5711.

Under penalties of perjury, I declare that I have examined the information on this form, including accompanying schedules and statements, and to the best of my knowledge and belief, it is true, correct, and complete. I further declare under penalties of perjury that if the facts upon which this form are based change, I will promptly notify the withholding agent.

Type or print payee's name and title _____ Telephone (_____) _____

Payee's signature ► _____ Date _____

2017 Instructions for Form 590

Withholding Exemption Certificate

References in these instructions are to the California Revenue and Taxation Code (R&TC).

General Information

Registered Domestic Partners (RDP) – For purposes of California income tax, references to a spouse, husband, or wife also refer to a Registered Domestic Partner (RDP) unless otherwise specified. For more information on RDPs, get FTB Pub. 737, Tax Information for Registered Domestic Partners.

A Purpose

Use Form 590, Withholding Exemption Certificate, to certify an exemption from nonresident withholding.

Form 590 does not apply to payments of backup withholding. For more information, go to ftb.ca.gov and search for **backup withholding**.

Form 590 does not apply to payments for wages to employees. Wage withholding is administered by the California Employment Development Department (EDD). For more information, go to edd.ca.gov or call 888.745.3886.

Do not use Form 590 to certify an exemption from withholding if you are a **Seller of California real estate**. Sellers of California real estate use Form 593-C, Real Estate Withholding Certificate, to claim an exemption from the real estate withholding requirement.

The following are excluded from withholding and completing this form:

- The United States and any of its agencies or instrumentalities.
- A state, a possession of the United States, the District of Columbia, or any of its political subdivisions or instrumentalities.
- A foreign government or any of its political subdivisions, agencies, or instrumentalities.

B Income Subject to Withholding

California Revenue and Taxation Code (R&TC) Section 18662 requires withholding of income or franchise tax on payments of California source income made to nonresidents of California.

Withholding is required on the following, but is not limited to:

- Payments to nonresidents for services rendered in California.
- Distributions of California source income made to domestic nonresident partners, members, and S corporation shareholders and allocations of California source income made to foreign partners and members.
- Payments to nonresidents for rents if the payments are made in the course of the withholding agent's business.
- Payments to nonresidents for royalties from activities sourced to California.

- Distributions of California source income to nonresident beneficiaries from an estate or trust.
- Endorsement payments received for services performed in California.
- Prizes and winnings received by nonresidents for contests in California.

However, withholding is optional if the total payments of California source income are \$1,500 or less during the calendar year.

For more information on withholding get FTB Pub. 1017, Resident and Nonresident Withholding Guidelines. To get a withholding publication, see Additional Information.

C Who Certifies this Form

Form 590 is certified by the payee. California residents or entities exempt from the withholding requirement should complete Form 590 and submit it to the withholding agent before payment is made. The withholding agent is then relieved of the withholding requirements if the agent relies in good faith on a completed and signed Form 590 unless notified by the Franchise Tax Board (FTB) that the form should not be relied upon.

An incomplete certificate is invalid and the withholding agent should not accept it. If the withholding agent receives an incomplete certificate, the withholding agent is required to withhold tax on payments made to the payee until a valid certificate is received. In lieu of a completed exemption certificate, the withholding agent may accept a letter from the payee as a substitute explaining why they are not subject to withholding. The letter must contain all the information required on the certificate in similar language, including the under penalty of perjury statement and the payee's taxpayer identification number (TIN). The withholding agent must retain a copy of the certificate or substitute for at least five years after the last payment to which the certificate applies, and provide it upon request to the FTB.

If an entertainer (or the entertainer's business entity) is paid for a performance, the entertainer's information must be provided. **Do not** submit the entertainer's agent or promoter information.

The grantor of a grantor trust shall be treated as the payee for withholding purposes. Therefore, if the payee is a grantor trust and one or more of the grantors is a nonresident, withholding is required. If all of the grantors on the trust are residents, no withholding is required. Resident grantors can check the box on Form 590 labeled "Individuals — Certification of Residency."

D Definitions

For California nonwage withholding purposes, **nonresident** includes all of the following:

- Individuals who are not residents of California.
- Corporations not qualified through the California Secretary of State (CA SOS) to do business in California or having no permanent place of business in California.
- Partnerships or limited liability companies (LLCs) with no permanent place of business in California.
- Any trust without a resident grantor, beneficiary, or trustee, or estates where the decedent was not a California resident.

Foreign refers to non-U.S.

For more information about determining resident status, get FTB Pub. 1031, Guidelines for Determining Resident Status. Military servicemembers have special rules for residency. For more information, get FTB Pub. 1032, Tax Information for Military Personnel.

Permanent Place of Business:

A corporation has a permanent place of business in California if it is organized and existing under the laws of California or it has qualified through the CA SOS to transact intrastate business. A corporation that has not qualified to transact intrastate business (e.g., a corporation engaged exclusively in interstate commerce) will be considered as having a permanent place of business in California only if it maintains a permanent office in California that is permanently staffed by its employees.

E Military Spouse Residency Relief Act (MSRRA)

Generally, for tax purposes you are considered to maintain your existing residence or domicile. If a military servicemember and nonmilitary spouse have the same state of domicile, the MSRRA provides:

- A spouse shall not be deemed to have lost a residence or domicile in any state solely by reason of being absent to be with the servicemember serving in compliance with military orders.
- A spouse shall not be deemed to have acquired a residence or domicile in any other state solely by reason of being there to be with the servicemember serving in compliance with military orders.

Domicile is defined as the one place:

- Where you maintain a true, fixed, and permanent home.
- To which you intend to return whenever you are absent.

A military servicemember's nonmilitary spouse is considered a nonresident for tax purposes if the servicemember and spouse have the same domicile outside of California and the spouse is in California solely to be with the servicemember who is serving in compliance with Permanent Change of Station orders.

California may require nonmilitary spouses of military servicemembers to provide proof that they meet the criteria for California personal income tax exemption as set forth in the MSRRA.

Income of a military servicemember's nonmilitary spouse for services performed in California is not California source income subject to state tax if the spouse is in California to be with the servicemember serving in compliance with military orders, and the servicemember and spouse have the same domicile in a state other than California.

For additional information or assistance in determining whether the applicant meets the MSRRA requirements, get FTB Pub. 1032.

Specific Instructions

Payee Instructions

Enter the withholding agent's name.

Enter the payee's information, including the TIN and check the appropriate TIN box.

You must provide a valid TIN as requested on this form. The following are acceptable TINs: social security number (SSN); individual taxpayer identification number (ITIN); federal employer identification number (FEIN); California corporation number (CA Corp no.); or CA SOS file number.

Private Mail Box (PMB) – Include the PMB in the address field. Write "PMB" first, then the box number. Example: 111 Main Street PMB 123.

Foreign Address – Follow the country's practice for entering the city, county, province, state, country, and postal code, as applicable, in the appropriate boxes. **Do not** abbreviate the country name.

Exemption Reason – Check the box that reflects the reason why the payee is exempt from the California income tax withholding requirement.

Withholding Agent Instructions

Do not send this form to the FTB. The withholding agent retains this form for a minimum of five years or until the payee's status changes, and must provide this form to the FTB upon request.

The payee must notify the withholding agent if any of the following situations occur:

- The individual payee becomes a nonresident.
- The corporation ceases to have a permanent place of business in California or ceases to be qualified to do business in California.

- The partnership ceases to have a permanent place of business in California.
- The LLC ceases to have a permanent place of business in California.
- The tax-exempt entity loses its tax-exempt status.

If any of these situations occur, then withholding may be required. For more information, get Form 592, Resident and Nonresident Withholding Statement, Form 592-B, Resident and Nonresident Withholding Tax Statement, and Form 592-V, Payment Voucher for Resident and Nonresident Withholding.

Additional Information

Website: For more information go to ftb.ca.gov and search for **nonwage**.
MyFTB offers secure online tax account information and services. For more information and to register, go to ftb.ca.gov and search for **myftb**.

Telephone: 888.792.4900 or 916.845.4900, Withholding Services and Compliance phone service

Fax: 916.845.9512

Mail: WITHHOLDING SERVICES AND COMPLIANCE MS F182
FRANCHISE TAX BOARD
PO BOX 942867
SACRAMENTO CA 94267-0651

For questions unrelated to withholding, or to download, view, and print California tax forms and publications, or to access the TTY/TDD numbers, see the information below.

Internet and Telephone Assistance

Website: ftb.ca.gov

Telephone: 800.852.5711 from within the United States
916.845.6500 from outside the United States

TTY/TDD: 800.822.6268 for persons with hearing or speech impairments

Asistencia Por Internet y Teléfono

Sitio web: ftb.ca.gov

Teléfono: 800.852.5711 dentro de los Estados Unidos
916.845.6500 fuera de los Estados Unidos

TTY/TDD: 800.822.6268 para personas con discapacidades auditivas o de habla

Certification Regarding Debarment, Suspension, and Other Responsibility Matters

The prospective participant certifies to the best of its knowledge and belief that it and the principals:

- (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- (b) Have not within a three year period preceding this proposal been convicted of or had a civil judgement rendered against them or commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction: violation of Federal or State antitrust statute or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (b) of this certification; and
- (d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 USC Sec. 1001, a false statement may result in a fine of up to \$10,000 or imprisonment for up to 5 years, or both.

Typed Name & Title of Authorized Representative

Signature of Authorized Representative Date

I am unable to certify to the above statements. My explanation is attached.



CAMPAIGN CONTRIBUTIONS DISCLOSURE

In accordance with California law, bidders and contracting parties are required to disclose, at the time the application is filed, information relating to any campaign contributions made to South Coast Air Quality Management District (South Coast AQMD) Board Members or members/alternates of the MSRC, including: the name of the party making the contribution (which includes any parent, subsidiary or otherwise related business entity, as defined below), the amount of the contribution, and the date the contribution was made. 2 C.C.R. §18438.8(b).

California law prohibits a party, or an agent, from making campaign contributions to South Coast AQMD Governing Board Members or members/alternates of the Mobile Source Air Pollution Reduction Review Committee (MSRC) of more than \$250 while their contract or permit is pending before South Coast AQMD; and further prohibits a campaign contribution from being made for three (3) months following the date of the final decision by the Governing Board or the MSRC on a donor's contract or permit. Gov't Code §84308(d). For purposes of reaching the \$250 limit, the campaign contributions of the bidder or contractor plus contributions by its parents, affiliates, and related companies of the contractor or bidder are added together. 2 C.C.R. §18438.5.

In addition, South Coast AQMD Board Members or members/alternates of the MSRC must abstain from voting on a contract or permit if they have received a campaign contribution from a party or participant to the proceeding, or agent, totaling more than \$250 in the 12-month period prior to the consideration of the item by the Governing Board or the MSRC. Gov't Code §84308(c).

The list of current South Coast AQMD Governing Board Members can be found at South Coast AQMD website (www.aqmd.gov). The list of current MSRC members/alternates can be found at the MSRC website (<http://www.cleantransportationfunding.org>).

SECTION I.

Contractor (Legal Name): _____

DBA, Name _____, County Filed in _____ Corporation, ID No. _____ LLC/LLP, ID No. _____
--

List any parent, subsidiaries, or otherwise affiliated business entities of Contractor:
(See definition below).

SECTION II.

Has Contractor and/or any parent, subsidiary, or affiliated company, or agent thereof, made a campaign contribution(s) totaling \$250 or more in the aggregate to a current member of the South Coast Air Quality Management Governing Board or member/alternate of the MSRC in the 12 months preceding the date of execution of this disclosure?

Yes No **If YES, complete Section II below and then sign and date the form. If NO, sign and date below. Include this form with your submittal.**

Campaign Contributions Disclosure, continued:

Name of Contributor _____

Governing Board Member or MSRC Member/Alternate	Amount of Contribution	Date of Contribution
---	------------------------	----------------------

Name of Contributor _____

Governing Board Member or MSRC Member/Alternate	Amount of Contribution	Date of Contribution
---	------------------------	----------------------

Name of Contributor _____

Governing Board Member or MSRC Member/Alternate	Amount of Contribution	Date of Contribution
---	------------------------	----------------------

Name of Contributor _____

Governing Board Member or MSRC Member/Alternate	Amount of Contribution	Date of Contribution
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I declare the foregoing disclosures to be true and correct.

By: _____

Title: _____

Date: _____

DEFINITIONS

Parent, Subsidiary, or Otherwise Related Business Entity (2 Cal. Code of Regs., §18703.1(d).)

- (1) Parent subsidiary. A parent subsidiary relationship exists when one corporation directly or indirectly owns shares possessing more than 50 percent of the voting power of another corporation.
- (2) Otherwise related business entity. Business entities, including corporations, partnerships, joint ventures and any other organizations and enterprises operated for profit, which do not have a parent subsidiary relationship are otherwise related if any one of the following three tests is met:
 - (A) One business entity has a controlling ownership interest in the other business entity.
 - (B) There is shared management and control between the entities. In determining whether there is shared management and control, consideration should be given to the following factors:
 - (i) The same person or substantially the same person owns and manages the two entities;
 - (ii) There are common or commingled funds or assets;
 - (iii) The business entities share the use of the same offices or employees, or otherwise share activities, resources or personnel on a regular basis;
 - (iv) There is otherwise a regular and close working relationship between the entities; or
 - (C) A controlling owner (50% or greater interest as a shareholder or as a general partner) in one entity also is a controlling owner in the other entity.



South Coast Air Quality Management District

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

Direct Deposit Authorization

STEP 1: Please check all the appropriate boxes

- | | |
|--|--|
| <input type="checkbox"/> Individual (Employee, Governing Board Member) | <input type="checkbox"/> New Request |
| <input type="checkbox"/> Vendor/Contractor | <input type="checkbox"/> Cancel Direct Deposit |
| <input type="checkbox"/> Changed Information | |

STEP 2: Payee Information

Last Name		First Name		Middle Initial	Title
Vendor/Contractor Business Name (if applicable)					
Address				Apartment or P.O. Box Number	
City			State	Zip	Country
Taxpayer ID Number		Telephone Number		Email Address	

Authorization

- I authorize South Coast Air Quality Management District (South Coast AQMD) to direct deposit funds to my account in the financial institution as indicated below. I understand that the authorization may be rejected or discontinued by South Coast AQMD at any time. If any of the above information changes, I will promptly complete a new authorization agreement. If the direct deposit is not stopped before closing an account, funds payable to me will be returned to South Coast AQMD for distribution. This will delay my payment.
- This authorization remains in effect until South Coast AQMD receives written notification of changes or cancellation from you.
- I hereby release and hold harmless South Coast AQMD for any claims or liability to pay for any losses or costs related to insufficient fund transactions that result from failure within the Automated Clearing House network to correctly and timely deposit monies into my account.

STEP 3:

You must verify that your bank is a member of an Automated Clearing House (ACH). Failure to do so could delay the processing of your payment. You must attach a voided check or have your bank complete the bank information and the account holder must sign below.

To be Completed by your Bank

Staple Voided Check Here	Name of Bank/Institution				
	Account Holder Name(s)				
	<input type="checkbox"/> Saving <input type="checkbox"/> Checking		Account Number		Routing Number
	Bank Representative Printed Name		Bank Representative Signature		Date
	ACCOUNT HOLDER SIGNATURE:				Date

For South Coast AQMD Use Only

Input By _____

Date _____



Surplus Off-Road Opt-In for NOx (SOON)

SOUTH COAST AQMD PROGRAM ANNOUNCEMENT PA2020-03

The South Coast Air Quality Management District (South Coast AQMD) is soliciting project proposals for the following purpose according to terms and conditions attached. In this Program Announcement (PA) the words “Proposer,” “Applicant,” “Contractor,” and “Consultant” are used interchangeably.

SECTION I – OVERVIEW

PURPOSE

The South Coast AQMD is seeking proposals for the Surplus Off-Road Opt-In for NOx (SOON) Provision of the California Air Resources Board’s (CARB’s) In-Use Off-Road Diesel-Fueled Fleets Regulation. The primary purpose of this Program is to provide financial incentives to assist in the purchase of zero or lower-emissions heavy-duty engine technologies to achieve near-term nitrogen oxides (NOx) emissions reductions from in-use off-road equipment. Since funding for the SOON Program is from the Carl Moyer Program (CMP), all CMP requirements apply to this Program, except where specifically noted, or where the South Coast AQMD implements more stringent program criteria as described in the Rule 2449 SOON Implementation Guidelines.

INTRODUCTION

The SOON Program is designed to achieve additional NOx reductions above those that would be obtained from the state off-road regulation. These reductions are critical to meeting the PM2.5 and ozone ambient air quality standards in the South Coast Air Basin.

Funding for Program Announcement PA2020-03 is from the CMP. Project awards are contingent upon receiving the CMP funds from CARB. Additional sources of funding, such as AB 923, may be available and added to this Program.

Eligible projects qualified for the SOON Program must meet a maximum cost-effectiveness limit of \$30,000 per ton of NOx emissions reduced and any additional South Coast AQMD criteria as stated in this PA. For advanced technology projects that are zero-emission, or alternatively meet the cleanest certified optional NOx standard applicable, South Coast AQMD may apply a cost-effectiveness limit of up to \$100,000 per weighted ton of NOx emissions reduced, for the incremental emission reductions that go beyond current emission standards, as allowed by the CMP 2017 Guidelines. Projects exceeding the cost-effectiveness limit may receive partial funding up to the cost-effectiveness limit or will be deemed ineligible. Except where otherwise stated, projects must meet the requirements of the CMP 2017 Guidelines.

Applications submitted in response to this PA will be evaluated according to the approved 2017 CMP Guidelines. It is the applicant’s responsibility to ensure that the most current information and requirements are reflected in a submitted application. Applicants should check the CARB website for any updates and/or advisories to the guidelines <http://www.arb.ca.gov/msprog/moyer/guidelines/current.htm>.

South Coast AQMD staff will evaluate all qualified SOON Program applications and make recommendations to the Governing Board for final selection of project(s) to be funded. All eligible

projects will be ranked based on cost-effectiveness of NOx emissions reduced. Please note that depending upon the number of applications received in response to this PA, South Coast AQMD may prioritize the selection of projects to reduce emissions in and around DAC and low-income communities. While South Coast AQMD encourages all eligible applications, this means that some projects may not be selected based on their domicile address, regardless of their cost-effectiveness ranking.

At least 50 percent of South Coast AQMD's CMP funds will be targeted for projects that meet the criteria of a disadvantaged or low-income community project. Other non-CMP funding sources may have DAC and/or low-income status requirements that may limit South Coast AQMD's ability to award such funding to projects that do not meet applicable geographic or income requirements. The Office of Environmental Health Hazard Assessment (OEHHA) in the California Environmental Protection Agency (CalEPA) has developed the California Communities Environmental Health Screening Tool: CalEnviroScreen Version 3.0 (CalEnviroScreen 3.0). The CalEnviroScreen 3.0 tool will be used by South Coast AQMD to identify projects that qualify as a DAC, which is defined as scoring in the top 25th percentile, and will strive to maximize the benefits to these communities from this PA. All applications will be assessed with the CalEnviroScreen tool to identify and verify if the project will benefit a DAC. This tool is available at: <https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30>

South Coast AQMD SOON Program requirements may be more stringent than CARB's requirements and/or guidelines. For example, South Coast AQMD may have a lower cost-effectiveness ceiling for a particular project type. In case there is any conflict between CARB and South Coast AQMD criteria, the more stringent criteria will prevail. South Coast AQMD will post any new information and requirements on its SOON Web page at www.aqmd.gov/soon. It is the responsibility of the applicant to ensure that the most current information and requirements are reflected in a submitted application. Be aware that there is a possibility that due to program priorities, cost-effectiveness or funding category limitations (i.e., caps), project applications may be offered only partial funding, and not all applications that meet the cost-effectiveness criteria may be funded.

DEFINITIONS

1. Alternative Fuel
Alternative fuels include compressed natural gas (CNG), liquefied natural gas (LNG), methanol, ethanol, propane (LPG) and electric technologies.
2. Base Rule
Base rule is defined as the CARB In-Use Off-Road Diesel-Fueled Fleets Regulation without the SOON provisions (Title 13, Division 3, Chapter 9, Article 4.8, Section 2449 and 2449.1). Compliance with the Base Rule is required and is demonstrated by the DOORS Compliance Snapshot.
3. Compliance Plan
Compliance plan is the future forecast of fleet average emissions using current fleet information and planned future repower, replacement, retirement and retrofit projects. An Excel spreadsheet template is available on the South Coast AQMD SOON webpage.
4. Contract Term
Contract term is the duration for which the contract is valid. It encompasses both the project

completion and project implementation periods.

- i. Project completion period is the first part of the Contract term starting from the date of Contract execution by both parties to the date the project post-inspection confirms that the project has become operational.
- ii. Project implementation period is the second part of the Contract term and equals the project life.

5. Cost-Effectiveness Limit

The cost-effectiveness limit determines the maximum funding that can be provided to an individual vehicle repower, replacement or retrofit project for each ton of emissions reduced. Under the SOON Program the cost-effective is calculated based on tons of NOx reduced per year.

6. Current NOx Standard

For all engine horsepower categories, the current NOx standard in 2020 is Tier 4 Final.

7. Dual-Fuel Technology

Dual-fuel technology includes electric hybrids and technologies that utilize a combination of either CNG and diesel fuel or LNG and diesel fuel, provided they are certified by CARB. Experimental technologies and fuels will be referred to CARB for evaluation and possible eligibility in the program.

8. Incremental Cost

Incremental cost is the percent of actual cost that is eligible for SOON funding. For repower projects, it is 85%; for replacement projects, it is 80%; and for NOx retrofit projects, it is 100%.

9. Project Life

Project life is the period of the contract term during which the repowered, replacement or retrofitted vehicle is operated. The contractor must report the annual usage throughout the project life. In addition, project life is used to calculate the cost-effectiveness and funding amount for a project.

10. Replacement Project

Replacement project is the purchase of a new or used vehicle to replace an existing vehicle. Only new vehicles meeting Tier 4 Final emissions standards are eligible for funding.

11. Repower Project

Repower project is the replacement of an old engine of an existing vehicle with a newer engine certified to lower emission standards.

12. Retrofit Project

Retrofit project is a modification made to an engine exhaust and/or fuel system such that the specifications of the retrofitted engine are different from the original engine.

GENERAL PROGRAM INFORMATION

The primary focus of the SOON Program is to achieve emission reductions from heavy-duty off-road vehicles and equipment operating in California as early and as cost-effectively as possible. The SOON Program is intended to achieve additional NOx reductions which are needed to meet the PM2.5 and ozone ambient air quality standards in the South Coast Air Basin. The emission reductions expected

through the deployment of zero or low-emissions engine or retrofit technologies under this Program must be real, surplus and quantifiable. Senate Bill 513 (Beall) removed many of the limitations associated with co-funding from other sources. The air district must verify the sum of all other incentive funds to ensure the Moyer funds will not exceed the total project cost. Applicants from non-public entities must provide at least 15 percent of the Moyer eligible project costs from non-public sources.

Replacement and repower projects are **limited to only** those involving a diesel baseline engine subject to the off-road regulation, and a lower emission or zero emission technology that is certified, verified or approved by CARB. **All projects must meet the program's cost-effectiveness limit(s) and be operational no later than May 20, 2022.** No administrative or vehicle operational costs are eligible.

It is expected that multiple awards will be granted under this PA, subject to the approval of the South Coast AQMD Governing Board.

All proposals will be evaluated based on criteria set forth in this PA. The South Coast AQMD will evaluate and/or verify information submitted by the applicant. At South Coast AQMD's discretion, consultants contracted by South Coast AQMD may conduct all or part of such evaluation and/or verification. Data verification during the evaluation and contracting process may cause initial cost-effectiveness rankings, and associated awards, to change. Furthermore, the South Coast AQMD reserves the right to make adjustments to awards based on the subsequent verification of information as well as changes in cost-effectiveness.

IMPORTANT PROGRAM INFORMATION

- Fleets with a total statewide equipment horsepower over 20,000 hp and with 40 percent or more of their vehicles at Tier 0 and Tier 1 emission levels as of January 1, 2008, are subject to the SOON Program and are required to apply for funding. Fleets not meeting both of the above criteria on January 1, 2008, may voluntarily participate in this Program and apply for funding.
- For this program cycle, all projects will be eligible for a maximum seven-year operational requirement within the jurisdiction of the South Coast Air Quality Management District. A shorter project life will be considered on a case-by-case basis and may be required by the CMP Guidelines for specific types of equipment. However, a shorter project life may affect the project's ranking relative to other projects and the amount of funding that can be provided.
- The annual hours used to calculate cost-effectiveness will be included in the contract. An extension of the contract or partial payback of funds may be required if the proposed annual hours are not achieved.
- For all repower projects, fleets are **not** required to, but may install the highest level verified diesel emission control system (VDECS) at their own cost.
- Retrofit projects which can achieve NOx reductions may be funded on a case-by-case basis.
- Applicants must demonstrate that during the contract period, vehicles equipped with NOx retrofits, repowered with new engines, or that have been replaced using SOON program funding, will not use a lower emission rate to calculate the fleet average index and target rate and BACT credit to meet compliance in the Diesel Off-Road Online Reporting System (DOORS). Actions taken using SOON program funding may be used for determining compliance **after** the completion of the SOON program project contract period for that vehicle. For example, if a Tier 2 vehicle is repowered with a Tier 4 engine with SOON Program funds for purposes of

compliance with the off-road regulation, that vehicle is still treated as if it were a Tier 2 until the end of the contract period for the SOON program project.

- Applicants **must** provide vendor quotes with their application to document the cost of implementing the proposed technology. **All quotes must have been obtained within 90 days of application submittal. Applicants may be required to submit quotes from more than one technology provider.**
- For off-road replacement and repower projects, the CMP guidelines specify that the horsepower rating of the new (or replacement) engine must not be greater than 125 percent of the original manufacturer rated horsepower of the old (or existing) engine. If the new engine is greater than 125 percent, then the eligible funding amount will be based on the cost of an engine or equipment with a horsepower rating that is no higher than 125 percent of the existing engine horsepower rating. The applicant must pay the additional costs associated with the higher horsepower engine and obtain a price quote for an engine or equipment that is within the 125 percent range for the funding determination. In addition, verifiable records on the existing engine must be provided with the application to accurately identify the engine manufacture year and horsepower (e.g., photographs of engine labels, statement from engine manufacturers, etc.).
- Applicants must demonstrate that they are in full compliance with all applicable CARB regulations and that vehicle/equipment funding requests under this Program provide surplus emissions reductions. **Applicants are required to submit a compliance plan showing how they will comply with the targets of CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation throughout the contract term, as well as how the new projects under this PA will meet SOON NOx targets in 2023.**
- Applicants must ensure that the vehicle/equipment to be purchased or installed is in compliance with all applicable federal, state and local air quality rules and regulations and that it will maintain compliance for the full contract term.
- Any associated tax obligation with the award is the responsibility of the grantee.
- No third-party contracts will be executed. The South Coast AQMD contract must be signed by the equipment owner.
- Pre- and post-inspection of all vehicles/engines/equipment approved for funding will be conducted by South Coast AQMD.
- Destruction of the engine/equipment being repowered or replaced is required.
- To avoid double dipping, applicants shall not apply for funding for the same equipment in any other air district.

POTENTIAL PROJECTS

All eligible projects must use CARB-certified technology or technology that has been verified/approved by CARB for real and quantifiable emission reductions that go beyond any regulatory requirement. The following projects are eligible for SOON funding:

Repower Project

For a repower project, the new engine must be certified for sale in California to the current NOx emission standard (Tier 4 Final). If an engine meeting the current emission standard is not available or cannot be installed:

- A Tier 3 Replacement Engine rated at 175 hp or higher can be used for the repower project.

- A Tier 3 Replacement rated at 175 horsepower or less can be used for repower projects provided it complies with U.S. Environmental Protection Agency (EPA) requirements related to replacing in-use engines contained in the Code of Federal Regulations, Title 40, Section 1068.240.
- For off-road equipment with similar modes of operation to on-road vehicles, other possible options include the replacement of an older diesel off-road engine with a new on-road engine certified to an emission standard equal to or cleaner than the Tier 4 Final off-road emission standard or a newer emission certified alternative fuel engine.

Retrofit Project

For a retrofit project, the retrofit technology **must provide a NOx benefit** and must be:

- Verified by CARB to reduce NOx or NOx plus PM for the specific engine for which funding is requested.
- In compliance with established durability and warranty requirements and cost-effectiveness criteria.

Diesel Particulate Filters (DPFs) and other devices that are not verified to reduce NOx are not eligible for SOON funding. The applicant will find more information on VDECS, including a list of currently verified DECS at <http://www.arb.ca.gov/diesel/verdev/verdev.htm>.

Replacement Project

For replacement projects, the replacement vehicle/equipment must be powered by a Tier 4 Final engine. If a vehicle/equipment with a Tier 4 Final engine will not be available within 6 months of the application submittal, vehicle/equipment with an Interim Tier 4 or Tier 3 engine may be purchased.

PROJECT CRITERIA

The South Coast AQMD retains the authority to impose more stringent additional requirements in order to address local concerns.

- Off-road CI equipment eligible for SOON Program funding includes equipment 25 hp (19 kilowatt) or greater. The complete definition can be found in CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation at <http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm>.
- SOON Program grants can be no greater than a project's incremental cost (85% of quotation for repower projects, 80% of quotation for replacement projects). The incremental cost shall be reduced by the value of any current financial incentive that reduces the project price, including but not limited to tax credits or deductions, grants or other public financial assistance.
- Applicants must ensure that the vehicle/equipment to be purchased or installed is in compliance with all applicable federal, state and local air quality rules and regulations and that it will maintain compliance for the full contract term.
- The certification emission standard and Tier designation for the engine must be determined from the CARB's Executive Order issued for that engine, not by the engine model year. Executive orders for off-road engines may be found at <http://www.arb.ca.gov/msprog/offroad/cert/cert.php>.
- Reduced emission engines or retrofits must be certified/verified for sale in California and must comply with durability and warranty requirements. These may include new CARB-certified engines and verified diesel emission control strategies.

- New vehicles equipped with Tier 4 family emission limits (FEL) engines certified to Tier 3 or Interim Tier 4 standards are eligible for SOON Program funding. **However, those engines will have their cost-effectiveness calculated as though they were Tier 3 engines.**
- New engines manufactured under the “Flexibility Provisions for Equipment Manufacturers”, as detailed in Title 13, CCR, section 2423(d), are ineligible for SOON Program funding to repower equipment.
- For replacement projects, existing equipment with engines manufactured under the flexibility provision, detailed in CCR, title 13, section 2423 (d), the baseline emission rates shall be determined by using the previous applicable Tier emission standard for the existing engine model year and horsepower rating.
- Class 7 diesel forklifts are the only diesel forklifts eligible for SOON Program funding and are subject to all off-road project criteria. The South Coast AQMD must obtain and verify documentation of the classification of the forklift prior to funding.
- If repower with an engine meeting the current applicable standard is technically infeasible, unsafe or cost prohibitive, the replacement engine must meet the most current practicable previously applicable emission standard and cost-effectiveness criteria and, if rated at less than 175 hp, must comply with the requirements related to replacing in-use engines contained in Title 40, Code of Federal Regulations, Section 1068.240.
- Replacement of an uncontrolled diesel off-road engine with a new on-road engine certified to an emission standard equal to or lower than the Tier 4 Final off-road emission standard or a newer emission-certified alternative fuel engine may be eligible for funding as off-road equipment with similar modes of operation as on-road vehicles on a case-by-case basis. Other equipment may be eligible for funding on a case-by-case basis. These repowers must meet all other applicable project criteria.
- Applicants must provide their DOORS Fleet Compliance Snapshot.
- Applicants must provide the DOORS EIN for each vehicle for which funding is requested.
- Applicants must provide proof they have owned each vehicle for which funding is requested for a replacement vehicle for at least two years.
- Applicants must provide a current Compliance Plan using the South Coast AQMD fleet calculator or the DOORS calculator demonstrating compliance with the off-road regulation throughout the anticipated contract period.
- Applicants must provide at least the most recent two (2) years of hour-meter readings.

Potential projects that fall outside of these criteria may be considered on a case-by-case basis if evidence provided to the air district suggests potential surplus, real, quantifiable and enforceable emission reduction benefits.

MAXIMUM ELIGIBLE FUNDING

The maximum eligible funding amount and project life for each SOON project type is summarized below.

Project	Maximum Funding	Maximum Project Life
Replacement	80% of vehicle/equipment cost	Five years, except:

		<ul style="list-style-type: none"> • Three years for excavators, skid steer loaders, and rough terrain forklifts
Repower	85% of engine cost plus parts and labor necessary for installation	Seven years
Retrofit	100% of retrofit device cost plus parts and labor for installation, plus estimated cost for maintenance during project life.	Five years

COST-EFFECTIVENESS EVALUATION DISCUSSION

The SOON Program is required to meet the requirements of the CMP by using the cost-effectiveness calculation methodology found in Appendix C of the CMP Guidelines (see <http://www.arb.ca.gov/msprog/moyer/guidelines/current.htm>). Under the SOON Program, only NOx emission reductions will be taken into consideration to calculate the cost-effectiveness.

REPORTING AND MONITORING

All participants in the SOON Program are required to keep appropriate records during the full contract period. Project life is the number of years used to determine the cost-effectiveness and is equivalent to the contract implementation period. All equipment must operate in the South Coast AQMD for the full project life. The South Coast AQMD shall conduct periodic reviews of each project’s operating records to ensure that the engine is operated as stated in the program application. Annual records must contain the following, at a minimum:

- Total Hours of Operation
- Total Hours of Operation in the South Coast Air District
- Annual Maintenance and Repair Information

Records must be retained and updated throughout the project life and made available for South Coast AQMD inspection. The South Coast AQMD may conduct periodic reviews of each vehicle/equipment project’s operating records to ensure that the vehicle is operated as required by the project requirements.

Equipment owner, if awarded CMP grant funds, will be required to submit annual reports for the life of the project, as described in Section II – Work Statement/Schedule of Deliverables.

PROGRAM ADMINISTRATION

The SOON Program will be administered locally by the South Coast AQMD through the Science and Technology Advancement Office.

FUNDING CATEGORIES

Only equipment identified in the CARB In-Use Off-Road Diesel-Fueled Fleets Regulation is eligible for this Program.

PROJECT EVALUATION/AWARDS

South Coast AQMD staff will evaluate all submitted proposals and make recommendations to the South Coast AQMD Governing Board for final selection of project(s) to be funded. Proposals will be evaluated for cost-effectiveness of NOx emissions reduced on an equipment-by-equipment basis, as well as a project's disproportional impact evaluation. (This is discussed further in Section IV).

SCHEDULE OF EVENTS

Release of PA2020-03	March 6, 2020
Workshop – 10AM to 1PM* Coachella Valley Mosquito and Vector Control Board Room 43420 Trader Place Indio, CA 92201	Wednesday, April 15, 2020 (Carl Moyer and SOON Program will be discussed at the workshop with an emphasis on agricultural projects)
Workshop – 10AM to 1PM* Resurrection Church, Parish Hall 3324 E. Opal Street Los Angeles, CA 90023	Wednesday, April 22, 2020
Workshop – 9AM to 12PM* Salt Lake Park, The Lounge 3401 E. Florence Avenue Huntington Park, CA 90255	Thursday, May 7, 2020
Workshop – 5:30PM to 8:30PM* San Bernardino Valley College, Building B100 701 South Mount Vernon Avenue San Bernardino, CA 92410	Tuesday, May 12, 2020
2 Workshops – 9AM to Noon* South Coast AQMD Headquarters Conference Room CC6 21865 Copley Drive Diamond Bar, CA 91765	Wednesday, April 29, 2020 Wednesday, May 6, 2020
All Applications Due	No later than 1:00 PM, Tuesday, June 2, 2020

Anticipated Award Consideration by South Coast AQMD Board	October-November 2020
*Training for the online application system will be included in these workshops.	

**ALL PROPOSALS MUST BE RECEIVED ELECTRONICALLY OR ON PAPER AT THE
SOUTH COAST AQMD HEADQUARTERS
NO LATER THAN 1:00 P.M. ON TUESDAY, JUNE 2, 2020**

Electronic submission using South Coast AQMD’s new CMP Online Application Program (OAP) is preferred and is available at www.aqmd.gov/moyer.

Postmarks of paper copy applications will not be accepted. Faxed or email proposals will not be accepted. Proposers may hand-deliver proposals to the South Coast AQMD by submitting the proposal to the South Coast AQMD Public Information Center. The proposal will be date and time-stamped and the person delivering the proposal will be given a receipt.

South Coast AQMD may issue subsequent solicitations if insufficient applications are received in the initial solicitation.

STATEMENT OF COMPLIANCE

Government Code Section 12990 and California Administrative Code, Title II, Division 4, Chapter 5, require employers to agree not to unlawfully discriminate against any employee or applicant because of race, religion, color, national origin, ancestry, physical handicap, medical condition, marital status, sex, or age. A statement of compliance with this clause is included in all South Coast AQMD contracts.

SECTION II: WORK STATEMENT/SCHEDULE OF DELIVERABLES

All applicants that are selected for funding awards must complete the Work Statement and Schedule of Deliverables described below as part of the contracting process. Development of these materials for the initial application is NOT required; however, applicants must sign the application form indicating their understanding of the requirements for submittal of additional project information to finalize a contract and that all vehicles, engines or equipment must be in operation no later than **May 20, 2022**.

WORK STATEMENT

The scope of work involves a series of tasks and deliverables that demonstrate compliance with the requirements of the SOON Program as administered by CARB and the South Coast AQMD.

At a minimum, any proposed project must meet the following criteria:

- Emission reductions must be real, quantifiable, enforceable and surplus in accordance with CARB and South Coast AQMD guidelines.
- Cost-effectiveness of the project must meet the minimum requirement of the CMP guidelines.

- Project engines or equipment must operate in-service for the full project life.
- All vehicles/engines/equipment must be in operation no later than May 20, 2022.
- Appropriate annual usage records must be kept and reported to South Coast AQMD during the project life (i.e., annual hours of operation).
- A compliance plan that demonstrates compliance with the off-road regulation throughout the contract period must be provided.
- Ensure that the project complies with other local, state and federal programs, and resulting emission reductions from a specific project are not required as a mitigation measure to reduce adverse environmental impacts that are identified in an environmental document prepared in accordance with the California Environmental Quality Act or the National Environmental Policy Act.
- If requested, a contractor must provide a financial statement and bank reference, or other evidence of financial ability to fulfill contract requirements.

DELIVERABLES

The contract will describe how the project will be monitored and what type of information will be included in project progress reports. At a minimum, the South Coast AQMD expects to receive the following:

- An annual report, throughout the project life, which provides the annual hours of operation, where the vehicle(s) or equipment(s) was operated, annual fuel consumption, and operational and maintenance issues encountered and how they were resolved.
- An annual submission of the applicant’s DOORS Fleet Compliance Snapshot demonstrating compliance with the off-road regulation.

South Coast AQMD reserves the right to verify the information provided.

SECTION III: PROPOSAL SUBMITTAL REQUIREMENTS

Proposers **must** complete the appropriate application forms committing that the information requested in Section II, Work Statement/Schedule of Deliverables, will be submitted if the Proposer’s project is selected for funding.

In addition, Conflict of Interest and Project Cost information, as described below, must also be submitted with the application. It is the responsibility of the proposer to ensure that all information submitted is accurate and complete.

CONFLICT OF INTEREST

Applicant must address any potential conflicts of interest with other clients affected by actions performed by the firm on behalf of the South Coast AQMD. Although the proposer will not be automatically disqualified by reason of work performed for such firms, the South Coast AQMD reserves the right to consider the nature and extent of such work in evaluating the proposal. Conflicts of interest will be screened on a case-by-case basis by the South Coast AQMD District Counsel’s Office. Conflict of interest provisions of the state law, including the Political Reform Act, may apply to work performed pursuant to this contract. Please discuss potential conflicts of interest on the application form entitled “Campaign Contributions Disclosure”.

PROJECT COST

Applicants must provide cost information that specifies the amount of funding requested and the basis for that request by attaching vendor quotes to the application. Applicants need to inform vendors of the time frame of the award process so that they can accurately quote costs based on the anticipated order/purchase date. **Note that no purchase orders may be placed or work performed for projects awarded under this PA until after the date of award approval by the South Coast AQMD Governing Board. Any orders placed or payments made in advance of an executed contract with the South Coast AQMD are done at the risk of the applicant. The South Coast AQMD has no obligation to fund the project until a contract is fully executed by both parties.**

The SOON Program funds only the differential cost between existing technology and zero or lower-emissions technology. The proposed zero or lower-emissions technology must be CARB-certified in most cases.¹ Proposals will be ranked by cost-effectiveness on a vehicle/equipment-by-vehicle/equipment basis. The cost-effectiveness limit has been established at \$30,000/ton of NO_x emissions reduced and \$100,000/ton of NO_x emissions reduced for advanced technology that includes zero-emission or alternatively, meets the cleanest optional NO_x standard certified. The cost-effectiveness level used for the selection of projects may be lower depending on the demand for program funds. No fueling infrastructure, administrative or operational costs will be funded.

All project costs must be clearly indicated in the application. In addition, applicants must include any sources of co-funding and the amount of each co-funding source in the application. **Applicants should be aware that the project life used in calculating the NO_x emissions reductions will be used to determine the length of their annual reporting obligation and the length of their contract. For example, if a 7-year project life is used for the NO_x emissions reduction calculation, then the applicant will be required to operate and track activity for the funded-vehicle/equipment for the full 7 years.**

PROPOSAL SUBMISSION

All proposals must be submitted according to specifications set forth herein.

Application Forms

Program application forms are provided after this document. These must be completed and submitted with other required documents (i.e., Certifications and Representations and vendor quotations) discussed in the application and below.

Certifications and Representations

Contained in this PA are six business forms which must also be completed and submitted with the application.

¹ Note that non-CARB certified engines/devices requiring an experimental permit from CARB may be considered, but the project will require special CARB approval.

Compliance Plan

Projects funded by SOON monies must result in NOx emissions reductions that are surplus to those that would be realized by fleets complying with the base rule. Fleets are required to submit a compliance plan in electronic format to demonstrate how they comply with both the base rule as well as the SOON provision of the rule. Fleet owners, at a minimum, must provide the following information for each year for the anticipated contract period:

- A vehicle list which includes, but is not limited to, vehicle type, manufacturer, model, model year, and whether the equipment is included in the base or SOON fleet for each piece of equipment in the fleet.
- Information including, but not limited to, calculations, fleet information, etc., showing compliance with the base rule fleet target levels or compliance with the BACT turnover and retrofit requirements. Either the CARB calculator (individual tabs for each future year) or the Excel SOON fleet calculator spreadsheet may be used.
- Information including, but not limited to, calculations, fleet information, etc., showing whether the vehicles funded by the SOON program are in compliance with the SOON NOx fleet average target levels.

SOON Compliance Plan documents and the Microsoft Excel SOON fleet calculator can be downloaded at the South Coast AQMD SOON website: www.aqmd.gov/soon. CARB's Fleet Average Calculators can be downloaded at the CARB website: <https://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm>.

Methods of Delivery:

The proposer is encouraged to submit the application using the South Coast AQMD online system, available at www.aqmd.gov/moyer. This online system allows applicants to submit their application electronically to the South Coast AQMD prior to the date and time specified below. South Coast AQMD "Business Information Forms" requiring signatures must be scanned and uploaded to the online system in pdf format. First-time users must register as a new user. A tutorial of the system will be provided at the pre-application workshops and you may contact Walter Shen at wshen@aqmd.gov or (909) 396-2487 if you would like additional assistance.

An applicant may also deliver paper copies of the application in person, or via a courier service or U.S. Mail. The application package shall include **the original application and three (3) complete paper copies of the application, and an electronic copy (CD or flash drive) of the compliance plan and completed application** in a sealed envelope, plainly marked in the upper left-hand corner with the name and address of the proposer and the words "**Program Announcement PA2020-03**". Paper applications shall be submitted in an eco-friendly format: stapled, not bound, black and white print; no three-ring, spiral or plastic binders, and no card stock or colored paper.

Due Date

All proposals submitted by paper or through the online application system must be received no later than **1:00 p.m., on Tuesday, June 2, 2020**. Postmarks for paper copies are not accepted as proof of deadline compliance. **Faxed or emailed proposals will not be accepted**. Paper proposals must be directed to:

Procurement Unit
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Any correction or resubmission done by the proposer will not extend the submittal due date.

Grounds for Rejection

A proposal may be immediately rejected if:

1. It is not prepared in the format described.
2. It is not signed by an individual authorized to represent the firm.
3. Does not include a current cost quote, Contractor Statement Forms, and other forms required in this PA.

Disposition of Proposals

The South Coast AQMD reserves the right to reject any or all proposals. All responses become the property of the South Coast AQMD. One copy of the proposal shall be retained for South Coast AQMD files. Additional copies and materials will be returned only if requested and at the proposer's expense.

Modification or Withdrawal

Once submitted, proposals cannot be altered without the prior written consent of South Coast AQMD.

SECTION IV: PROPOSAL EVALUATION/CONTRACTOR SELECTION CRITERIA

South Coast AQMD staff will evaluate all submitted proposals and make recommendations to the South Coast AQMD Governing Board for final selection of project(s) to be funded. Proposals will be evaluated based on the 2017 CMP Guidelines, including verification that the project meets the NOx cost-effectiveness limit(s) for this program. The cost-effectiveness determination will be done on a vehicle/equipment-by-vehicle/equipment basis. Be aware that there is a possibility that due to program priorities, cost-effectiveness and/or funding limitations, a project may be offered only partial funding, and not all proposals that meet the minimum cost-effectiveness criteria may be funded.

The evaluation will determine the ranking for each project based on the cost-effectiveness of NOx emissions reduced. Please note that depending upon the number of applications received in response to this PA, South Coast AQMD may prioritize the selection of projects to reduce emissions in and around DAC and low-income communities. While South Coast AQMD encourages all eligible applications, this means that some projects may not be selected based on their domicile address, regardless of their cost-effectiveness ranking.

At least 50 percent of the CMP funds must be used for projects that are located and operated within a disadvantaged and/or low-income community. South Coast AQMD uses the following method to meet these requirements.

1. All projects must meet the criteria in the 2017 CMP Guidelines and the cost-effectiveness limit of \$30,000 per ton of NOx emissions reduced and \$100,000/ton of NOx emissions reduced for advanced technology that are zero-emission or alternatively, meet the cleanest optional NOx standard certified.

2. Each project's domiciled address will be used to determine if the project is located within a disadvantaged or low-income community. The CalEnviroScreen 3.0 tool will be used by South Coast AQMD to determine if a project is located within a DAC and/or low-income community. This tool is available at: <https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30>
3. Projects that are not domiciled within a DAC and/or low-income community may still be considered if the application documentation shows that the vehicle/equipment was operated a majority of time in a DAC and/or low-income community.

All other projects will be ranked according to NOx cost-effectiveness, with the most cost-effective projects considered first and then in descending order for each funding category until the remainder of the funds are exhausted.

SECTION V: PAYMENT TERMS

For all projects, payment will be made upon installation and commencement of operation of the funded equipment for 85% of the submitted reposer invoice (80% of the submitted replacement invoice) or the contract maximum amount, whichever is less.

CONTACT FOR ADDITIONAL INFORMATION

Questions regarding the content or intent of this PA, procedural matters, sample contract, and the compliance plan worksheet can be found at the South Coast AQMD SOON website (<http://www.aqmd.gov/SOON>), or can be addressed to:

Alyssa Yan
Science and Technology Advancement
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
Phone: (909) 396-2024
ayan@aqmd.gov

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Application Forms



Carl Moyer and SOON Application
 Form A-1
 General Application Form (page 1 of 3)

The SCAQMD is accepting applications for projects throughout its jurisdiction. All applications will be evaluated based on their cost-effectiveness and their disproportionate impact score as discussed in Section IV "Application Evaluation/ Contractor Selection Criteria" contained in Program Announcement. For additional information about SCAQMD's policies and application information, visit: www.aqmd.gov/moyer. In general, this program will follow CARB Carl Moyer Program guidelines, which are available at: <http://www.arb.ca.gov/msprog/moyer/moyer.htm>.

The submittal of an application does not guarantee approval for funding, but will be used to determine the potential emission reductions and eligible grant funding amount for the proposed project. Any equipment purchased prior to project approval by the SCAQMD Governing Board will not be eligible for funding. Applicant may, at their own risk, issue a purchase order for approved equipment prior to contract execution. Other than a purchase order, **no other work shall proceed** until a fully executed contract, i.e. signed by the applicant and SCAQMD Board Chairman and a pre-inspection, is completed.

Organization Information

Legal Name of Organization *

The legal organization name must be that of the legal equipment owner.

Organization Address

Mailing Address *
 Street Address/P.O. Box
 City *
 State *
 Zip *
 County *

Primary Contact Name and Information

First Name
 Last Name
 Email Address
 (A valid Email address is required. Eg. john@gmail.com)
 Phone Number
 Fax Number

Person Authorized to Sign Application and Execute Grant Agreement

First Name
 Last Name
 Email Address
 (A valid Email address is required. Eg. john@gmail.com)
 Phone Number
 Fax Number

Third Party Information

Name of Person Who Completed the Application
 What is Your Position?
 How much are you being paid to complete this application for the owner or to assist in the proposed project?
 What is the source of funds being used to pay you?

Signature of Third Party Person Who Completed the Application:

Date:



Carl Moyer and SOON Application
Form A-1
General Application Form (page 2 of 3)

All information provided in this application will be used by SCAQMD staff to evaluate the eligibility of this application to receive program funds. SCAQMD staff reserves the right to request additional information and can deny the application if such requested information is not provided by the requested deadline. Incomplete or illegible applications will be returned to applicant or vendor, without evaluation. An incomplete application is an application that is missing information critical to the evaluation of the project.

Please read and check each item below to indicate understanding and agreement:

I understand that this application is for evaluation purposes only and does not guarantee project funding. Only a fully executed Grant Agreement between the equipment owner and the District constitutes an obligation to fund a project.

I certify to the best of my knowledge and under penalty of perjury that the information contained in this application is true and accurate.

I understand that all vehicles/equipment, both existing and new, must be made available within the SCAQMD boundaries for inspection, unless otherwise approved by SCAQMD's Project Officer.

The vehicle/engine will be used within the SCAQMD boundaries (with the emission reduction system operating) for at least the projected usage shown in this application, and no less than 75 percent of the time.

I understand that it is my responsibility to ensure that all technologies are either verified or certified by the California Air Resources Board (CARB) to reduce NOx and/or PM pollutants. CARB Verification Letters and/or Executive Orders are attached, as applicable.

I understand that for repower projects, I am required to install the highest level available verified diesel emission control device (VDECS), and that the costs of this device and associated installation are a CMP eligible expense. These costs may be included in the project grant request up to the maximum cost-effectiveness limit.

I understand that there may be conditions placed upon receiving a grant and agree to refund the grant (or pro-rated portion thereof) if it is found that at any time I do not meet those conditions and if directed by the SCAQMD in accordance with the contract agreement.

I understand that, for this equipment, I am required to disclose if I have applied for or received incentive funding from another entity or program. Failure to do so will disqualify me from Carl Moyer Program Funding.

In the event that the vehicle(s)/equipment do not complete the minimum term of any agreement eventually reached from this application, I agree to ensure the equivalent project emissions reductions, or to return grant funds to the SCAQMD as required by the contract.

I understand that all on-road engines in my fleet that are eligible for a low-NOx software upgrade (reflash) must be reflashed within 60 days of receipt of contract execution. I may self-certify that the reflash has been performed by submitting a receipt of the completed reflash or a picture of the "Low NOx Reflash Label" from the reflashed engine to SCAQMD.

I understand that third party contracts are not permitted. A third party may, however complete an application on an owner's behalf. Third parties are required to list how much compensation, if any, they are receiving to prepare the application(s), and to certify that no Carl Moyer Program funds are being used for this compensation.

I understand that off-road equipment applicants subject to CARB's In-Use Off-Road Diesel Vehicle Regulation (Off-Road Regulation) must submit information regarding fleet size and compliance status. This must include the Diesel Off-Road On-line Reporting System (DOORS) ID of the fleet and the DOORS Equipment Identification Number (EIN) of the funded equipment.

I understand that additional project information may be requested during project review and must be submitted prior to final evaluation.

I understand that all vehicles, engines or equipment funded by this program must be operational within eighteen (18) months of contract execution, or by the vehicle in service date as specified in the Statement of Work, whichever is earlier.

All project applicants must submit documentation that supports the activity claimed in the application (i.e., fuel receipts, mileage logs and/or hour-meter readings covering the last two years). This documentation is attached.

The grant contract language cannot be modified without the written consent of all parties. I have reviewed and accept the sample contract language.

I understand that an IRS Form 1099 may be issued to me for incentive funds received under the Moyer Program. I understand that it is my



Carl Moyer and SOON Application
Form A-1
General Application Form (page 3 of 3)

responsibility to determine the tax liability associated with participating in the Moyer Program.

I understand that an SCAQMD-funded Global Positioning System (GPS) unit will be installed on vehicles/equipment not operating within SCAQMD boundaries full time. I will submit data as requested and otherwise cooperate with all data reporting requirements. I also understand that the additional cost of the GPS unit will be added to the project cost when calculating cost-effectiveness, though the SCAQMD will pay for this system directly.

I understand that the SCAQMD has the right to conduct unannounced inspections for the full project life to ensure the project equipment is fully operational at the activity level committed to by the contract.

I understand that all emission reductions resulting from Carl Moyer funded projects will be retired and the Carl Moyer Program claims all emission reductions from its funded projects. I also understand that there is no double counting or splitting of emission reductions if I receive additional incentive funding.

I understand that a tamper proof, non-resettable digital hour meter/odometer must be installed on all vehicles/equipment and that the digital hour meter/odometer will record the hours/miles accumulated within the SCAQMD boundaries. This cost is my responsibility.

I understand that any tax credits claimed must be deducted from the CMP request.
Please check one:

- I do not plan to claim a tax credit or deduction for costs funded by the CMP.
- I do plan to claim a tax credit or deduction for costs funded by the CMP.

If so please indicate amount here: \$

- I plan to claim a tax credit or deduction only for the portion of incremental costs not funded by the CMP.

If so please indicate amount here: \$

I have checked this box to indicate that there are no potential conflicts of interest with other clients affected by actions performed by the firm on behalf of SCAQMD. If I have not checked this box, I have attached a description to this application of the potential conflict of interest, which will be screened on a case-by-case basis by the SCAQMD District Counsel's Office.

I understand and certify that I am currently in compliance with all federal, state and local air quality rules and regulations at the time of application submittal, and I am not aware of any outstanding or pending enforcement actions.

Please indicate the Total Funding Requested (for the entire project, including all equipment/vehicle replacements, repowers, etc.): \$ _____

By signing below, I certify under penalty of perjury that the information provided in this application is accurate and true.

Please print the name of the signing authority (first and last name)

Signature of signing authority:

Please enter the application submission date:

APPLICATION CHECKLIST

Applicants are encouraged to submit their application using SCAQMD's online system. If you are applying in person, use this checklist to organize your paper copy application. Each of the following application sections is required to be submitted if you submit a paper application:

- A cover letter stating your grant request, how many pieces of equipment and/or engines included in the proposed project, and the funding amount being requested (per engine and for the total project). For applications covering more than one category, organize this information into project category (i.e., marine, locomotive, on-road, etc.)
- This Application Checklist (signed below).
- General Application Form A-1. Provide a separate Form A-1 for each category (i.e., marine, locomotive, etc.) for which grant funding is requested. Form A-1 also includes the following documents:
 - Application Statement (signed and initialed as applicable)
 - Completed and **signed** Business Information Forms¹
- Category Application Form specific to your project category (i.e., locomotive, off-road, marine, etc.), along with the following attachments/enclosures:
 - Optional Excel Worksheet associated with applicable application form/category (you may use this form for multiple unit projects, if desired)
 - Vendor quotes dated no earlier than 90 days prior to the date of application submittal
 - CARB Executive Orders for each engine. Download at:
 - On-road: <http://www.arb.ca.gov/msprog/onroad/cert/cert.php>
 - Off-road: <http://www.arb.ca.gov/diesel/cv.htm>
 - Previous two years of historical records documenting equipment usage, retroactive to the date of application.

Once completed, please submit one original plus three (3) complete signed copies of the application package (all forms and documents), as well as an electronic copy of the application and its supporting documents on a CD or flash drive.

I understand that all documents, as listed above, are required in order to have a complete application package in order to be considered for funding under the Carl Moyer Program.

Signature

Date

¹ These forms may be downloaded at: www.aqmd.gov/moyer



Carl Moyer and SOON Application Form C-1 Off-Road Equipment Replacement Equipment Information (page 1 of 2)

If you have any questions regarding this program or the application process, please contact Walter Shen by phone at (909) 396-2487 or by email at wshen@aqmd.gov.

Large Off-Road Fleets have limited eligibility for Carl Moyer Program funding, but may apply for SOON Program funding using this application. For more information, please visit www.aqmd.gov/SOON.

Please complete **ONE (1) Form** for each piece of equipment.

Existing Equipment Information

Are you applying under Carl Moyer Program OR the Surplus Off-Road NOx Program?

Has this equipment received Carl Moyer Program funds in the past? Yes No

For Large Fleets Only - have you received Carl Moyer funding after January 1, 2017? Yes No

What is the primary function of this equipment?

Is the vehicle location address the same as the applicant address? If not, please complete below. Yes No

Street Address (if no address, provide intersection) City

County State

Zip Vehicle Type

If other, please describe:

Equipment Category

Equipment Type

If other equipment type, please describe

Equipment Make Equipment Model

Equipment Model Year Equipment Serial Number or VIN

Unit Number or EIN#(for non-Ag Operations)

Is 2 to 1 Replacement Applied? Yes No

Number of Main Engines Number of Auxiliary Engines

Is this equipment used in Agricultural operations? Yes No

What percentage of equipment operations are in Agriculture?



Carl Moyer and SOON Application Form C-1 Off-Road Equipment Replacement Equipment Information (page 2 of 2)

New Equipment and Vendor Information

Unit Number	<input type="text"/>	Equipment Category	<input type="text"/>
Equipment Type	<input type="text"/>		
If other equipment type, please describe	<input type="text"/>		
Equipment Make	<input type="text"/>	Equipment Model	<input type="text"/>
Equipment Model Year	<input type="text"/>		
Vendor	<input type="text"/>	Vendor Contact Name	<input type="text"/>
Vendor Phone Number	<input type="text"/>	Vendor Address	<input type="text"/>
Vendor City	<input type="text"/>	State	<input type="text"/>
Vendor Zip	<input type="text"/>		

All cost estimates must be based on quotes that have been obtained within 90 days prior to the closing date of the Program Announcement. Attach all quotes to the application.

Number of engines for this New Equipment Unit:

Main (Front) Engine(s)	<input type="text"/>	Auxiliary (Rear) Engine(s)	<input type="text"/>
New Replacement Unit Cost \$	<input type="text"/>	Tax \$	<input type="text"/>
Total Cost for this Replacement \$	<input type="text"/>	Applicant Co-Funding Amount (If Any) \$	<input type="text"/>
Applicant Grant Request (If Any) \$	<input type="text"/>		



Carl Moyer and SOON Application

Form C-1

Off-Road Equipment Replacement

Project Details

Is equipment currently subject to CARB's Off-Road Regulation?

Yes No

What is the total horsepower of all vehicles in the fleet?

Enter DOORS Fleet Number

All Off-Road equipment applicants subject to CARB's In-Use Off-Road Diesel Vehicle Regulation must submit their DOORS fleet compliance snapshot and fleet vehicle list.

You may contact the DOORS hotline at (877) 593-6677 for assistance.

SOON applications must also submit the fleet average calculation. Please visit <https://arb.ca.gov/msprog/ordiesel/fac.htm> for more information.

Total Funding Requested (for this Replacement ONLY)

Identify other funding sources to be used for this project

Total Project Cost (From Quote: MUST EQUAL QUOTE)

Applicant Co-Funding Amount

Operation Information

Is existing equipment in operable condition?

Yes No

How many years has the applicant owned the existing equipment?

Does this vehicle have a functioning, non-resettable hour meter?

Yes No

Percent Operation in California

Percent Operation in District

Note: See <http://www.aqmd.gov/home/about/jurisdiction> for a jurisdiction map.

Proposed Project Life (this is the number of years that the equipment must operate as specified in your SCAQMD contract)



Carl Moyer and SOON Application
Form C-1
Off-Road Equipment Replacement
Engine Information

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Existing/Baseline Engine Information

Baseline Engine Type Main Auxiliary

Baseline Engine Fuel Type

Baseline Engine Make

Baseline Engine Model

Baseline Engine Model Year

Baseline Engine Serial Number

Baseline Engine Horsepower

Baseline Engine Family Number

Old Engine (Baseline) Emissions Tier

New Engine Information

New Engine Fuel Type

New Engine Make

New Engine Model

New Engine Model Year

New Engine Serial Number

New Engine Horsepower

New Engine Family Number

New Engine (Reduced) Emissions Tier



Carl Moyer and SOON Application
Form C-1
Off-Road Equipment Replacement
Engine Activity Information

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Project application must include documentation of existing equipment usage for the previous 24 months prior to the application date.

Baseline Engine - Annual operation details for the past 24-months

	Jan - Date of Application Submittal 2020	Jan - Dec 2019	Mar - Dec 2018	Estimated Annual Future Usage
Hours	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



Carl Moyer and SOON Application
Form C-1
Off-Road Equipment Replacement
Attachments

The following attachments must be submitted for this application:

- Insurance Documentation
- Engine Executive Order(s) and Retrofit Device Executive Order(s)
- Quotes (must be within 90 days of application submittal)
- Equipment Usage Documentation (for past 24 – months including, but not limited to, maintenance records, hour meter readings)
- Photo showing the baseline engine (old) engine model year, engine serial #, HP, engine family # (if available)
- Equipment Ownership (Bill of Sale)
- SOON Fleet Average Calculation (please go to <https://arb.ca.gov/msprog/ordiesel/fac.htm>)
- only for applicants applying for SOON funding (only if applying under SOON Program)
- DOORS Fleet Compliance Snapshot including vehicle list
- Business Information Request Form
- Campaign Contribution Disclosure
- Business Status Cert
- W-9 Form
- Direct Deposit Form
- Certification of Debarment, Suspension and Other Responsibility Matters



Carl Moyer and SOON Application

Form C-2

Off-Road Equipment Repower Equipment Information

If you have any questions regarding this program or the application process, please contact Walter Shen by phone at (909) 396-2487 or by email at: wshen@aqmd.gov

Large Off-Road Fleets have limited eligibility for Carl Moyer Program funding, but may apply for SOON Program funding using this application. For more information, please visit www.aqmd.gov/SOON.

Please complete ONE (1) form for each piece of equipment.

Existing Equipment Information

Are you applying under Carl Moyer Program OR the Surplus Off-Road NOx Program?

Has this equipment received Carl Moyer Program funds in the past? Yes No

For Large Fleets Only - have you received Carl Moyer funding after January 1, 2017? Yes No

What is the primary function of this equipment?

Is the vehicle location address the same as the applicant address? If not, please complete below. Yes No

Street Address (if no address, provide intersection) City

County State

Zip Vehicle Type

If other, please describe:

Equipment Category

Equipment Type

If other equipment type, please describe

Equipment Make Equipment Model

Equipment Model Year Equipment Serial Number or VIN

Unit Number or EIN# (for non-Ag Operations)

Number of Main Engines Number of Auxiliary Engines

Is this equipment used in Agricultural operations? Yes No



Carl Moyer and SOON Application Form C-2 Off-Road Equipment Repower Project Details

Is equipment currently subject to CARB's Off-Road Regulation?

Yes No

What is the total horsepower of all vehicles in the fleet?

Enter DOORS Fleet Number

All Off-Road equipment applicants subject to CARB's In-Use Off-Road Diesel Vehicle Regulation must submit their DOORS fleet compliance snapshot and fleet vehicle list.

You may contact the DOORS hotline at (877) 593-6677 for assistance.

SOON applications must also submit the fleet average calculation. Please visit <https://arb.ca.gov/msprog/ordiesel/fac.htm> for more information.

Total Funding Requested (including Retrofit cost, if applicable)

Identify other funding sources to be used for this project

Total Project Cost (From Quote: MUST EQUAL QUOTE - incl. Retrofit if applicable)

Applicant Co-Funding Amount

Operation Information

Is existing equipment in operable condition?

Yes No

How many years has the applicant owned the existing equipment?

Does this vehicle have a functioning, non-resettable hour meter?

Yes No

Percent Operation in California

Percent Operation in District

Proposed Project Life (this is the number of years that the equipment must operate as specified in your SCAQMD contract)



**Carl Moyer and SOON Application
Form C-2
Off-Road Equipment Repower
Engine Information (page 1 of 2)**

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Existing/Baseline Engine Information

Baseline Engine Type Main Auxiliary

Baseline Engine Fuel Type

Baseline Engine Make Baseline Engine Model

Baseline Engine Model Year Baseline Engine Serial Number

Baseline Engine Horsepower Baseline Engine Family Number

Old Engine (Baseline) Emissions Tier

Method proposed for rendering the baseline engine(s) inoperable

New Engine Information

New Engine Fuel Type

New Engine Make New Engine Model

New Engine Model Year New Engine Serial Number

New Engine Horsepower New Engine Family Number

New Engine (Reduced) Emissions Tier

Is the New Engine a Family Emissions Limit (FEL) engine? Yes No

New Engine Cost Information

New Engine Unit Cost Cost of Installation/Labor

Cost of New Engine Tax Total Cost of Repower

Applicant Co-Funding Amount (if any) Grant Request Amount for this Repower

All cost estimates must be based on quotes that have been obtained within 90 days prior to the closing date of the Program Announcement. Attach all quotes to the application.

New Engine Vendor Information

Vendor Vendor Contact Name

Vendor Phone Number Vendor Address

Vendor City Vendor State

Vendor Zip



Carl Moyer and SOON Application
Form C-2
Off-Road Equipment Repower
Engine Information (page 2 of 2)

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Engine Retrofit Information

Will a retrofit device be added to this engine as part of this project?

Yes No

Retrofit Device Make

Retrofit Device Model

% PM Reduction

% NOX Reduction

% ROG Reduction

Retrofit Device ARB Executive
Order Number

Project Life

Retrofit Cost Information

Retrofit Device System Cost

Retrofit Device Installation
Cost

Total Cost of Retrofit

Amount requested for this
retrofit \$



Carl Moyer and SOON Application
Form C-2
Off-Road Equipment Repower
Engine Activity Information

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Project application must include documentation of existing equipment usage for the previous 24 months prior to the application date.

Baseline Engine - Annual operation details for the past 24-months

	Jan - Date of Application Submittal 2020	Jan - Dec 2019	Mar - Dec 2018	Estimated Annual Future Usage
Hours	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



Carl Moyer and SOON Application
Form C-2
Off-Road Equipment Repower
Attachment

The following attachments must be submitted for this application:

- Insurance Documentation
- Engine Executive Order(s) and Retrofit Device Executive Order(s)
- Quotes (must be within 90 day of application submittal)
- Equipment Usage Documentation (for past 24 – months including, but not limited to, maintenance records, hour meter readings)
- Photo showing the baseline (old) engine model year, engine serial #, horsepower, engine family # (if available)
- SOON Fleet Average Calculation (please go to <https://arb.ca.gov/msprog/ordiesel/fac.htm>)
- only for applicants applying for SOON funding (only if applying under SOON Program)
- DOORS Fleet Compliance Snapshot - including vehicle list
- Business Information Request Form
- Campaign Contribution Disclosure
- W-9 Form
- Direct Deposit Form
- Business Status Certification
- Certification of Debarment, Suspension and Other Responsibility Matters



Carl Moyer and SOON Application Form C-3 Off-Road Equipment Retrofit Equipment Information

If you have questions regarding this program or the application process, please contact Walter Shen by phone at (909) 396-2487 or by email at: wshen@aqmd.gov.

Existing Equipment Information

Are you applying under Carl Moyer Program OR the Surplus Off-Road NOx Program?

Has this equipment received Carl Moyer Program funds in the past? Yes No

What is the primary function of this equipment?

Is the vehicle location address the same as the applicant address? If not, please complete below. Yes No

Street Address (if no address, provide intersection) City

County State

Zip Vehicle Type

If other, please describe:

Equipment Category

Equipment Type

If other equipment type, please describe

Equipment Make Equipment Model

Equipment Model Year Equipment Serial Number or VIN

Unit Number

Number of Main Engines Number of Auxiliary Engines

Is this equipment used in Agricultural operations? Yes No



**Carl Moyer and SOON Application
Form C-3
Off-Road Equipment Retrofit
Project Details**

Is equipment currently subject to CARB's Off-Road Regulation?

Yes No

What is the total horsepower of all vehicles in the fleet?

Enter DOORS Fleet Number

All Off-Road equipment applicants subject to CARB's In-Use Off-Road Diesel Vehicle Regulation must submit their DOORS fleet compliance snapshot and fleet vehicle list.

You may contact the DOORS hotline at (877) 593-6677 for assistance.

SOON applications must also submit the fleet average calculation. Please visit <https://arb.ca.gov/msprog/ordiesel/fac.htm> for more information.

Total Funding Requested

Identify other funding sources to be used for this project

Total Project Cost (From Quote: MUST EQUAL QUOTE)

Applicant Co-Funding Amount

Operation Information

Is existing equipment in operable condition?

Yes No

How many years has the applicant owned the existing equipment?

Does this vehicle have a functioning, non-resettable hour meter?

Yes No

Percent Operation in California

Percent Operation in District

See <http://www.aqmd.gov/home/about/jurisdiction> for a jurisdiction map.

Proposed Project Life (this is the number of years that the equipment must operate as specified in your SCAQMD contract)



**Carl Moyer and SOON Application
Form C-3
Off-Road Equipment Retrofit
Engine & Retrofit Information**

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Existing/Baseline Engine Information

Baseline Engine Type	<input type="radio"/> Main	<input type="radio"/> Auxiliary		
Baseline Engine Fuel Type	<input type="text"/>			
Baseline Engine Make	<input type="text"/>	Baseline Engine Model	<input type="text"/>	
Baseline Engine Model Year	<input type="text"/>	Baseline Engine Serial Number	<input type="text"/>	
Baseline Engine Horsepower	<input type="text"/>	Baseline Engine Family Number	<input type="text"/>	
Old Engine (Baseline) Emissions Tier	<input type="text"/>			

Engine Retrofit Information

Retrofit Device Make	<input type="text"/>	Retrofit Device Model	<input type="text"/>
Verification Level	<input type="text"/>	Project Life	<input type="text"/>
Verified % PM Reduction	<input type="text"/>	Verified % NOX Reduction	<input type="text"/>
Verified % ROG Reduction	<input type="text"/>	Retrofit Device ARB Executive Order Number	<input type="text"/>
Retrofit Device Serial Number	<input type="text"/>		

Retrofit Cost Information

Retrofit Device System Cost	<input type="text"/>	Retrofit Device Installation Cost	<input type="text"/>
Tax Amount for Retrofit	<input type="text"/>	Total Cost of Retrofit	<input type="text"/>
Maintenance Cost	<input type="text"/>	Amount requested for this retrofit	<input type="text"/>
Retrofit Dealer Vendor	<input type="text"/>		

All cost estimates must be based on quotes that have been obtained within 90 days prior to the closing date of the Program Announcement. Attach all quotes to the application. The data-logging cost of a retrofit project cannot be included in the eligible project cost.



Carl Moyer and SOON Application
Form C-3
Off-Road Equipment Retrofit
Engine Activity Information

If you have more than one engine for your project, please make copies of this form and use one form for each engine.

Project application must include documentation of existing equipment usage for the previous 24 months prior to the application date.

Baseline Engine - Annual operation details for past 24 months

	Jan - Date of Application Submittal 2020	Jan - Dec 2019	Mar - Dec 2018	Estimated Annual Future Usage
Hours	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



Carl Moyer and SOON Application
Form C-3
Off-Road Equipment Retrofit
Attachments

The following attachments must be submitted for this application:

- Insurance Documentation
- Engine Executive Order(s) and Retrofit Device Executive Order(s)
- Quotes (must be within 90 days of application submittal)
- Equipment Usage Documentation (for past 24 – months)
- Other misc. attachments
- DOORS Vehicle List
- SOON Fleet Average Calculation (please go to <https://arb.ca.gov/msprog/ordiesel/fac.htm>) (only if applying under SOON Program)
- DOORS Fleet Compliance Snapshot
- Business Information Request Form
- Campaign Contribution Disclosure
- W-9 Form
- Business Status Certification
- Direct Deposit Form
- Certification of Debarment, Suspension and Other Responsibility Matters



South Coast Air Quality Management District

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

Business Information Request

Dear South Coast AQMD Contractor/Supplier:

South Coast Air Quality Management District (South Coast AQMD) is committed to ensuring that our contractor/supplier records are current and accurate. If your firm is selected for award of a purchase order or contract, it is imperative that the information requested herein be supplied in a timely manner to facilitate payment of invoices. In order to process your payments, we need the enclosed information regarding your account. **Please review and complete the information identified on the following pages, remember to sign all documents for our files, and return them as soon as possible to the address below:**

**Attention: Accounts Payable, Accounting Department
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4178**

If you do not return this information, we will not be able to establish you as a vendor. This will delay any payments and would still necessitate your submittal of the enclosed information to our Accounting department before payment could be initiated. Completion of this document and enclosed forms would ensure that your payments are processed timely and accurately.

If you have any questions or need assistance in completing this information, please contact Accounting at (909) 396-3777. We appreciate your cooperation in completing this necessary information.

Sincerely,

Sujata Jain
Chief Financial Officer

DH:tm

Enclosures: Business Information Request
Disadvantaged Business Certification
W-9
Form 590 Withholding Exemption Certificate
Federal Contract Debarment Certification
Campaign Contributions Disclosure
Direct Deposit Authorization



South Coast Air Quality Management District

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

BUSINESS INFORMATION REQUEST

Business Name	
Division of	
Subsidiary of	
Website Address	
Type of Business <i>Check One:</i>	<input type="checkbox"/> Individual <input type="checkbox"/> DBA, Name _____, County Filed in _____ <input type="checkbox"/> Corporation, ID No. _____ <input type="checkbox"/> LLC/LLP, ID No. _____ <input type="checkbox"/> Other _____

REMITTING ADDRESS INFORMATION

Address			
City/Town			
State/Province		Zip	
Phone	() - Ext	Fax	() -
Contact		Title	
E-mail Address			
Payment Name if Different			

All invoices must reference the corresponding Purchase Order Number(s)/Contract Number(s) if applicable and mailed to:

**Attention: Accounts Payable, Accounting Department
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4178**

BUSINESS STATUS CERTIFICATIONS

Federal guidance for utilization of disadvantaged business enterprises allows a vendor to be deemed a small business enterprise (SBE), minority business enterprise (MBE) or women business enterprise (WBE) if it meets the criteria below.

- is certified by the Small Business Administration or
- is certified by a state or federal agency or
- is an independent MBE(s) or WBE(s) business concern which is at least 51 percent owned and controlled by minority group member(s) who are citizens of the United States.

Statements of certification:

As a prime contractor to South Coast AQMD, _____ (name of business) will engage in good faith efforts to achieve the fair share in accordance with 40 CFR Section 33.301, and will follow the six affirmative steps listed below **for contracts or purchase orders funded in whole or in part by federal grants and contracts.**

1. Place qualified SBEs, MBEs, and WBEs on solicitation lists.
2. Assure that SBEs, MBEs, and WBEs are solicited whenever possible.
3. When economically feasible, divide total requirements into small tasks or quantities to permit greater participation by SBEs, MBEs, and WBEs.
4. Establish delivery schedules, if possible, to encourage participation by SBEs, MBEs, and WBEs.
5. Use services of Small Business Administration, Minority Business Development Agency of the Department of Commerce, and/or any agency authorized as a clearinghouse for SBEs, MBEs, and WBEs.
6. If subcontracts are to be let, take the above affirmative steps.

Self-Certification Verification: Also for use in awarding additional points, as applicable, in accordance with South Coast AQMD Procurement Policy and Procedure:

Check all that apply:

- | | |
|---|--|
| <input type="checkbox"/> Small Business Enterprise/Small Business Joint Venture | <input type="checkbox"/> Women-owned Business Enterprise |
| <input type="checkbox"/> Local business | <input type="checkbox"/> Disabled Veteran-owned Business Enterprise/DVBE Joint Venture |
| <input type="checkbox"/> Minority-owned Business Enterprise | <input type="checkbox"/> Most Favored Customer Pricing Certification |

Percent of ownership: _____ %

Name of Qualifying Owner(s): _____

State of California Public Works Contractor Registration No. _____ . MUST BE INCLUDED IF BID PROPOSAL IS FOR PUBLIC WORKS PROJECT.

I, the undersigned, hereby declare that to the best of my knowledge the above information is accurate. Upon penalty of perjury, I certify information submitted is factual.

NAME

TITLE

TELEPHONE NUMBER

DATE

Definitions

Disabled Veteran-Owned Business Enterprise means a business that meets all of the following criteria:

- is a sole proprietorship or partnership of which is at least 51 percent owned by one or more disabled veterans, or in the case of any business whose stock is publicly held, at least 51 percent of the stock is owned by one or more disabled veterans; a subsidiary which is wholly owned by a parent corporation but only if at least 51 percent of the voting stock of the parent corporation is owned by one or more disabled veterans; or a joint venture in which at least 51 percent of the joint venture's management and control and earnings are held by one or more disabled veterans.
- the management and control of the daily business operations are by one or more disabled veterans. The disabled veterans who exercise management and control are not required to be the same disabled veterans as the owners of the business.
- is a sole proprietorship, corporation, partnership, or joint venture with its primary headquarters office located in the United States and which is not a branch or subsidiary of a foreign corporation, firm, or other foreign-based business.

Joint Venture means that one party to the joint venture is a DVBE and owns at least 51 percent of the joint venture. In the case of a joint venture formed for a single project this means that DVBE will receive at least 51 percent of the project dollars.

Local Business means a business that meets all of the following criteria:

- has an ongoing business within the boundary of South Coast AQMD at the time of bid application.
- performs 90 percent of the work within South Coast AQMD's jurisdiction.

Minority-Owned Business Enterprise means a business that meets all of the following criteria:

- is at least 51 percent owned by one or more minority persons or in the case of any business whose stock is publicly held, at least 51 percent of the stock is owned by one or more minority persons.
- is a business whose management and daily business operations are controlled or owned by one or more minority person.
- is a business which is a sole proprietorship, corporation, partnership, joint venture, an association, or a cooperative with its primary headquarters office located in the United States, which is not a branch or subsidiary of a foreign corporation, foreign firm, or other foreign business.

“Minority” person means a Black American, Hispanic American, Native American (including American Indian, Eskimo, Aleut, and Native Hawaiian), Asian-Indian American (including a person whose origins are from India, Pakistan, or Bangladesh), Asian-Pacific American (including a person whose origins are from Japan, China, the Philippines, Vietnam, Korea, Samoa, Guam, the United States Trust Territories of the Pacific, Northern Marianas, Laos, Cambodia, or Taiwan).

Small Business Enterprise means a business that meets the following criteria:

- a. 1) an independently owned and operated business; 2) not dominant in its field of operation; 3) together with affiliates is either:
 - **A service, construction, or non-manufacturer with 100 or fewer employees, and average annual gross receipts of ten million dollars (\$10,000,000) or less over the previous three years, or**
 - A manufacturer with 100 or fewer employees.
- b. Manufacturer means a business that is both of the following:
 - 1) Primarily engaged in the chemical or mechanical transformation of raw materials or processed substances into new products.
 - 2) Classified between Codes 311000 to 339000, inclusive, of the North American Industrial Classification System (NAICS) Manual published by the United States Office of Management and Budget, 2007 edition.

Small Business Joint Venture means that one party to the joint venture is a Small Business and owns at least 51 percent of the joint venture. In the case of a joint venture formed for a single project this means that the Small Business will receive at least 51 percent of the project dollars.

Women-Owned Business Enterprise means a business that meets all of the following criteria:

- is at least 51 percent owned by one or more women or in the case of any business whose stock is publicly held, at least 51 percent of the stock is owned by one or more women.
- is a business whose management and daily business operations are controlled or owned by one or more women.
- is a business which is a sole proprietorship, corporation, partnership, or a joint venture, with its primary headquarters office located in the United States, which is not a branch or subsidiary of a foreign corporation, foreign firm, or other foreign business.

Most Favored Customer as used in this policy means that the South Coast AQMD will receive at least as favorable pricing, warranties, conditions, benefits and terms as other customers or clients making similar purchases or receiving similar services.

**Request for Taxpayer
Identification Number and Certification**

Give Form to the
requester. Do not
send to the IRS.

▶ Go to www.irs.gov/FormW9 for instructions and the latest information.

Print or type. See Specific Instructions on page 3.	1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.	
	2 Business name/disregarded entity name, if different from above	
	3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only one of the following seven boxes. <input type="checkbox"/> Individual/sole proprietor or single-member LLC <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____ <small>Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is not disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.</small> <input type="checkbox"/> Other (see instructions) ▶ _____	4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3): Exempt payee code (if any) _____ Exemption from FATCA reporting code (if any) _____ <small>(Applies to accounts maintained outside the U.S.)</small>
	5 Address (number, street, and apt. or suite no.) See instructions.	Requester's name and address (optional)
6 City, state, and ZIP code		
7 List account number(s) here (optional)		

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Social security number

				-							
--	--	--	--	---	--	--	--	--	--	--	--

or

Employer identification number

				-							
--	--	--	--	---	--	--	--	--	--	--	--

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person (defined below); and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here	Signature of U.S. person ▶	Date ▶
------------------	----------------------------	--------

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to www.irs.gov/FormW9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following:

- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.

By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting*, later, for further information.

Note: If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien;
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States;
- An estate (other than a foreign estate); or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.

In the cases below, the following person must give Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States.

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity;
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust; and
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Pub. 515, *Withholding of Tax on Nonresident Aliens and Foreign Entities*).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items.

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

Backup Withholding

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 24% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the instructions for Part II for details),
3. The IRS tells the requester that you furnished an incorrect TIN,
4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or
5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code*, later, and the separate instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships*, earlier.

What is FATCA Reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code*, later, and the instructions for the Requester of Form W-9 for more information.

Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account; for example, if the grantor of a grantor trust dies.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account (other than an account maintained by a foreign financial institution (FFI)), list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9. If you are providing Form W-9 to an FFI to document a joint account, each holder of the account that is a U.S. person must provide a Form W-9.

a. **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

Note: ITIN applicant: Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040/1040A/1040EZ you filed with your application.

b. **Sole proprietor or single-member LLC.** Enter your individual name as shown on your 1040/1040A/1040EZ on line 1. You may enter your business, trade, or "doing business as" (DBA) name on line 2.

c. **Partnership, LLC that is not a single-member LLC, C corporation, or S corporation.** Enter the entity's name as shown on the entity's tax return on line 1 and any business, trade, or DBA name on line 2.

d. **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on line 2.

e. **Disregarded entity.** For U.S. federal tax purposes, an entity that is disregarded as an entity separate from its owner is treated as a "disregarded entity." See Regulations section 301.7701-2(c)(2)(iii). Enter the owner's name on line 1. The name of the entity entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner's name is required to be provided on line 1. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on line 2, "Business name/disregarded entity name." If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, you may enter it on line 2.

Line 3

Check the appropriate box on line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box on line 3.

IF the entity/person on line 1 is a(n) . . .	THEN check the box for . . .
• Corporation	Corporation
• Individual • Sole proprietorship, or • Single-member limited liability company (LLC) owned by an individual and disregarded for U.S. federal tax purposes.	Individual/sole proprietor or single-member LLC
• LLC treated as a partnership for U.S. federal tax purposes, • LLC that has filed Form 8832 or 2553 to be taxed as a corporation, or • LLC that is disregarded as an entity separate from its owner but the owner is another LLC that is not disregarded for U.S. federal tax purposes.	Limited liability company and enter the appropriate tax classification. (P= Partnership; C= C corporation; or S= S corporation)
• Partnership	Partnership
• Trust/estate	Trust/estate

Line 4, Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space on line 4 any code(s) that may apply to you.

Exempt payee code.

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys' fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space in line 4.

- 1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2)
- 2—The United States or any of its agencies or instrumentalities
- 3—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities
- 4—A foreign government or any of its political subdivisions, agencies, or instrumentalities
- 5—A corporation
- 6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or possession
- 7—A futures commission merchant registered with the Commodity Futures Trading Commission
- 8—A real estate investment trust
- 9—An entity registered at all times during the tax year under the Investment Company Act of 1940
- 10—A common trust fund operated by a bank under section 584(a)
- 11—A financial institution
- 12—A middleman known in the investment community as a nominee or custodian
- 13—A trust exempt from tax under section 664 or described in section 4947

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over \$600 required to be reported and direct sales over \$5,000 ¹	Generally, exempt payees 1 through 5 ²
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

¹ See Form 1099-MISC, Miscellaneous Income, and its instructions.

² However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

Exemption from FATCA reporting code. The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) written or printed on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)

B—The United States or any of its agencies or instrumentalities

C—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i)

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i)

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state

G—A real estate investment trust

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940

I—A common trust fund as defined in section 584(a)

J—A bank as defined in section 581

K—A broker

L—A trust exempt from tax under section 664 or described in section 4947(a)(1)

M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

Note: You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns. If this address differs from the one the requester already has on file, write NEW at the top. If a new address is provided, there is still a chance the old address will be used until the payor changes your address in their records.

Line 6

Enter your city, state, and ZIP code.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN.

If you are a single-member LLC that is disregarded as an entity separate from its owner, enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note: See *What Name and Number To Give the Requester*, later, for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at www.SSA.gov. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at www.irs.gov/Businesses and clicking on Employer Identification Number (EIN) under Starting a Business. Go to www.irs.gov/Forms to view, download, or print Form W-7 and/or Form SS-4. Or, you can go to www.irs.gov/OrderForms to place an order and have Form W-7 and/or SS-4 mailed to you within 10 business days.

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note: Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if item 1, 4, or 5 below indicates otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code*, earlier.

Signature requirements. Complete the certification as indicated in items 1 through 5 below.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), ABLE accounts (under section 529A), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account) other than an account maintained by an FFI	The actual owner of the account or, if combined funds, the first individual on the account ¹
3. Two or more U.S. persons (joint account maintained by an FFI)	Each holder of the account
4. Custodial account of a minor (Uniform Gift to Minors Act)	The minor ²
5. a. The usual revocable savings trust (grantor is also trustee) b. So-called trust account that is not a legal or valid trust under state law	The grantor-trustee ¹ The actual owner ¹
6. Sole proprietorship or disregarded entity owned by an individual	The owner ³
7. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulations section 1.671-4(e)(2)(i)(A))	The grantor ⁴
For this type of account:	Give name and EIN of:
8. Disregarded entity not owned by an individual	The owner
9. A valid trust, estate, or pension trust	Legal entity ⁴
10. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
11. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
12. Partnership or multi-member LLC	The partnership
13. A broker or registered nominee	The broker or nominee

For this type of account:	Give name and EIN of:
14. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
15. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulations section 1.671-4(b)(2)(i)(B))	The trust

¹ List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

² Circle the minor's name and furnish the minor's SSN.

³ You must show your individual name and you may also enter your business or DBA name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

⁴ List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships*, earlier.

*Note: The grantor also must provide a Form W-9 to trustee of trust.

Note: If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records From Identity Theft

Identity theft occurs when someone uses your personal information such as your name, SSN, or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Pub. 5027, Identity Theft Information for Taxpayers.

Victims of identity theft who are experiencing economic harm or a systemic problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes. Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to phishing@irs.gov. You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration (TIGTA) at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at spam@uce.gov or report them at www.ftc.gov/complaint. You can contact the FTC at www.ftc.gov/idtheft or 877-IDTHEFT (877-438-4338). If you have been the victim of identity theft, see www.IdentityTheft.gov and Pub. 5027.

Visit www.irs.gov/identitytheft to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.

2019 Withholding Exemption Certificate**590**

The payee completes this form and submits it to the withholding agent. The withholding agent keeps this form with their records.

Withholding Agent Information

Name _____

Payee Information

Name _____

 SSN or ITIN FEIN CA Corp. no. CA SOS file no.

Address (apt./sta., room, PO box, or PMB no.) _____

City (If you have a foreign address, see instructions.) _____

State _____

ZIP code _____

Exemption Reason**Check only one box.**

By checking the appropriate box below, the payee certifies the reason for the exemption from the California income tax withholding requirements on payment(s) made to the entity or individual.

 Individuals — Certification of Residency:

I am a resident of California and I reside at the address shown above. If I become a nonresident at any time, I will promptly notify the withholding agent. See instructions for General Information D, Definitions.

 Corporations:

The corporation has a permanent place of business in California at the address shown above or is qualified through the California Secretary of State (SOS) to do business in California. The corporation will file a California tax return. If this corporation ceases to have a permanent place of business in California or ceases to do any of the above, I will promptly notify the withholding agent. See instructions for General Information D, Definitions.

 Partnerships or Limited Liability Companies (LLCs):

The partnership or LLC has a permanent place of business in California at the address shown above or is registered with the California SOS, and is subject to the laws of California. The partnership or LLC will file a California tax return. If the partnership or LLC ceases to do any of the above, I will promptly inform the withholding agent. For withholding purposes, a limited liability partnership (LLP) is treated like any other partnership.

 Tax-Exempt Entities:

The entity is exempt from tax under California Revenue and Taxation Code (R&TC) Section 23701 _____ (Insert letter) or Internal Revenue Code Section 501(c) _____ (Insert number). If this entity ceases to be exempt from tax, I will promptly notify the withholding agent. Individuals cannot be tax-exempt entities.

 Insurance Companies, Individual Retirement Arrangements (IRAs), or Qualified Pension/Profit-Sharing Plans:

The entity is an insurance company, IRA, or a federally qualified pension or profit-sharing plan.

 California Trusts:

At least one trustee and one noncontingent beneficiary of the above-named trust is a California resident. The trust will file a California fiduciary tax return. If the trustee or noncontingent beneficiary becomes a nonresident at any time, I will promptly notify the withholding agent.

 Estates — Certification of Residency of Deceased Person:

I am the executor of the above-named person's estate or trust. The decedent was a California resident at the time of death. The estate will file a California fiduciary tax return.

 Nonmilitary Spouse of a Military Servicemember:

I am a nonmilitary spouse of a military servicemember and I meet the Military Spouse Residency Relief Act (MSRRA) requirements. See instructions for General Information E, MSRRA.

CERTIFICATE OF PAYEE: Payee must complete and sign below.To learn about your privacy rights, how we may use your information, and the consequences for not providing the requested information, go to ftb.ca.gov/forms and search for 1131. To request this notice by mail, call 800.852.5711.

Under penalties of perjury, I declare that I have examined the information on this form, including accompanying schedules and statements, and to the best of my knowledge and belief, it is true, correct, and complete. I further declare under penalties of perjury that if the facts upon which this form are based change, I will promptly notify the withholding agent.

Type or print payee's name and title _____ Telephone (____) _____

Payee's signature ► _____ Date _____

2017 Instructions for Form 590

Withholding Exemption Certificate

References in these instructions are to the California Revenue and Taxation Code (R&TC).

General Information

Registered Domestic Partners (RDP) – For purposes of California income tax, references to a spouse, husband, or wife also refer to a Registered Domestic Partner (RDP) unless otherwise specified. For more information on RDPs, get FTB Pub. 737, Tax Information for Registered Domestic Partners.

A Purpose

Use Form 590, Withholding Exemption Certificate, to certify an exemption from nonresident withholding.

Form 590 does not apply to payments of backup withholding. For more information, go to ftb.ca.gov and search for **backup withholding**.

Form 590 does not apply to payments for wages to employees. Wage withholding is administered by the California Employment Development Department (EDD). For more information, go to edd.ca.gov or call 888.745.3886.

Do not use Form 590 to certify an exemption from withholding if you are a **Seller of California real estate**. Sellers of California real estate use Form 593-C, Real Estate Withholding Certificate, to claim an exemption from the real estate withholding requirement.

The following are excluded from withholding and completing this form:

- The United States and any of its agencies or instrumentalities.
- A state, a possession of the United States, the District of Columbia, or any of its political subdivisions or instrumentalities.
- A foreign government or any of its political subdivisions, agencies, or instrumentalities.

B Income Subject to Withholding

California Revenue and Taxation Code (R&TC) Section 18662 requires withholding of income or franchise tax on payments of California source income made to nonresidents of California.

Withholding is required on the following, but is not limited to:

- Payments to nonresidents for services rendered in California.
- Distributions of California source income made to domestic nonresident partners, members, and S corporation shareholders and allocations of California source income made to foreign partners and members.
- Payments to nonresidents for rents if the payments are made in the course of the withholding agent's business.
- Payments to nonresidents for royalties from activities sourced to California.

- Distributions of California source income to nonresident beneficiaries from an estate or trust.
- Endorsement payments received for services performed in California.
- Prizes and winnings received by nonresidents for contests in California.

However, withholding is optional if the total payments of California source income are \$1,500 or less during the calendar year.

For more information on withholding get FTB Pub. 1017, Resident and Nonresident Withholding Guidelines. To get a withholding publication, see Additional Information.

C Who Certifies this Form

Form 590 is certified by the payee. California residents or entities exempt from the withholding requirement should complete Form 590 and submit it to the withholding agent before payment is made. The withholding agent is then relieved of the withholding requirements if the agent relies in good faith on a completed and signed Form 590 unless notified by the Franchise Tax Board (FTB) that the form should not be relied upon.

An incomplete certificate is invalid and the withholding agent should not accept it. If the withholding agent receives an incomplete certificate, the withholding agent is required to withhold tax on payments made to the payee until a valid certificate is received. In lieu of a completed exemption certificate, the withholding agent may accept a letter from the payee as a substitute explaining why they are not subject to withholding. The letter must contain all the information required on the certificate in similar language, including the under penalty of perjury statement and the payee's taxpayer identification number (TIN). The withholding agent must retain a copy of the certificate or substitute for at least five years after the last payment to which the certificate applies, and provide it upon request to the FTB.

If an entertainer (or the entertainer's business entity) is paid for a performance, the entertainer's information must be provided. **Do not** submit the entertainer's agent or promoter information.

The grantor of a grantor trust shall be treated as the payee for withholding purposes. Therefore, if the payee is a grantor trust and one or more of the grantors is a nonresident, withholding is required. If all of the grantors on the trust are residents, no withholding is required. Resident grantors can check the box on Form 590 labeled "Individuals — Certification of Residency."

D Definitions

For California nonwage withholding purposes, **nonresident** includes all of the following:

- Individuals who are not residents of California.
- Corporations not qualified through the California Secretary of State (CA SOS) to do business in California or having no permanent place of business in California.
- Partnerships or limited liability companies (LLCs) with no permanent place of business in California.
- Any trust without a resident grantor, beneficiary, or trustee, or estates where the decedent was not a California resident.

Foreign refers to non-U.S.

For more information about determining resident status, get FTB Pub. 1031, Guidelines for Determining Resident Status. Military servicemembers have special rules for residency. For more information, get FTB Pub. 1032, Tax Information for Military Personnel.

Permanent Place of Business:

A corporation has a permanent place of business in California if it is organized and existing under the laws of California or it has qualified through the CA SOS to transact intrastate business. A corporation that has not qualified to transact intrastate business (e.g., a corporation engaged exclusively in interstate commerce) will be considered as having a permanent place of business in California only if it maintains a permanent office in California that is permanently staffed by its employees.

E Military Spouse Residency Relief Act (MSRRA)

Generally, for tax purposes you are considered to maintain your existing residence or domicile. If a military servicemember and nonmilitary spouse have the same state of domicile, the MSRRA provides:

- A spouse shall not be deemed to have lost a residence or domicile in any state solely by reason of being absent to be with the servicemember serving in compliance with military orders.
- A spouse shall not be deemed to have acquired a residence or domicile in any other state solely by reason of being there to be with the servicemember serving in compliance with military orders.

Domicile is defined as the one place:

- Where you maintain a true, fixed, and permanent home.
- To which you intend to return whenever you are absent.

A military servicemember's nonmilitary spouse is considered a nonresident for tax purposes if the servicemember and spouse have the same domicile outside of California and the spouse is in California solely to be with the servicemember who is serving in compliance with Permanent Change of Station orders.

California may require nonmilitary spouses of military servicemembers to provide proof that they meet the criteria for California personal income tax exemption as set forth in the MSRRA.

Income of a military servicemember's nonmilitary spouse for services performed in California is not California source income subject to state tax if the spouse is in California to be with the servicemember serving in compliance with military orders, and the servicemember and spouse have the same domicile in a state other than California.

For additional information or assistance in determining whether the applicant meets the MSRRA requirements, get FTB Pub. 1032.

Specific Instructions

Payee Instructions

Enter the withholding agent's name.

Enter the payee's information, including the TIN and check the appropriate TIN box.

You must provide a valid TIN as requested on this form. The following are acceptable TINs: social security number (SSN); individual taxpayer identification number (ITIN); federal employer identification number (FEIN); California corporation number (CA Corp no.); or CA SOS file number.

Private Mail Box (PMB) – Include the PMB in the address field. Write "PMB" first, then the box number. Example: 111 Main Street PMB 123.

Foreign Address – Follow the country's practice for entering the city, county, province, state, country, and postal code, as applicable, in the appropriate boxes. **Do not** abbreviate the country name.

Exemption Reason – Check the box that reflects the reason why the payee is exempt from the California income tax withholding requirement.

Withholding Agent Instructions

Do not send this form to the FTB. The withholding agent retains this form for a minimum of five years or until the payee's status changes, and must provide this form to the FTB upon request.

The payee must notify the withholding agent if any of the following situations occur:

- The individual payee becomes a nonresident.
- The corporation ceases to have a permanent place of business in California or ceases to be qualified to do business in California.

- The partnership ceases to have a permanent place of business in California.
- The LLC ceases to have a permanent place of business in California.
- The tax-exempt entity loses its tax-exempt status.

If any of these situations occur, then withholding may be required. For more information, get Form 592, Resident and Nonresident Withholding Statement, Form 592-B, Resident and Nonresident Withholding Tax Statement, and Form 592-V, Payment Voucher for Resident and Nonresident Withholding.

Additional Information

Website: For more information go to ftb.ca.gov and search for **nonwage**.
MyFTB offers secure online tax account information and services. For more information and to register, go to ftb.ca.gov and search for **myftb**.

Telephone: 888.792.4900 or 916.845.4900, Withholding Services and Compliance phone service

Fax: 916.845.9512

Mail: WITHHOLDING SERVICES AND COMPLIANCE MS F182
FRANCHISE TAX BOARD
PO BOX 942867
SACRAMENTO CA 94267-0651

For questions unrelated to withholding, or to download, view, and print California tax forms and publications, or to access the TTY/TDD numbers, see the information below.

Internet and Telephone Assistance

Website: ftb.ca.gov

Telephone: 800.852.5711 from within the United States
916.845.6500 from outside the United States

TTY/TDD: 800.822.6268 for persons with hearing or speech impairments

Asistencia Por Internet y Teléfono

Sitio web: ftb.ca.gov

Teléfono: 800.852.5711 dentro de los Estados Unidos
916.845.6500 fuera de los Estados Unidos

TTY/TDD: 800.822.6268 para personas con discapacidades auditivas o de habla

Certification Regarding Debarment, Suspension, and Other Responsibility Matters

The prospective participant certifies to the best of its knowledge and belief that it and the principals:

- (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- (b) Have not within a three year period preceding this proposal been convicted of or had a civil judgement rendered against them or commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction: violation of Federal or State antitrust statute or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (b) of this certification; and
- (d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 USC Sec. 1001, a false statement may result in a fine of up to \$10,000 or imprisonment for up to 5 years, or both.

Typed Name & Title of Authorized Representative

Signature of Authorized Representative Date

I am unable to certify to the above statements. My explanation is attached.



CAMPAIGN CONTRIBUTIONS DISCLOSURE

In accordance with California law, bidders and contracting parties are required to disclose, at the time the application is filed, information relating to any campaign contributions made to South Coast Air Quality Management District (South Coast AQMD) Board Members or members/alternates of the MSRC, including: the name of the party making the contribution (which includes any parent, subsidiary or otherwise related business entity, as defined below), the amount of the contribution, and the date the contribution was made. 2 C.C.R. §18438.8(b).

California law prohibits a party, or an agent, from making campaign contributions to South Coast AQMD Governing Board Members or members/alternates of the Mobile Source Air Pollution Reduction Review Committee (MSRC) of more than \$250 while their contract or permit is pending before South Coast AQMD; and further prohibits a campaign contribution from being made for three (3) months following the date of the final decision by the Governing Board or the MSRC on a donor’s contract or permit. Gov’t Code §84308(d). For purposes of reaching the \$250 limit, the campaign contributions of the bidder or contractor plus contributions by its parents, affiliates, and related companies of the contractor or bidder are added together. 2 C.C.R. §18438.5.

In addition, South Coast AQMD Board Members or members/alternates of the MSRC must abstain from voting on a contract or permit if they have received a campaign contribution from a party or participant to the proceeding, or agent, totaling more than \$250 in the 12-month period prior to the consideration of the item by the Governing Board or the MSRC. Gov’t Code §84308(c).

The list of current South Coast AQMD Governing Board Members can be found at South Coast AQMD website (www.aqmd.gov). The list of current MSRC members/alternates can be found at the MSRC website (<http://www.cleantransportationfunding.org>).

SECTION I.

Contractor (Legal Name): _____

DBA, Name _____, County Filed in _____ Corporation, ID No. _____ LLC/LLP, ID No. _____
--

List any parent, subsidiaries, or otherwise affiliated business entities of Contractor:
(See definition below).

SECTION II.

Has Contractor and/or any parent, subsidiary, or affiliated company, or agent thereof, made a campaign contribution(s) totaling \$250 or more in the aggregate to a current member of the South Coast Air Quality Management Governing Board or member/alternate of the MSRC in the 12 months preceding the date of execution of this disclosure?

Yes No **If YES, complete Section II below and then sign and date the form. If NO, sign and date below. Include this form with your submittal.**

Campaign Contributions Disclosure, continued:

Name of Contributor _____

Governing Board Member or MSRC Member/Alternate	Amount of Contribution	Date of Contribution
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Name of Contributor _____

Governing Board Member or MSRC Member/Alternate	Amount of Contribution	Date of Contribution
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Name of Contributor _____

Governing Board Member or MSRC Member/Alternate	Amount of Contribution	Date of Contribution
---	------------------------	----------------------

Name of Contributor _____

Governing Board Member or MSRC Member/Alternate	Amount of Contribution	Date of Contribution
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I declare the foregoing disclosures to be true and correct.

By: _____

Title: _____

Date: _____

DEFINITIONS

Parent, Subsidiary, or Otherwise Related Business Entity (2 Cal. Code of Regs., §18703.1(d).)

- (1) Parent subsidiary. A parent subsidiary relationship exists when one corporation directly or indirectly owns shares possessing more than 50 percent of the voting power of another corporation.
- (2) Otherwise related business entity. Business entities, including corporations, partnerships, joint ventures and any other organizations and enterprises operated for profit, which do not have a parent subsidiary relationship are otherwise related if any one of the following three tests is met:
 - (A) One business entity has a controlling ownership interest in the other business entity.
 - (B) There is shared management and control between the entities. In determining whether there is shared management and control, consideration should be given to the following factors:
 - (i) The same person or substantially the same person owns and manages the two entities;
 - (ii) There are common or commingled funds or assets;
 - (iii) The business entities share the use of the same offices or employees, or otherwise share activities, resources or personnel on a regular basis;
 - (iv) There is otherwise a regular and close working relationship between the entities; or
 - (C) A controlling owner (50% or greater interest as a shareholder or as a general partner) in one entity also is a controlling owner in the other entity.



South Coast Air Quality Management District

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

Direct Deposit Authorization

STEP 1: Please check all the appropriate boxes

- | | |
|--|--|
| <input type="checkbox"/> Individual (Employee, Governing Board Member) | <input type="checkbox"/> New Request |
| <input type="checkbox"/> Vendor/Contractor | <input type="checkbox"/> Cancel Direct Deposit |
| <input type="checkbox"/> Changed Information | |

STEP 2: Payee Information

Last Name		First Name		Middle Initial	Title
Vendor/Contractor Business Name (if applicable)					
Address				Apartment or P.O. Box Number	
City			State	Zip	Country
Taxpayer ID Number		Telephone Number			Email Address

Authorization

- I authorize South Coast Air Quality Management District (South Coast AQMD) to direct deposit funds to my account in the financial institution as indicated below. I understand that the authorization may be rejected or discontinued by South Coast AQMD at any time. If any of the above information changes, I will promptly complete a new authorization agreement. If the direct deposit is not stopped before closing an account, funds payable to me will be returned to South Coast AQMD for distribution. This will delay my payment.
- This authorization remains in effect until South Coast AQMD receives written notification of changes or cancellation from you.
- I hereby release and hold harmless South Coast AQMD for any claims or liability to pay for any losses or costs related to insufficient fund transactions that result from failure within the Automated Clearing House network to correctly and timely deposit monies into my account.

STEP 3:

You must verify that your bank is a member of an Automated Clearing House (ACH). Failure to do so could delay the processing of your payment. You must attach a voided check or have your bank complete the bank information and the account holder must sign below.

To be Completed by your Bank

Staple Voided Check Here	Name of Bank/Institution					
	Account Holder Name(s)					
	<input type="checkbox"/> Saving <input type="checkbox"/> Checking		Account Number		Routing Number	
	Bank Representative Printed Name			Bank Representative Signature		Date
	ACCOUNT HOLDER SIGNATURE:					Date

For South Coast AQMD Use Only

Input By _____

Date _____

BOARD MEETING DATE: March 6, 2020 AGENDA NO. 4

PROPOSAL: Recognize Revenue and Transfer and Appropriate Funds for Volkswagen Environmental Mitigation Trust

SYNOPSIS: In November 2018, the Board recognized \$150 million in revenue from CARB for the Volkswagen (VW) Environmental Mitigation Trust and authorized the transfer of up to 10 percent into the General Fund to reimburse administrative costs for this program. Subsequently, CARB and the South Coast AQMD executed a project agreement for this program totaling \$165 million, which included \$150 million for projects and \$15 million for administrative costs. These actions are to recognize up to \$15 million in additional revenue from CARB, transfer \$520,733 into the General Fund to reimburse FY 2018-19 Salaries & Employee Benefits and Service & Supplies, and transfer and appropriate up to \$898,000 into Science & Technology Advancement's and Information Management's FYs 2019-20 and 2020-21 Budgets, Professional and Special Services and Capital Outlays Major Objects, for administrative expenses to implement the VW Mitigation Program.

COMMITTEE: Technology, February 21, 2020; Less than a quorum was present; a concurrence of the staff recommendation will be forwarded to the Board

RECOMMENDED ACTIONS:

1. Recognize revenue, upon receipt, up to \$15,000,000 from CARB (through Wilmington Trust, N.A., Grant ID number G18-VWM-04) into the VW Mitigation Special Revenue Fund (79) to administer and implement two project funding categories identified in CARB's Beneficiary Mitigation Plan for the VW Environmental Mitigation Trust;
2. Transfer \$520,733 from the VW Mitigation Special Revenue Fund (79) into the General Fund to reimburse Salaries & Employee Benefits and Service & Supplies Expense incurred in FY 2018-19 for initial administration of the VW Mitigation Program (see Tables 1 and 2); and

3. Transfer and appropriate up to \$898,000 from the VW Mitigation Special Revenue Fund (79) into Science & Technology Advancement's and/or Information Management's FYs 2019-20 and/or 2020-21 Budgets, Professional and Special Services and Capital Outlays Major Objects, for administrative expenses to implement the VW Mitigation Program (see Tables 3 and 4).

Wayne Nastri
Executive Officer

MMM:NB:VW/LCM:PG:DAH

Background

The South Coast AQMD is administering two of five categories for the Volkswagen (VW) Environmental Mitigation Trust on a statewide basis. In November 2018, the Board recognized, upon receipt, up to \$150 million in revenue from CARB for the Volkswagen (VW) Environmental Mitigation Trust and authorized the transfer up to 10 percent into the General Fund to reimburse administrative costs for this program. In December 2018, as part of mid-year budget adjustments, the Board also approved five new positions to support the initial increased workload under this program.

Subsequently, CARB and the South Coast AQMD executed a project agreement for this program totaling \$165 million, which included \$150 million for projects and \$15 million for administrative costs. In November 2019, the first disbursement of the funds from the VW Trust was received totaling \$9.6 million, comprised of \$6.75 million in project funds and \$2.85 million in administrative funds. Future revenue installments will be received based on parameters established in the grant. At this time, there is a need to recognize the additional revenue, reimburse costs incurred after CARB's approval (on May 28, 2018) of the Beneficiary Mitigation Plan as allowed by the project agreement, and appropriate VW administrative funds into budget accounts to continue carrying out day-to-day functions.

Proposal

These actions are to recognize the additional revenue, upon receipt, up to \$15,000,000 from CARB into the VW Mitigation Special Revenue Fund (79) to administer and implement two project funding categories as well as to transfer \$520,733 from the VW Mitigation Special Revenue Fund (79) into the General Fund to reimburse Salaries & Employee Benefits and Service and Supplies expenditures incurred in FY 2018-19 before revenue was received (see Tables 1 and 2).

Staff recommends appropriating funds into Science & Technology Advancement's (STA) and Information Management's (IM) budgets for FYs 2019-20 and 2021-21 to capture costs already incurred this fiscal year and allocate funds for projected costs

through the end of the next fiscal year, after which funding will be appropriated as part of the annual budget process. This action is to transfer and appropriate up to \$898,000 from the VW Mitigation Special Revenue Fund (79) into STA's and/or IM's FYs 2019-20 and 2020-21 Budgets, Professional and Special Services and Capital Outlays Major Objects, for administrative expenses to implement the VW Mitigation Program. This transfer and appropriation will support day-to-day program needs without impacting either division's operational budgets. It also includes some one-time expenses, such as development of a web landing page per CARB requirements, procurement of licenses to build web applications and servers, and development of a grant management system (GMS) for submission and evaluation of VW applications. Other program specific expenses include contracting for technical assistance hosting and promoting webinars to assist eligible applicants in applying for funding. Tables 3 and 4 outline these estimated expenditures.

Benefits to South Coast AQMD

These funds will allow for successful administration through FY 2020-21 of the two project funding categories assigned by CARB to the South Coast AQMD on a statewide basis. The projects to be funded are intended to mitigate excess NOx emissions caused by VW vehicles. Over the ten-year life of this program, CARB estimates a reduction of 10,000 tons of NOx emissions. Co-benefits will also be achieved, reducing criteria air pollutants, toxic contaminants and GHGs. At least 50 percent of the funds are expected to benefit disadvantaged and low-income communities throughout the state. The program will also accelerate deployment of new commercially available near-zero and zero emissions heavy-duty truck technologies, a key strategy to reducing NOx emissions identified in the 2016 AQMP. Based on the overall statewide program, a portion of the benefits listed above will occur in the South Coast AQMD.

Resource Impacts

There are sufficient funds in the VW Mitigation Special Revenue Fund (79). The transfer to reimburse FY 2018-19 Salaries & Employee Benefits and Service and Supplies Expense will not exceed \$520,733. The transfer and appropriation to the FYs 2019-20 and 2020-21 Budgets, Capital Outlays and Professional and Special Services Major Objects, will not exceed \$898,000. Any funds not expended after the FY 2020-21 budget cycle will be returned to the VW Mitigation Special Revenue Fund (79). The budgets to continue implementation of the South Coast AQMD's VW Mitigation Program in future years will be included as part of the annual budget process.

Attachments

Table 1: FY 2018-19 Expenses Incurred for Salaries & Employee Benefits to Implement VW Mitigation Program

Table 2: FY 2018-19 Expenses Incurred for Services & Supplies to Implement VW Mitigation Program

- Table 3: Proposed VW Mitigation Program Administrative Expenditures for STA's FYs 2019-20 and/or 2020-21
- Table 4: Proposed VW Mitigation Program Administrative Expenditures for IM's FYs 2019-20 and/or 2020-21

Table 1
FY 2018-19 Expenses Incurred for Salaries & Employee Benefits
to Implement VW Mitigation Program

Account Description	FTEs	Program Code	Incurred Expenses
Salaries & Employee Benefits Major Object:			
VW Program Development	0.02	04827	\$5,935
VW Program Development	0.01	08827	2,548
VW Program Development	0.41	27827	130,799
VW Program Development	1.06	44827	371,674
Total Salaries & Employee Benefits Major Object:	1.5		\$510,956

Salaries & Employee Benefits were not included within the FY 2018-19 Budget or subsequent mid-year adjustments because the revenue was not received until after FY 2018-19 books were closed.

Table 2
FY 2018-19 Expenses Incurred for Services & Supplies
to Implement VW Mitigation Program

Account Description	Account Number	Program Code	Incurred Expenses
Services & Supplies Major Object:			
Professional & Special Services	67450	44827	\$4,371
Auto Mileage	67700	44827	297
Travel	67800	44827	2,415
Travel Related Air Fare	67805	44827	490
Travel Related Lodging	67810	44827	2,176
Postage	68060	44827	23
Misc. Expenses	69700	44827	5
Total Services & Supplies Major Object:			\$9,777

Table 3
Proposed VW Mitigation Program Administrative Expenditures
for STA's FYs 2019-20 and/or 2020-21

Account Description	Account Number	Program Code	Estimated Expenditures
Services & Supplies Major Object:			
Rents & Leases	67300	44827	\$1,200
Professional & Special Services: Up to 4 webinars plus technical assistance & misc. professional services	67450	44827	100,000
Maintenance of Equipment	67600	44827	90,000
Auto Mileage	67700	44827	1,500
Travel	67800	44827	10,000
Postage	68060	44827	9,000
Office Expense	68100	44827	1,500
Miscellaneous	69700	44827	25,000
Total Services & Supplies Major Object:			\$238,200
Capital Outlays Major Object:			
Develop Calculation Model in Support of GMS	77000	44827	\$25,000
Total Capital Outlays Major Object:			\$25,000
Total			\$263,200

Expenditures may be appropriated in either Services & Supplies Major Object or Capital Outlays Major Object, as warranted.

Appropriations not expended in FY 2019-20 will be carried over into FY 2020-21, after which funding will be appropriated as part of the annual budget process.

Table 4
Proposed VW Mitigation Program Administrative Expenditures
for IM's FYs 2019-20 and/or 2020-21

Account Description	Account Number	Program Code	Estimated Expenditures
Services & Supplies Major Object:			
Professional & Special Services: Develop Web Landing Page per CARB Requirements	67450	27827	\$22,800
Office Expense: Host Web Application Server and Procure Windows 2019 Data Center License for Building Web Application Servers & Procure SQL Server Standard Core Edition for Building Database Servers	68100	27827	122,000
Total Services & Supplies Major Object:			\$144,800
Capital Outlays Major Object:			
Develop Grant Management System (GMS)	77000	27827	\$400,000
Enhancements to GMS	77000	27827	90,000
Total Capital Outlays Major Object:			\$490,000
Total			\$634,800

Expenditures may be appropriated in either Services & Supplies Major Object or Capital Outlays Major Object, as warranted.

Appropriations not expended in FY 2019-20 will be carried over into FY 2020-21, after which funding will be appropriated as part of the annual budget process.

BOARD MEETING DATE: March 6, 2020

AGENDA NO. 5

PROPOSAL: Execute Contract to Conduct Airborne Measurements of NO_x Emissions in the South Coast Air Basin

SYNOPSIS: Emission inventories are a critical component of South Coast AQMD's air quality modeling and control strategy development. The University of California, Berkeley (UC Berkeley) has proposed to conduct airborne flux measurements by aircraft, offering a robust method to evaluate NO_x emission inventories. CARB has committed \$700,000 for the parallel measurement of VOC fluxes during this field effort. This action is to execute a contract with the UC Berkeley to conduct airborne measurements of NO_x emissions in the South Coast Air Basin at a cost not to exceed \$300,000 from the Clean Fuels Program Fund (31).

COMMITTEE: Technology, February 21, 2020; Less than a quorum was present; a concurrence of the staff recommendation will be forwarded to the Board

RECOMMENDED ACTION:

Authorize the Chairman to execute a contract with The Regents of the University of California, on behalf of its Berkeley Campus, to conduct airborne measurements of NO_x emissions in the South Coast Air Basin in an amount not to exceed \$300,000 from the Clean Fuels Program Fund (31).

Wayne Natri
Executive Officer

PF:SR:ZP:SML

Background

Emission inventories are critical components of South Coast AQMD's air quality modeling and control strategy development to improve air quality in the South Coast Air Basin (Basin). Volatile organic compounds (VOCs), nitrogen oxides (NO_x) and diesel particulate matter (PM) from various sources such as area/consumer products, mobile sources, diesel combustion sources and vegetation contribute to ozone and PM pollution.

During development of the 2016 AQMP, uncertainties in emissions inventory and air quality modeling were one of the main comments raised by stakeholders. While the emissions inventory and regional modeling employed in the 2016 AQMP were state-of-the science, emissions inventories require constant improvement and updates. The University of California, Berkeley (UC Berkeley) has proposed to conduct airborne measurements by aircraft, offering a robust method to evaluate these inventories. CARB has committed \$700,000 for the parallel measurement of VOC emissions during this field effort.

Proposal

UC Berkeley will conduct airborne NO_x and VOC emissions measurements over the Basin in the summer of 2021 to evaluate NO_x emissions and over 100 VOC species during approximately 40 flight hours. The instrumentation on-board the Naval Postgraduate School's Twin Otter aircraft represents a substantial improvement compared to previous airborne emission measurements conducted over California. UC Berkeley will plan the flights, perform the measurements, analyze the data and prepare a final report. UC Berkeley will work in close collaboration with CARB and South Coast AQMD staff during the entire process to ensure the data collected is suitable for the evaluation of emission inventories.

Sole Source Justification

Section VIII.B.2 of the Procurement Policy and Procedure identifies four major provisions under which a sole source award may be justified. This request for a sole source award is made under provisions B.2.c. and B.2.d. Specifically, provision B.2.c.(1): The desired services are available from only the sole-source based upon the unique experience and capabilities of the proposed contractor or contractor team. And provision B.2.d.(8): Other circumstances exist which in the determination of the Executive Officer requirement such waiver in the best interests of the AQMD, including research and development efforts with educational institutions and nonprofit organizations. Dr. Cohen and his team at UC Berkeley possess the unique knowledge and instrumental capabilities needed for this project. Dr. Cohen's group has published extensively in the field of NO_x observations and associated air quality impacts and has experience conducting similar airborne measurements elsewhere.

Benefits to South Coast AQMD

This proposed project will provide a unique set of NO_x and VOC data that can improve the emissions inventories to be used in the upcoming 2022 AQMP. The data will assist in understanding of the full photochemical spectrum involved in ozone production in the Basin. Additionally, the knowledge to be acquired through this project will assist in identifying pathways in the formation of VOC and NO_x and the benefits of using clean fuels to lower these emissions. Emissions studies are included in the *Technology Advancement Office Clean Fuels Program 2019 Plan Update* under the category of "Fuel/Emissions Studies."

Resource Impacts

The contract with UC Berkeley will not exceed \$300,000 from the Clean Fuels Program Fund (31).

Sufficient funds are available in the Clean Fuels Program Fund (31), which was established as a special revenue fund resulting from the state-mandated Clean Fuels Program. The Clean Fuels Program, under Health and Safety Code Sections 40448.5 and 40512 and Vehicle Code Section 9250.11, establishes mechanisms to collect revenues from mobile sources to support projects to increase the utilization of clean fuels, including the development of the necessary advanced enabling technologies. Funds collected from motor vehicles are restricted, by statute, to be used for projects and program activities related to mobile sources that support the objectives of the Clean Fuels Program.

BOARD MEETING DATE: March 6, 2020

AGENDA NO. 6

PROPOSAL: Recognize Revenue, Amend Contract for Heavy-Duty Truck Replacements and Reimburse General Fund for Administrative Costs

SYNOPSIS: In November 2019, South Coast AQMD received approval of a revised project scope for a FY 18 U.S. EPA Diesel Emissions Reductions Act (DERA) grant previously awarded. The approved project scope will allow for replacement of older on-road heavy-duty diesel trucks with new near-zero emissions natural gas-powered trucks in non-drayage applications. Since Proposition 1B eligible projects qualify for these DERA funds, staff proposes to award the funds to a previously approved Proposition 1B project. These actions are to recognize \$1,601,523 in revenue from U.S. EPA DERA into the Advanced Technology Outreach and Education Fund (17), amend a contract for heavy-duty truck replacements adding DERA funds to reduce Proposition 1B-Goods Movement funding, and reimburse the General Fund for administrative costs up to \$99,444 to implement the project.

COMMITTEE: Technology, February 21, 2020; Less than a quorum was present; a concurrence of the staff recommendation will be forwarded to Board

RECOMMENDED ACTIONS:

1. Recognize revenue, upon receipt, up to \$1,601,523 from a U.S. EPA FY 18 DERA grant into the Advanced Technology, Outreach and Education Fund (17) to replace on-road heavy-duty diesel trucks with near-zero emissions natural gas heavy-duty trucks;
2. Amend a contract with Ecology Auto Parts, Inc., adding up to \$1,502,079 from the Advanced Technology, Outreach and Education Fund (17) to utilize DERA funds, thereby reducing the Proposition 1B funding for the Ecology vehicle replacement project; and

3. Reimburse the General Fund up to \$99,444 from the Advanced Technology, Outreach and Education Fund (17) to implement the DERA award.

Wayne Natri
Executive Officer

MMM:NB:JI:PMB

Background

In September 2018, the South Coast AQMD was awarded \$1,601,523 in FY 2018 U.S. EPA Diesel Emissions Reduction Act (DERA) funds for a heavy-duty diesel truck replacement project, replacing older diesel drayage trucks with new natural gas trucks. Subsequently, in November 2019, the South Coast AQMD and U.S. EPA agreed to a project scope change allowing replacement of non-drayage trucks instead, without a change in the award amount. The new project scope will replace older (Model Years 2000-2003) non-drayage on-road heavy-duty diesel tractor-trailer trucks (HDDTs) with new near-zero-emissions (NZE) natural gas-powered tractor-trailer trucks in non-drayage applications. Since Proposition 1B eligible projects qualify for these DERA funds, staff proposes to award the funds to a previously approved competitively awarded Proposition 1B project. In 2018, following Board approval, a Proposition 1B contract with Ecology Auto Parts, Inc., (Ecology) was executed for the replacement of 47 older HDDTs with 47 new NZE natural gas-powered heavy-duty trucks for a total award of \$4,700,000 or \$100,000 per vehicle replacement. In October 2019, the Board also issued another Proposition 1B-Goods Movement Program Announcement to solicit additional projects to utilize turnback funds until all funds are exhausted.

Proposal

The actions are to recognize up to \$1,601,523 in FY 18 U.S. EPA DERA funds into the Advanced Technology, Outreach and Education Fund (17) and amend a contract with Ecology to add \$1,502,079 in DERA project funds and reduce \$1,502,079 in Proposition 1B funds, thereby maintaining the original \$100,000 per vehicle award under Proposition 1B. The proposed cost-share methodology is as follows: DERA Grant to fund up to 35 percent of the cost of the new NZE truck; Proposition 1B to fund the remaining balance of the \$100,000 award; and Ecology to fund the remaining cost of the vehicle. This cost-share methodology will be applied to as many of the 47 Proposition 1B qualifying vehicles that also meet DERA funding requirements.

The DERA Grant will supplement the Proposition 1B program and will enable the Proposition 1B funds to be reallocated to other eligible applications that have been received under the October 2019 Program Announcement, thereby reducing additional mobile source emissions and possibly leveraging other funds.

This action is to also reimburse the General Fund up to \$99,444 from the Advanced Technology, Outreach and Education Fund (17) to implement the DERA project.

Benefits to South Coast AQMD

Successful implementation of these vehicle replacements will permanently remove higher emitting on-road heavy-duty diesel trucks and deploy new ultra-low NOx emissions natural gas trucks certified to CARB's optional NOx standard of 0.02g-NOx/bhp-hr, which is 90% lower than the current standard. The accelerated replacement of diesel trucks with near-zero emissions natural gas trucks will help realize immediate emission reductions in the Basin.

Resource Impacts

The FY 18 DERA funds totaling \$1,601,523 will be recognized into the Advanced Technology, Outreach and Education Fund (17). Of the \$1,601,523 award, \$1,502,079 is for project costs and \$99,444 is for administrative costs. The DERA funding in the contract with Ecology will not exceed \$1,502,079.

With U.S. EPA's concurrence, the \$1,601,523 in FY 18 DERA funds will be used to supplement the Proposition 1B funds for this project, enabling the Proposition 1B funds to be reallocated to other projects, further reducing mobile source emissions and possibly leveraging other funds. The total project cost depends on the number of trucks replaced and the price per each truck. Funding for the project comes from the FY 18 DERA Grant, Proposition 1B and Ecology.

BOARD MEETING DATE: March 6, 2020

AGENDA NO. 7

PROPOSAL: Execute Contract for Independent Audit Services for FYs Ending June 30, 2020, 2021 and 2022

SYNOPSIS: On November 1, 2019, the Board approved release of an RFP for independent financial audit services. Two proposals were submitted to the Administrative Committee for consideration at its February 14, 2020 meeting. After the Committee interviewed representatives of each of the firms, BCA Watson Rice, LLP was selected to be recommended to the full Board.

COMMITTEE: Administrative, February 14, 2020; Recommended for Approval

RECOMMENDED ACTION:

Authorize the Chairman to execute a contract with BCA Watson Rice, LLP for performance of the South Coast AQMD's Financial Audits for FYs ending June 30, 2020, 2021 and 2022 in an amount not to exceed \$161,901.

Wayne Natri
Executive Officer

SJ:tm

Background

A financial audit is performed annually on the South Coast AQMD in compliance with the California Government Code and audit requirements for federal awards under the Uniform Guidance.* This audit is performed by independent Certified Public Accountants, and their reports are addressed to the Board. The Board approved release of an RFP for independent financial services last November.

Outreach

In accordance with South Coast AQMD's Procurement Policy and Procedure, a public notice advertising the RFP and inviting bids was published in the Los Angeles Times, the Orange County Register, the San Bernardino Sun, and Riverside County's Press Enterprise newspapers to leverage the most cost-effective method of outreach to the South Coast Basin.

* Office of Management and Budget – Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards at 2 CFR 200, is referred to as the Uniform Guidance.

Additionally, potential bidders may have been notified utilizing South Coast AQMD’s own electronic listing of certified minority vendors. Notice of the RFP was emailed to the Black and Latino Legislative Caucuses and various minority chambers of commerce and business associations and placed on the Internet at South Coast AQMD’s website (<http://www.aqmd.gov>) where it could be viewed by making the selection “Grants & Bids.”

Bid Evaluation

Forty-eight copies of RFP #P2020-04 were sent out to firms who have requested to be notified of South Coast AQMD procurement for auditing services. Two proposals were received prior to the bid closing at 1:00 p.m. on January 9, 2020.

The evaluation panel consisted of a retired South Coast AQMD Chief Financial Officer and two South Coast AQMD staff: a Senior Deputy District Counsel and a Senior Accountant. The panel’s composition was one Middle Eastern and two Caucasians, two males and one female. The evaluation results for the two bidders that qualified are below:

BIDDER	ANNUAL AUDIT HOURS	BID AMOUNT 3 YEARS	TECHNICAL SCORE	NOT ENGAGED WITH SOUTH COAST AQMD IN LAST 3 YEARS	LOCAL FIRM	TOTAL POINTS *	OVERALL RANK
BCA Watson Rice, LLP **	488	\$161,901	66	**	√	113	1
Simpson & Simpson CPAs	460	\$173,090	67	√	√	105	2

* Total maximum points of 127
 ** Current South Coast AQMD auditors

The selection criteria used to rank the proposals included responsiveness to the RFP; technical expertise; qualifications and experience; past performance; cost; SB/SBJV/DVBE/DVBEJV/DVBE/SB subcontractors/local business designation (non-EPA). Based on the panel’s assessment of the criteria, the top two bidders were submitted to the Administrative Committee for consideration and recommendation to the full Board. The Committee recommended BCA Watson Rice, LLP.

Resource Impacts

The maximum audit costs, including out-of-pocket expenses, are \$52,640, \$53,956 and \$55,305 for FYs ending June 30, 2020, 2021 and 2022, respectively. Funding will be requested through the annual budget process.



BOARD MEETING DATE: March 6, 2020

AGENDA NO. 8

PROPOSAL: Approve South Coast AQMD Annual Investment Policy and Delegation of Authority to Appointed Treasurer to Invest South Coast AQMD Funds

SYNOPSIS: The South Coast AQMD adopts an annual investment policy which, if done, must be considered at a public meeting of the Board. State law additionally requires South Coast AQMD to annually renew its delegation of authority to its treasurer to invest or to reinvest funds of the local agency. This action is to approve the Annual Investment Policy and the Resolution to renew delegation of authority to the Los Angeles County Treasurer to invest and reinvest South Coast AQMD funds.

COMMITTEE: Investment Oversight, February 21, 2020; Recommended for Approval

RECOMMENDED ACTIONS:

1. Approve the attached Annual Investment Policy, and
2. Adopt the attached Resolution to renew delegation of authority to the Los Angeles County Treasurer to invest and reinvest South Coast AQMD funds.

Wayne Natri
Executive Officer

SJ:tm

Background

State law provides that the Chief Fiscal Officer of a local agency may annually provide to any investment oversight committee and local legislative body an investment policy that the legislative body shall consider at a public meeting. (Government Code Section 53646(a)(2).) In addition, state law (Government Code Section 53607) requires that a local agency's legislative body annually renew its delegation of authority to its Treasurer to invest or to reinvest funds of the local agency.

In April 12, 1996, the Board approved a recommendation to minimize South Coast AQMD investments in the Los Angeles County Pooled Surplus Investment Portfolio (PSIP), by directing staff to work with the Los Angeles County Treasurer (South Coast AQMD's Treasurer) to make specific investments on behalf of South Coast AQMD. This change required the development of an annual statement of investment policy specific for South Coast AQMD.

South Coast AQMD's investment consultant, working with staff and the Los Angeles County Treasurer's office, developed the attached statement of investment policy. This policy, which is reviewed annually for possible changes, sets forth the investment guidelines for South Coast AQMD with the objective of ensuring that funds are prudently invested to preserve principal and provide necessary liquidity while earning a market average rate of return.

Proposal

The Investment Policy was substantially revised in 2013, including updating credit requirements, revising maturity limits, and clarifying diversification guidelines. Minor updates have been made since that time to ensure compliance with changes to the California Government Code. There are revisions being recommended for the Investment Policy, which include: 1) a change of title of the Assistant Deputy Executive Officer to Chief Financial Officer to match organizational changes in July 2019; 2) Change to South Coast AQMD to reference SCAQMD; and 3) changes to the *Implementation* to be consistent with the Los Angeles County's "Delegation of Authority to Invest and Annual Adoption of the Treasurer and Tax Collector Investment Policy".

The County of Los Angeles has provided excellent treasury management services to the South Coast AQMD since inception of the District. These services include providing banking services, processing electronic payments to South Coast AQMD, and the investment of the South Coast AQMD's cash balances. Staff is recommending that the South Coast AQMD continue with the services provided by the Los Angeles County Treasurer. Staff further recommends adoption of the Resolution delegating authority to the Los Angeles County Treasurer to invest or reinvest funds of the South Coast AQMD, or to sell or exchange securities so purchased.

Resource Impacts

Costs associated with South Coast AQMD treasury management operations are included in the FY 2019-20 Budget and will be included in the FY 2020-21 Budget.

Attachments

1. South Coast AQMD Annual Investment Policy
2. Resolution - Delegation of Authority to Appoint L.A. County Treasurer

South Coast Air Quality Management District

Annual Investment Policy

I. PURPOSE

This Annual Investment Policy (the “Policy”) sets forth the investment guidelines for all general, special revenue, trust, agency and enterprise funds of the South Coast Air Quality Management District (South Coast AQMD). The objective 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.

South Coast AQMD funds deposited with the Los Angeles County Treasurer may only be invested in the Los Angeles County Pooled Surplus Investment Portfolio or in Special Purpose Investments as authorized by this Policy. The South Coast AQMD Annual Investment Policy conforms to the California Government Code (the Code) as well as customary standards of prudent investment management. Irrespective of these Policy provisions, should the provisions of the Code be or become more restrictive than those contained herein, such provisions will be considered immediately incorporated in this Policy and adhered to.

II. SCOPE

It is intended that this Policy cover all funds (except those funds invested in the two retirement systems covering South Coast AQMD employees and 457 deferred compensation plan funds) and investment activities under the direction of the South Coast AQMD and deposited with the Los Angeles County Treasurer.

The investment of bond proceeds will be governed by state law and the permitted investment provisions of relevant bond documents.

III. OBJECTIVES

The objectives of this Annual Investment Policy, in priority order, are SAFETY OF PRINCIPAL, LIQUIDITY, AND MARKET RATE OF RETURN.

1. Safety of Principal. The primary objective of South Coast AQMD is to reduce credit risk and interest rate risk to a level that is consistent with safe and prudent investment management. Credit risk is the risk of default or the inability of a debt issuer to make interest or principal payments when due. Credit risk is minimized by investing in only permitted investments and diversifying the portfolio according to this Annual Investment Policy so that no one type of issuer or issue will have a disproportionate impact on the portfolio. Interest

rate risk is associated with price volatility introduced by extending the maturity of instruments purchased. Interest rate risk is controlled by limiting the maturity exposure to acceptable levels.

2. Liquidity. South Coast AQMD funds will be invested to ensure that normal cash needs and scheduled extraordinary cash needs can be met. Cash flow forecasting will be used to determine the current and projected future needs of South Coast AQMD and the ability of South Coast AQMD to make Special Purpose Investments. South Coast AQMD shall invest funds in instruments for which there is a secondary market and which offer the flexibility to be easily sold at any time with minimal risk of loss of either the principal or interest based upon then prevailing interest rates.
3. Market Rate of Return. South Coast AQMD's funds shall be invested to attain a market average rate of return through economic cycles consistent with maintaining risk at a prudent level.

These objectives are to be achieved in part through the diversification of South Coast AQMD investments among the Los Angeles County Pooled Surplus Investment Portfolio and Special Purpose Investments. The combination of the Pooled Surplus Investment Portfolio and the Special Purpose Investment of South Coast AQMD funds in the State of California Local Agency Investment Fund will provide significant diversification, safety of principal and liquidity for the programs of the South Coast AQMD. Other Special Purpose Investments in an South Coast AQMD separate account will experience market price changes due to interest rate risk consistent with longer maturity investments that are permitted by this policy.

IV. RESPONSIBILITIES

The Governing Board. The South Coast AQMD Governing Board is responsible for establishing the Annual Investment Policy and ensuring investments are made in compliance with this Policy. This Policy shall be reviewed annually by the Governing Board at a public meeting pursuant to Section 53646(g) of the California Government Code. The Los Angeles County Treasurer has been appointed Treasurer of South Coast AQMD. The Treasurer shall be appointed at least annually by the South Coast AQMD Governing Board.

The Treasurer. The Treasurer is responsible for making investments and for compliance with this Policy pursuant to the delegation of authority to invest funds or to sell or exchange securities made in accordance with Code Section 53607. The Treasurer shall submit a monthly report of investment transactions to the South Coast AQMD Governing Board. If the South Coast AQMD Governing Board appoints

as Treasurer someone other than the Los Angeles County Treasurer, the new Treasurer shall be responsible for making investments and for compliance with this Policy or such other Policy which may be adopted by the Governing Board at that time.

~~The Assistant Deputy Executive Officer of Finance~~Chief Financial Officer. The ~~Assistant Deputy Executive Officer of Finance~~Chief Financial Officer, based on information provided by the Treasurer, shall submit a quarterly report to the Governing Board pursuant to Code Section 53646(g). The ~~Assistant Deputy Executive Officer of Finance~~Chief Financial Officer is responsible for preparation of cash flow forecasts for South Coast AQMD funds as described below. The ~~Assistant Deputy Executive Officer of Finance~~Chief Financial Officer will recommend specific individual investments for the Special Purpose Investments to be made by the Treasurer.

The Investment Oversight Committee. The South Coast AQMD Governing Board shall appoint an Investment Oversight Committee. The duties and responsibilities of the Investment Oversight Committee shall consist of the following:

1. Annual review of South Coast AQMD's Investment Policy before it is considered by the Governing Board, and recommend revisions, as necessary, to the ~~Assistant Deputy Executive Officer of Finance~~Chief Financial Officer.
2. Quarterly review of South Coast AQMD's investment portfolio for conformance with South Coast AQMD's Annual Investment Policy diversification and maturity guidelines, and make recommendations to the ~~Assistant Deputy Executive Officer of Finance~~Chief Financial Officer as appropriate.
3. Provide comments to the South Coast AQMD ~~Assistant Deputy Executive Officer of Finance~~Chief Financial Officer regarding potential investments and potential investment strategies.
4. Perform such additional duties and responsibilities as may be required from time to time by specific action and direction of the Governing Board.

It shall not be the purpose of the Investment Oversight Committee to advise on particular investment decisions of South Coast AQMD.

V. IMPLEMENTATION

This 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.

A. Standard of Care.

South Coast AQMD's Governing Board or persons authorized to make investment decisions on behalf of South Coast AQMD are trustees and fiduciaries subject to the prudent investor standard, as required by Code Section 53600.3, and shall be applied in the context of managing an overall portfolio. South Coast AQMD's investment professionals acting in accordance with written procedures and the Annual Investment Policy and exercising due diligence shall be relieved of personal responsibility for an individual security's credit risk or market price changes, provided deviations from expectations are reported in a timely fashion and appropriate action is taken to control developments.

The Prudent Investor Standard: When investing, reinvesting, purchasing, acquiring, exchanging, selling, or managing public funds, a trustee shall act with care, skill, prudence, and diligence under the circumstances then prevailing, including but not limited to, the general economic conditions and the anticipated needs of the agency, that a prudent person acting in a like capacity and familiarity with those matters would use in the conduct of funds of a like character and with like aims, to safeguard the principal and maintain the liquidity needs of the agency.

B. Investable Funds.

Investable Funds for purposes of this Policy are the South Coast AQMD general, special revenue, trust, agency and enterprise funds that are available for investment at any one time including any estimated bank account float. Investable Funds are idle or surplus funds of the South Coast AQMD including all segregated funds. All bond proceeds are excluded from Investable Funds. The Cash Flow Horizon is the time period in which the South Coast AQMD cash flow can be reasonably forecast. This Policy establishes the Cash Flow Horizon for South Coast AQMD idle or surplus funds to be three (3) years. The South Coast AQMD cash flow forecast must be updated at least every six months.

When the South Coast AQMD Assistant Deputy Executive Officer of Finance Chief Financial Officer determines that the cash flow forecast can be met, the Treasurer, at the request of the ~~Assistant Deputy Executive Officer of Finance~~ Chief Financial Officer, may invest a maximum of up to 75% of the minimum amount of funds available for investment during the Cash Flow Horizon in Special Purpose Investments ("SPI"), exclusive of investments in the State of California Local Agency

Investment Fund (“LAIF”), in a separate account outside of the Pooled Surplus Investment (“PSI”) Portfolio, in accordance with this Policy.

C. Authorized Investments.

Authorized investments shall match the general categories established by the California Government Code Sections 53601 et seq. and 53635 et seq.

Authorization for specific instruments within these general categories as well as portfolio concentration and maturity limits are established below as part of this Policy. No investments shall be authorized that have the possibility of returning a zero or negative yield when held to maturity; for example: inverse floaters, range notes or interest only STRIPS. As the California Government Code is amended, this Policy shall likewise become amended.

South Coast AQMD investments or deposits in the County of Los Angeles PSI Portfolio are governed by the County of Los Angeles Treasurer’s Investment Policy for Pooled Surplus Funds. South Coast AQMD investments or deposits in the LAIF are governed by the investment policy and guidelines for LAIF as established by the Office of the Treasurer for the State of California.

Investments in LAIF are an SPI investment and are limited in amount to the investment limits established for LAIF by the California State Treasurer.

South Coast AQMD funds and segregated funds that are invested by the Treasurer in an SPI separate account outside of the County of Los Angeles PSI Portfolio or LAIF are subject to this Policy. South Coast AQMD funds invested in an SPI separate account will be governed by various approved lists that may be established and maintained by the Los Angeles County Treasurer or the South Coast AQMD’s Investment Advisor.

D. Maximum Maturities.

The maximum maturity of any SPI investment shall be five (5) years. The weighted average maturity of the SPI separate account portfolio may not exceed three (3) years. Maturity shall mean the nominal maturity of the security, or the unconditional put option date, if the security contains such provision. Term or tenure shall mean the remaining time to maturity when purchased.

E. Permitted Investments.

1. U.S. Treasuries.

Direct obligations of the United States of America and securities which are fully and unconditionally guaranteed as to the timely payment of principal and interest by the full faith and credit of the United States of America.

U.S. Treasury coupon and principal STRIPS are not considered to be derivatives for the purpose of this Annual Investment Policy and are, therefore, permitted investments pursuant to the Annual Investment Policy.

2. Federal Agencies and U.S. Government Sponsored Enterprises.

Obligations, participations, or other instruments of, or issued by, a federal agency or a United States government sponsored enterprise.

3. Los Angeles County Pooled Surplus Investment Portfolio.

The County of Los Angeles Pooled Surplus Investment Portfolio is a pooled fund managed by the County Treasurer whose permitted investments are authorized in the Code and are governed by the Treasurer's Investment Policy with credit requirements and maturity limits established by the County Treasurer and adopted by the County Board of Supervisors.

4. State of California Local Agency Investment Fund.

LAIF is a pooled fund managed by the Office of the State Treasurer whose permitted investments are identified in the Code and whose credit requirements and maturity limits are established by the State Treasurer.

5. Shares of Money Market Mutual Funds.

Credit requirements for approved money market funds shall be limited to ratings of AAA by at least two nationally recognized statistical rating organizations (NRSRO) or managed by an investment advisor registered with the Securities and Exchange Commission with not less than five years' experience and with assets under management in excess of five hundred million dollars (\$500,000,000), and such investment may not represent more than ten percent (10%) of the total assets in the money market fund.

6. Bankers' Acceptances.

Bankers' acceptances must be issued by national or state-chartered banks or a state-licensed branch of a foreign bank. Eligible bankers' acceptances shall have the highest ranking or the highest letter and number rating as provided for by a NRSRO.

Maximum maturities for bankers' acceptances are 180 days.

7. Negotiable Certificates of Deposit.

Negotiable certificates of deposit must be issued by national or state-chartered banks, a federally- or state-licensed branch of a foreign bank, savings associations and state or federal credit unions. Negotiable CDs must be rated in a rating category of -“A-1/A or its equivalent, or higher, by at least one NRSRO.

The South Coast AQMD will not purchase negotiable certificates of deposit of a savings association or credit union as Special Purpose Investments if an South Coast AQMD Board member or a member of management staff, with investment authority, also serves on the Board of Directors or a committee of that savings association or credit union.

Maximum maturities for all negotiable certificates of deposit are ~~five (5)~~ three (3) years.

8. Commercial Paper.

Commercial paper of “prime” quality of the highest ranking or of the highest letter and number rating as provided for by a NRSRO. The entity that issues the commercial paper shall meet all of the following conditions in either paragraph a. or paragraph b.:

- a. The entity meets the following criteria:
 - i. Is organized and operating in the United States as a general corporation.
 - ii. Has total assets in excess of ~~one billion dollars (\$1,000,000,000)~~ \$500 million.
 - iii. Has debt other than commercial paper, if any, that is rated in a rating category of “A”, or ~~the its~~ its equivalent, or higher, by a NRSRO.
- b. The entity meets the following criteria:
 - i. Is organized within the United States as a special purpose corporation, trust, or limited liability company.
 - ii. Has program wide credit enhancements including, but not limited to, over collateralization, letters of credit, or surety bond.
 - iii. Has commercial paper that is rated in a rating category of “A-1”, or the equivalent, or higher, by ~~at least two a~~ a NRSROs.

Investments may not represent more than ten percent (10%) of the outstanding paper of the issuing corporation.

Maximum maturities for commercial paper are 270 days.

9. Medium Term Maturity Corporate Securities.

Medium-term corporate notes shall be rated in a rating category “A” or its equivalent or higher by a NRSRO.

Floating rate medium term notes may be used if interest resets at least quarterly.

Maximum maturities for medium term maturity corporate securities are ~~five~~ three years.

10. Mortgage Securities or Asset-backed Securities.

All asset-backed securities must be rated in a rating category of “AA” or its equivalent or better rating and the issuer’s corporate debt rating must be in a rating category of “A” or its equivalent or better by a Nationally Recognized Statistical Rating Organization (NRSRO).

The maximum maturity for Mortgage or Asset-backed Securities shall be five years.

11. Repurchase Agreements.

All repurchase transactions must be collateralized by U.S. Treasuries or Agencies with a market value of 102% or greater for collateral marked to market daily, entered into with a broker-dealer which is a recognized primary dealer and evidenced by a broker-dealer master purchase agreement signed by the County Treasurer and approved by South Coast AQMD.

The maximum maturity of a repurchase agreement shall be 30 days.

12. Reverse Repurchase Agreements.

Reverse repurchase agreements are not allowed except as part of investments in the County of Los Angeles Pooled Surplus Investment Portfolio and the State of California Local Agency Investment Fund.

13. ~~Variable and~~ Floating Rate Securities.

~~Variable and~~ Floating rate securities are instruments that have a coupon or interest rate that is adjusted periodically due to changes in a base or benchmark rate. Investments in floating rate securities must utilize commercially available U.S. denominated ~~indices~~ indexes such as U. S. Treasury bills or Federal Funds. Investments in floating rate securities whose reset is calculated using more than one of the above indices are not permitted,

i.e. dual index notes.

~~Variable and Floating Rate Securities~~ that are priced based on a single common index are not considered derivative securities.

The maximum maturity is five years.

14. Obligations of the State of California or any local agency within the state.

Permitted obligations will include bonds payable solely out of revenues from a revenue producing property owned, controlled or operated by the state or any local agency, or by a department, board, agency or authority of the state or any local agency.

Obligations of the State of California or other local agencies within the state must be rated in a rating category of “A”, or its equivalent, or higher, -by a NRSRO.

15. Obligations of Supranational Institutions

Permitted obligations will include U.S. dollar denominated senior unsecured unsubordinated obligations issued or unconditionally guaranteed by any of the supranational institutions identified in California Government Code Section 53601(q), with a maximum remaining maturity of five years or less, and which are eligible for purchase and sale within the U.S.

Obligations of supranational institutions must be rated in a rating category of “AA”, or its equivalent, or higher, by a NRSRO.

F. Diversification Guidelines.

Diversification limits ensure that at the time of investment the South Coast AQMD’s portfolio is not unduly concentrated in the securities of one type, industry, or issuer, thereby assuring adequate portfolio liquidity should one sector or issuer experience difficulties. The diversification limits outlined below for an individual investment instrument and issuer/counterparty are expressed as the maximum percentage of the total South Coast AQMD’s portfolio invested by the Los Angeles County Treasurer. Maximum percentage limits shall apply at the time of purchase and allocations in excess of maximum percentages due to

fluctuations in portfolio size will not be considered out of compliance with this Policy.

<u>Instrument</u>	<u>Maximum % of Portfolio</u>
1. U.S. Treasuries	100%
2. Federal Agencies & U.S. Government Sponsored Enterprises	100%
3. Los Angeles County Pooled Surplus Investment Portfolio	100%
4. State of California Local Agency Investment Fund	100%
5. Shares of Money Market Mutual Funds	15%
6. Bankers Acceptances	40%
7. Negotiable Certificates of Deposit	30%
8. Commercial Paper	25%
9. Medium Term Maturity Corporate Securities	30%
10. Mortgage Securities or Asset-backed Securities	20%
11. Repurchase Agreements	50%
12. Reverse Repurchase Agreements*	Not Allowed
13. Variable and Floating Rate Securities	30%
14. Obligations of the State of California or any California local agency	30%
15. Obligations of Supranational Institutions	10%

* See Section V(E)(12).

<u>Issuer/Counterparty</u>	<u>Maximum % of Portfolio</u>
Any one Federal Agency or U.S. Government Sponsored Enterprise	50%
Securities of any single non-government issuer or its related entities, regardless of security type	5%
Securities of any State of California or California local agency	5%
Any one Repurchase Agreement or other collateralized counterparty name	50%

G. Investment Agreements (For Bond Funds Only).

Investment Agreements or Fully Flexible Repurchase Agreements shall provide a fixed spread to an index or a fixed rate of return with liquidity, usually one-to-seven day's withdrawal notice with no penalties, to meet cash flow needs of the South Coast AQMD. Investment Agreements may be with any bank, insurance company or broker/dealer, or any corporation whose principal business is to enter into such agreements, if:

1. At the time of such investment:
 - a. Such bank has an unsecured, uninsured and unguaranteed obligation rated in a rating category of “AA”, or its equivalent, or higher, by at least two NRSROs, or
 - b. such insurance company or corporation has an unsecured, uninsured and unguaranteed claims paying ability rated “AAA” or its equivalent by at least two NRSROs, or
 - c. such bank or broker/dealer has an unsecured, uninsured and unguaranteed obligation rated in a rating category of “A”, or its equivalent, or higher by at least two NRSROs (and with respect to such broker/dealer shall be rated of the highest short-term ratings by at least two NRSROs); provided, that such broker/dealer or “A” rated bank also collateralize the obligation under the investment agreement with U.S. Treasuries or Agencies.
2. The agreement shall include a provision to the effect that if any rating of any such bank, insurance company, broker/dealer or corporation is downgraded below the rating existing at the time such agreement was entered into, the South Coast AQMD shall have the right to terminate such agreement.
3. Collateralization shall be at a minimum of 102%, marked to market, at a minimum, weekly.

The maximum term for an Investment Agreement for bond proceeds will be governed by the permitted investment language of the bond indenture.

H. Rating Downgrades.

Securities that are currently under “Credit Watch-Negative” for downgrade below the minimum credit criteria of this Policy by any NRSROs are not permitted for purchase for the SPI investments under this Policy.

The South Coast AQMD SPI separate account may from time to time be invested in a security whose rating is downgraded below the quality criteria permitted by the Annual Investment Policy. Any security held as an investment whose rating falls below the investment guidelines or whose rating is put on notice for possible downgrade shall be immediately reviewed for action by the ~~Assistant Deputy Executive Officer of Finance~~ Chief Financial Officer. The decision to retain the security until maturity, sell (or put) the security, or other action shall be approved by the Treasurer. Minimum credit criteria shall apply at the time of purchase.

I. Securities Safekeeping.

Securities shall be deposited for safekeeping with a third party custodian in compliance with Code Section 53608.

J. Review and Monitoring of Investments.

The ~~Assistant Deputy Executive Officer of Finance~~ Chief Financial Officer will submit to the Governing Board the quarterly reports on investments prepared by the Treasurer for the Pooled Surplus Investment Portfolio and South Coast AQMD funds invested in the State Local Agency Investment Fund and Special Purpose Investments. The ~~Assistant Deputy Executive Officer of Finance~~ Chief Financial Officer will review at least monthly the transactions and positions of South Coast AQMD funds invested in Special Purpose Investments outside of the Local Agency Investment Fund or the Pooled Surplus Investment Portfolio.

Approved ~~March 1~~ March 6, 2020, ~~2019~~



BOARD MEETING DATE: March 6, 2020

AGENDA NO. 9

PROPOSAL: Appropriate Funds and Amend Contract for Consultant Services for South Coast AQMD's Why Healthy Air Matters High School Program

SYNOPSIS: The current contract with Lee Andrews Group, Inc., for outreach efforts conducted for the WHAM Program, expires on April 17, 2020. This contract includes an option for two one-year extensions. Based on the firm's effective performance during their current contract, this action is to approve the one-year extension of the consultant's contract in the amount of \$500,000 for Calendar Year 2020 from the BP ARCO Settlement Projects Fund (46).

COMMITTEE: Administrative, February 14, 2020; Recommended for Approval

RECOMMENDED ACTIONS:

1. Appropriate \$500,000 from the BP ARCO Settlement Projects Fund (46) to the Legislative, Public Affairs & Media FY 2019-20 Budget, Services and Supplies Major Object, Professional & Specialized Services account; and
2. Approve a one-year extension of the contract with Lee Andrews Group, Inc. at the current contract amount of \$500,000.

Wayne Nastri
Executive Officer

DJA:LTO:mjk

Background

In February 2019, the South Coast AQMD Governing Board approved the implementation of an air quality education program at 100 high schools in environmental justice communities within its jurisdiction. The program targeted 40 schools in Los Angeles County, and 20 schools each in Orange, Riverside, and San Bernardino Counties.

After a Request for Proposals (RFP) process, the Lee Andrews Group Inc. (LA Group) was contracted to support implementation of the high school air quality educational program in April 2019. The program now known as, “Why Healthy Air Quality Matters” (WHAM) was successfully launched in school districts resulting in 100 schools participating from all four counties.

The LA Group provided comprehensive support to successfully develop, launch and implement the program. Deliverables received from the LA Group are as follows:

Research, Strategy and Project Preparation:

1. **Tracking System:** An overall project tracking system to monitor tasks and to ensure all information contained therein was complete and accurate.
2. **Project Status:** Regular updates on the status of the project.
3. **Curriculum Guide:** Expert tips and guidance on how to successfully implement Kids Making Sense[®] curriculum by Sonoma Technology Incorporated (STI).
4. **Outreach Materials:** Presentations, fact sheets and outreach materials needed to present the program to school district administrators to garner participation by their schools.
5. **Implementation Plan:** A detailed Program Implementation Plan that included:
 - a. Overall outreach program description and guidelines.
 - b. A plan based on research for the most effective outreach approach to work with schools in each of the four counties. This plan includes details on requirements, limitations and/or restrictions for outside organizations implementing educational curricular programs for schools in all four of the counties.
 - c. An implementation strategy based on confirmed research to work with schools in each of the four counties.
 - d. Specific recommendations on how to promote South Coast AQMD’s air quality educational message to school administrators, teachers and students through the implementation of the Kids Making Sense[®] curriculum which relates to South Coast AQMD programs such as AB 617, AQ-SPEC, and other environmental justice related issues.
 - e. Criteria to identify and select 100 schools within environmental justice communities and a prioritization/target list of high schools with a brief description of justification for selection.
 - f. An implementation schedule based on academic and administrative calendars for each of the four counties.
 - g. A tracking system for all organizations and schools contacted including contact information, administrative procedures by school district and school, and, if any, guidelines on implementing the program.
 - h. A wait list for schools interested in participating in the program in the future.
 - i. A process for South Coast AQMD to share with schools that are not participating in the program and/or schools that would like to contact STI to purchase their own Kids Making Sense[®] educational kits;
 - j. A tracking system for the Kids Making Sense[®] educational kits that lists each item and established a system to distribute, collect and replenish materials on an on-going basis; and,
 - k. A survey teachers and students on WHAM.

6. **Staff Volunteer Training:** Held a day-long training for South Coast AQMD staff volunteers including a unit-by-unit lecture and hands-on demonstrations by STI and a classroom etiquette guide.

Program Implementation:

1. **Meetings and Presentations with School Districts, School Administrators and Teachers:** Facilitated and coordinated 145 meetings to offer the WHAM Program to school districts, school administrators and teachers. The multi-step process involved meeting with school districts to garner approval to participate, working with the school districts to confirm specific school participation and then partnering with the school administrators to confirm participation of teachers. LA Group assisted in the development of presentation materials, fact sheets, and other outreach materials needed to present the program to stakeholders to secure participation by their schools in environmental justice communities.
2. **Execution of Agreements:** Assisted with the execution of 31 agreements with school districts and schools within South Coast AQMD's jurisdiction, securing participation from 100 schools.
3. **Delivery and Collection of Kits:** Delivered Kids Making Sense® kits to participating schools prior to classes being taught to enable teachers to become familiar with the materials. Collecting of kits upon completion of the curriculum for South Coast AQMD, so the materials may be re-used in the following year.
4. **Scheduling:** Assisted with the scheduling of South Coast AQMD staff volunteers to present the WHAM curriculum in the classrooms.
5. **Technical Assistance:** Provided technical assistance as needed to teachers to facilitate implementation of the curriculum.
6. **Evaluation:** Assisted in the development of a program evaluation methodology, questionnaire, and mechanism to collect data in a timely fashion from school administrators, teachers, and students.

The LA Group effectively collaborated with South Coast AQMD staff to research, design, develop and implement the WHAM Program, and as a result, helped advance the South Coast AQMD Board's environmental justice interests and policies.

At this critical point in time, it is important that the momentum with school districts and high schools continue in the coming year as we work towards achieving clean air in disadvantaged communities, consistent with South Coast AQMD's mission and goals.

The second year of implementation for WHAM requires revisiting with each year one school district to reconfirm participation by their schools, including any necessary paperwork and administrative procedures. School districts follow strict guidelines to protect their students and to ensure any external educational curriculum is appropriate. Although strong relationships have been developed with school districts, South Coast AQMD must follow their protocols to implement the WHAM program. Further, school

districts have expressed an interest in implementing WHAM in more of their high schools as South Coast AQMD was limited to 100 locations in the first year. Some school districts expressed that they would like to offer the WHAM program to all their high schools to provide parity in the educational experiences available to their students. There are also some school districts that were unable to participate in year one who expressed interest in participating in the next academic school year. Additionally, South Coast AQMD's WHAM program has been well received as air quality and environmental education, especially hands-on experiential learning experiences, are highly valued by the academic community. This positive response from school districts and high schools warrants South Coast AQMD to offer the WHAM program to the existing 100 participants with up to an additional 100 campuses in the second year of implementation. In effect, there are significant actions related to the WHAM program that need to be taken to prepare for, implement, build and maintain the school district and school participation.

The LA Group is an effective consulting team for South Coast AQMD. Their extensive experience in implementing a complicated public outreach program with sensitive requirements involving schools and students strengthen the South Coast AQMD's ability to support the Board's environmental justice priorities. The WHAM program also has elevated awareness about South Coast AQMD and air quality issues. The LA Group has created a successful model to follow for a second year of implementation of WHAM.

Proposal

The contract with the LA Group expires on April 17, 2020. South Coast AQMD staff is extremely satisfied with the performance of the firm and recommends the Board retain them for a one-year contract extension. The present contract, based on a competitive selection process, has an option for up to two one-year extensions that may be exercised at the Board's discretion pursuant to the original RFP. This proposal is to approve the first one-year extension for the contract.

Resource Impacts

Sufficient funding will exist for this contract upon the transfer of \$500,000 from the BP ARCO Settlement Projects Fund (46) to the Legislative, Public Affairs & Media FY 2019-20 Budget, Services and Supplies Major Object, Professional & Specialized Services account.

BOARD MEETING DATE: March 6, 2020

AGENDA NO. 10

PROPOSAL: Issue Purchase Order to Promote "The Right to Breathe" Video

SYNOPSIS: This action is to add \$500,000 to South Coast AQMD's Google AdWords campaign to promote South Coast AQMD's "The Right to Breathe" video. Funding for this effort will come from the BP ARCO Settlement Projects Fund (46).

COMMITTEE: Administrative, February 14, 2020; Recommended for Approval

RECOMMENDED ACTION:

Authorize the Executive Officer to issue a purchase order in an amount up to \$500,000 to pay monthly invoices for a 12-month Google AdWords campaign. Funding will come from the BP ARCO Settlement Projects Fund (46).

Wayne Natri
Executive Officer

NM

Background

"The Right to Breathe" Video Update

In early 2017, the Chairman requested an update to South Coast AQMD's signature film, "The Right to Breathe," which was released in 2011. Like the original film, the goal is to educate viewers about air quality and environmental justice challenges as well as current solutions. The updated video was completed in March 2018.

Google AdWords Campaign

During the fall of 2015, South Coast AQMD implemented a successful pilot advertising program with Google AdWords. Since then, the Board has approved additional Google AdWords advertising campaigns to promote various South Coast AQMD programs including "The Right to Breathe."

The Google AdWords campaign uses geo-targeted marketing, coupled with pre-selected keywords to lead users to "The Right to Breathe" video display/banner ads. In addition, the Google AdWords campaigns have included YouTube "pre-roll." Pre-roll is a short

video ad that plays automatically before a desired video selected by a YouTube viewer. Updated campaign includes adding a short cut link to the full video on the South Coast AQMD website.

The most recent AdWords campaign promoting South Coast AQMD's "The Right to Breathe" video covers the period of April 1, 2019 to March 31, 2020. The total campaign budget, approved by the Board at its January 4, 2019 meeting, was \$500,000.

As of January 2, 2020, the campaign had achieved 37.6 million impressions, 17.8 million views and 69,836 clicks at a cost of \$402,100.

Proposal

To continue to promote South Coast AQMD's mission of cleaning the air and its focus on improving air quality for environmental justice communities, staff proposes renewing a 12-month Google AdWords campaign promoting "The Right to Breathe" video.

With Board approval, the 2020 AdWords campaign would start on April 1, 2020. The campaign would conclude on March 31, 2021.

Staff proposes a daily AdWords budget of \$1,370 for a total 12-month campaign budget of \$500,000.

Sole Source Justification

Section VIII.B.2 of the Procurement Policy and Procedure identifies four major provisions under which a sole source award may be justified. This request for a sole source award is made under provision B.2.c.: The desired services are available from only the sole source, specifically, B.2.c.(1): The unique experience and capabilities of the proposed contractor or contractor team.

Consumers are increasingly relying on digital media for news and information. In turn, companies are making increasing use of digital advertising to promote their brand and services. Google is a leader in providing online advertising and its ownership of YouTube positions the company as a leader in online video messaging. For these reasons, Google remains uniquely qualified to assist South Coast AQMD with outreach for the "The Right to Breathe" campaign, utilizing online digital advertising featuring video pre-roll ads and website image ads.

Resource Impacts

The purchase order for the proposed 2020 Google AdWords campaign would not exceed \$500,000. Sufficient funding is available in the BP ARCO Settlement Projects Fund (46).

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BOARD MEETING DATE: March 6, 2020

AGENDA NO. 11

PROPOSAL: Annual Meeting of the Health Effects of Air Pollution Foundation

SYNOPSIS: This item is to conduct the annual meeting of the Health Effects of Air Pollution Foundation. The Foundation staff will present an annual report detailing the research supported by the Foundation over the past year, the Foundation's plans for the future, and a financial report.

COMMITTEE: No Committee Review

RECOMMENDED ACTION:

Receive and file the annual report and ratify the Foundation's disbursements described in the annual report.

Wayne Nastri
Executive Officer

BTG:ML

2020 Annual Report

Background

In February 2003, the Board directed staff to establish the Brain Tumor and Air Pollution Foundation to implement an initiative by the Board Chairman to fund research into the potential connections between air pollution and brain cancer. After years of supporting research related to the impacts of air pollution on brain tumors, in March 2017 the Board changed the Foundation's name to the Health Effects of Air Pollution Foundation and expanded the Foundation's mission to support research on the incidence, detection, and causes and cures of various health conditions that may be caused or aggravated by air pollution. To date, the Foundation has received contributions of almost \$12.5 million and has funded studies with leading medical and public health researchers in Southern California.

Directors and Officers

The Directors of the Foundation are: Ben Benoit, Chairman
Dr. William A. Burke, Vice Chairman
Dr. Clark E. Parker, Sr.
Judith Mitchell

The Foundation's staff is: Wayne Nastri, Chief Executive Officer
Denise Whitcher, Secretary
Sujata Jain, Treasurer

Report on the Foundation's Activities

Completed Research Projects

The following research projects have been completed:

“A Cohort Study of Air Pollution, Malignant and Benign Brain Tumors in Los Angeles County” (BTAP010)

Principal Investigator: Dr. Anna Wu (University of Southern California)

Approved Funding: \$758,978

Summary: The study leveraged data from the Multiethnic Cohort study to examine whether air pollution is associated with primary malignant and benign brain tumors. The investigators evaluated exposures to PM10, PM2.5, NO2, NOx, ozone and CO, and air toxics, including ultra-fine particles, and examined associations between traffic air pollution and malignant primary brain cancer and meningiomas (non-cancerous brain tumors). The study found that among men, long-term exposures to higher levels of benzene and PM10 were associated with increased brain cancer risk, especially among Latino men. In contrast, air pollution exposures were not associated with increased brain cancer risk in women. The study also analyzed exposures to ultra-fine particles from airplanes and found that these pollutants may be associated with some increased brain cancer risk among African American men and women. Ozone was the only pollutant associated with meningioma risk, and only among men. This project was completed in January 2020.

“Role of Particle-Induced Inflammation in Progression of Brain Tumors” (BTAP011)

Principal Investigator: Dr. Keith Black (Cedars-Sinai Medical Center)

Approved Funding: \$733,461

Summary: The investigators studied whether exposure to ambient air pollution-derived particulate matter (PM) alters the progression of brain tumors in mice. The mice used in the experiments have brain tumors initiated from human glioblastoma cell lines. The PM samples were collected from Irvine, CA ambient air. As part of this study, changes in tumor progression and inflammatory markers (measured by changes in gene expression) and stem cell activation were evaluated. The mice were separated into 4 groups, and exposed to filtered air, coarse PM, fine PM, and ultrafine PM for one month. The

exposure period was originally planned to be 2 months, but it had to be reduced to one month due to the tumor-bearing animals showing signs of distress and malaise. Molecular analyses (RNAseq and proteomics) were performed on the brain tissues of the non-tumor bearing mice, and the study found changes in gene expression in certain pathways that play a fundamental role in cancer development, neuroinflammation, and immune response, particularly for mice exposed to ultrafine PM. The study identified neuroinflammation signaling and immune system cytokine signaling pathways as key biological mechanisms for air pollution related responses. The findings suggest that PM exposures may cause brain tissue changes that create an environment that enhances the proliferation and progression of brain tumors. This project was completed in June 2019.

“Role of Particle-Induced Inflammation on Progression of Neurodegenerative Brain Disease” (HEAPF013)

Principal Investigator: Drs. Keith Black and Julia Ljubimova (Cedars-Sinai Medical Center)

Approved Funding: \$750,000

Summary: The investigators studied whether exposure to ambient air pollution-derived particulate matter (PM) alters the progression of neurodegenerative disorders in mice. The mice used in the experiments include ones that were genetically modified so that they developed Alzheimer’s disease, as well as control wild-type mice. The mice were separated into 4 groups, which were exposed to filtered air, coarse PM, fine PM, and ultrafine PM for 3 months or 6 months, and followed until they died. The PM was from samples collected from Irvine, CA ambient air. As part of this study, changes in disease progression and biomarkers of Alzheimer’s disease were evaluated using RNAseq and proteomic analysis to identify key biomarkers for Alzheimer’s disease. The study found that air pollution did not accelerate the formation of amyloid beta plaques, which is one of the signature features of late-stage Alzheimer’s. The study instead identified that air pollution enhanced cell stress and tau protein accumulations, which may be used as an early biomarker of Alzheimer’s. The study further identified air pollution to be associated with changes in gene expression that down-regulated certain proteins that help protect brain cells (collagen assembly) and upregulated certain proteins that check for errors in gene expression (nonsense-mediated decay pathway). This project was completed in June 2019.

Current Research Projects

The following research currently funded by the Foundation is in progress:

“Do Changes in Amount and Composition of Ambient PM Influence Induction or Exacerbation of Brain and Lung Tumors?” (HEAPF012)

Principal Investigator: Dr. Arthur Cho (University of California, Los Angeles)

Approved Funding: \$979,182

Summary: This study used cellular and mouse models to investigate whether exposure to air pollution (PM and vapor phase) increases the expression of biological markers that are

associated with the development or progression of lung or brain cancers. The investigators collected ambient air samples at several locations and in different seasons in the South Coast Air Basin. The samples were characterized for their potential biological actions, and then used in studying the potential effects in human lung cancer cells and brain cancer cells, as well as in a mouse study (induced with brain cancer cells). Preliminary results of this study found that exposure to the vapor phase air pollutants increased cellular expression of heme oxygenase-1 (HO-1), while exposure to PM air pollution only marginally increased this inflammatory biomarker. The study also found that both PM and vapor air pollution samples decreased the expression of CAV-1, a protein that helps to suppress tumors. These results suggest potential pathways for air pollution to trigger cancer proliferation at the cellular level. This project is scheduled to be completed in May 2020.

In addition, the Foundation approved the following research proposals at its January 2020 meeting:

Institution (Principal Investigator)	Title of Proposal	Amount of Funding Approved
Cedars-Sinai Medical Center (Dr. Keith Black)	Development of the Alzheimer's disease under the exposure of air pollutants 2019-2022	\$2,250,000
University of California, Los Angeles (Dr. Arthur Cho)	Adverse Health Effects of Volatile Organic Compounds	\$471,000
University of Southern California (Dr. Anna Wu)	Impact of ambient air pollution on the risk of breast cancer and survival in Los Angeles County: The Multiethnic Cohort Study	\$804,189

Financial Report

The Foundation's fiscal year ended June 30, 2019. Financial statements were prepared by staff and audited by BCA Watson Rice, LLP (Auditor). Total expenses for the fiscal year were \$1,039,371 and included grants (\$1,038,053), audit fees (\$1,200) and other fees/taxes (\$118). The Auditor issued an unmodified opinion, indicating that the financial statements were presented fairly, in all material respects, and in accordance with generally accepted accounting principles.

As of January 31, 2020, the Foundation had a cash balance of \$4,156,485. The following is an accounting of the Foundation's operations since its inception (7/23/03):

Revenue from Operations	
Contributions	\$12,472,568
Interest Income	44,827
<i>Total Revenue from Operations</i>	\$12,517,395
Operating Expenses	
Grants	
-Cedars-Sinai	\$6,710,607
-UCLA	761,254
-USC	867,419
Corporation Filing Costs	1,745
Bank charges	598
Professional fees-audit	19,287
<i>Total Operating Expenses</i>	\$8,360,910
Cash Balance	\$4,156,485

Plans for the Upcoming Year

The Foundation will work with the researchers as they begin the three continuation projects that were approved for funding at the January 2020 Foundation meeting, and will continue to monitor the progress of the existing research project. Staff will provide an update to the Board once these projects have been completed.

Resource Impacts

None.

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BOARD MEETING DATE: March 6, 2020

AGENDA NO. 12

REPORT: Legislative, Public Affairs and Media Report

SYNOPSIS: This report highlights the January 2020 outreach activities of the Legislative, Public Affairs and Media Office, which includes Major Events, Community Events/Public Meetings, Environmental Justice Update, Speakers Bureau/Visitor Services, Communications Center, Public Information Center, Business Assistance, Media Relations, and Outreach to Community Groups and Federal, State, and Local Governments.

COMMITTEE: No Committee Review

RECOMMENDED ACTION:
Receive and file.

Wayne Nastri
Executive Officer

DJA:FW:LTO:DM:ar

BACKGROUND

This report summarizes the activities of the Legislative, Public Affairs and Media Office for January 2020. The report includes: Major Events; Community Events/Public Meetings; Environmental Justice Update; Speakers Bureau/Visitor Services; Communications Center; Public Information Center; Business Assistance; Media Relations; and Outreach to Community Groups and Governments.

MAJOR EVENTS (HOSTED AND SPONSORED)

Every year South Coast AQMD staff engage in holding and sponsoring many major events throughout the South Coast AQMD's four county areas to promote, educate and provide important information to the public regarding reducing air pollution, protecting public health, and improving air quality and the economy.

January 18

South Coast AQMD hosted the Seventh Annual Martin Luther King, Jr. Day of Service event entitled, “Continuing the Legacy Through Clean Air for All” at the California Science Center in Los Angeles. The event was attended by more than 350 participants, which included members of the public, community groups, elected officials, and other guests.

COMMUNITY EVENTS/PUBLIC MEETINGS

South Coast AQMD staff engaged with thousands of residents, providing valuable information about the agency, incentive programs and ways individuals can help reduce air pollution through events and meetings sponsored solely by South Coast AQMD or in partnership with others. Attendees typically receive the following information.

- Tips on reducing their exposure to smog and its health effects;
- Clean air technologies and their deployment;
- Invitations or notices of conferences, seminars, workshops and other public events;
- South Coast AQMD incentive programs;
- Ways to participate in South Coast AQMD’s rules and policy development; and
- Assistance in resolving air pollution-related problems.

South Coast AQMD staff attended and/or provided information and updates at the following event:

January 19

Staff exhibited at the San Fernando Valley Climate Town Hall Meeting, held at the Temple Beth Hillel to provide information about South Coast AQMD air quality programs. The event was attended by community members, city officials, and business entities.

ENVIRONMENTAL JUSTICE UPDATE

The following are key environmental justice-related activities in which staff participated throughout the month. These events involve communities affected disproportionately from adverse air quality impacts.

January 9

Staff held the AB 617 Southeast Los Angeles Community Kick-off Meeting in Huntington Park. The purpose of the meeting was to provide the community and interested stakeholders with information on the AB 617 program and the Community Steering Committee process.

January 16

Staff held the quarterly AB 617 Wilmington/Carson/West Long Beach Community Steering Committee (CSC) meeting in Wilmington to provide an update on the Community Emissions Reduction Plan (CERP). Staff from CARB also held a workshop to gather input from the community on the CERP and air monitoring efforts.

January 22

Staff held the AB 617 Eastern Coachella Valley Community Kick-off Meeting in Coachella. The purpose of the meeting was to provide the community and interested stakeholders with information on the AB 617 program and how to participate as a member of the Community Steering Committee.

January 23

Staff held the quarterly AB 617 San Bernardino/Muscoy Community Steering Committee (CSC) meeting in San Bernardino to provide an update of the Community Emissions Reduction Plan (CERP). Staff from CARB also held a workshop to gather input from the community on the CERP and air monitoring efforts.

January 24

The Environmental Justice Advisory Group met at the South Coast AQMD. Staff outlined the committee's 2019 accomplishments, summarized 2020 goals & objectives, and provided updates on the status of AB 617 Year 1 and Year 2 activities.

January 30

Staff held the quarterly AB 617 Boyle Heights, East Los Angeles, West Commerce Community Steering Committee (CSC) meeting in Los Angeles, to provide an update of the Community Emissions Reduction Plan (CERP). Staff from CARB also held a workshop to gather input from the community on the CERP and air monitoring efforts.

SPEAKERS BUREAU/VISITOR SERVICES

South Coast AQMD regularly receives requests for staff to speak on air quality related issues from a wide variety of organizations, such as trade associations, chambers of commerce, community-based groups, schools, hospitals and health-based organizations. South Coast AQMD also hosts visitors from around the world, who meet with staff on a wide range of air quality issues.

January 10

Staff hosted a group of representatives from various Chinese American Organizations, at South Coast AQMD headquarters. Staff presented information on South Coast AQMD, incentive programs for businesses and residents, and clean air vehicles and alternative fuels.

COMMUNICATION CENTER STATISTICS

The Communication Center handles daily and after-hour calls on South Coast AQMD's main line, 1-800-CUT-SMOG®, and Spanish language telephone lines., The total number of calls received in January is summarized below.

South Coast AQMD's Main Line and 1-800-CUT-SMOG®	3,677
Spanish language	51
Clean Air Connections	<u>4</u>
Total Calls	3,732

PUBLIC INFORMATION CENTER STATISTICS

The Public Information Center (PIC) handles telephone calls and walk-in requests for general information. Information for January is summarized below.

Calls Received by PIC Staff	164
Calls to Automated System	<u>614</u>
Total Calls	778

Visitor Transactions	263
Email Advisories Sent	9,952

BUSINESS ASSISTANCE

South Coast AQMD notifies local businesses of proposed regulations so they can participate in the agency's rule development process. South Coast AQMD also works with other agencies and governments to identify efficient, cost-effective ways to reduce air pollution and shares that information broadly. Staff provides personalized assistance to small businesses both over the telephone and via on-site consultation, as summarized below;

- Provided permit application assistance to 216 companies;
- Conducted three free on-site consultations; and
- Processed 68 Air Quality Permit Checklists.

Types of businesses assisted:

Auto Body Shops	Gas Stations	Furniture Refinishing Facilities
Auto Repair Centers	Restaurants	Construction Firms
Printing Facilities	Plating Facilities	Architecture Firms
Manufacturing Facilities	Dry Cleaners	Engineering Firms
		Warehouses

MEDIA RELATIONS

The Media Office handles all South Coast AQMD outreach and communications with television, radio, newspapers and all other publications and media operations. The January reports are as follows:

Major Media Interactions:	80
Press Releases:	6
Air Quality Advisories Issued:	4

Major Media Topics for January

- AB 617 Kick Off Meeting - Staff pitched the meeting to reporters at ABC, KTLA, CBS, NBC, KPCC, LA Times, Compton Bulletin, LA Daily News, Univision and Telemundo.
- Torrance Benzene Levels - Torrance Daily Breeze requested information on high benzene levels at the Torrance air monitoring sites. Staff sent information about ongoing actions in the area.
- Landfills – KPCC requested any data comparing landfill emissions to emissions from a local trash incinerator. Staff referred the reporter to the FIND tool and provided related background material.
- Check Before You Burn (CBYB) – (continued from December) Staff participated in an interview on the Carlos and Lisa Show which aired on January 14, 2020 on KDOC TV.
- CBYB – Pitches were sent out and picked up by Telemundo, Spectrum, KPCC, CBS, KCRW, KFI, MyNewsLA, KEIB and three different Patch websites. Additional coverage aired on ABC, as well as MyNewsLA, KFI, KFBK, City News Service and San Clemente Patch throughout the month.
- Transportation – Spectrum News requested an interview regarding the climate effects of empty public buses and trains. Staff referred the reporter to LA Metro.
- Freeway Pollution and Housing – The Guardian requested information on the effects of air pollution in communities near freeways. Staff responded via email.
- Delta Jet Fuel Dump – LA Times and LACDPH called to inquire about inspector response to the jet fuel dump in Cudahy. Many outlets inquired about the NOV South Coast AQMD issued to Delta Airlines, and staff reached out to several additional outlets. Coverage was secured from more than 300 outlets including the LA Times, ABC, NBC, KCAL, KTTV, KABC Radio, KFI Radio, KPCC Radio, and the Associated Press.
- Torrance Refinery Settlement - LA Times asked about mitigations systems approved for Torrance Refinery by the Board. Staff responded via email.

- General Air Quality – Fox News inquired about air quality conditions on January 16. Staff provided an explanation of the conditions to the reporter.
- East Coachella Valley AB 617 Meeting – Staff pitched Palm Springs media outlets on the meeting, and secured coverage on NBC, CBS, FOX, ABC and Telemundo. Interviews were conducted with Board Member Perez and staff.
- Spanish App Release – Staff pitched major media outlets in Los Angeles and Coachella. NBC and Telemundo in Coachella interviewed Board Member Perez.
- Rule 1180/Low Cost Sensors - LA Times spoke to staff about Rule 1180, the monitoring network, use of purple air monitors during wildfires, and an update on monitoring near freeways.
- Abatement Notifications – LA Times inquired about recent abatement notifications issued to two facilities. Staff sent copies of the abatement notifications via email.
- Air Quality – Staff participated in an interview regarding air quality improvement efforts. The interview will be pitched to PBS and is expected to air in either February or March.
- City Watch LA - Reporter reached out and requested a tour of our facilities. Staff is in the process of scheduling this.
- Windblown Dust - Staff pitched local reporters on windblown dust advisories, and the item was picked up by City News Service.
- Green New Deal - Random Lengths News inquired about how the Green New Deal might apply to ports. Staff is preparing a response.
- Odors - NBC inquired about an odor situation which lead to students at Annalee Elementary School in Carson being held indoors. Staff confirmed that inspectors were dispatched to the scene.

News Releases and Announcements

- No-Burn Day - Mandatory Wood-Burning Ban in Effect for Residents of The South Coast Air Basin - January 3, 2020
- South Coast AQMD to Hold Kick-Off Meeting for Southeast Los Angeles Environmental Justice Communities - January 9, 2020
- No-Burn Day - Mandatory Wood-Burning Ban in Effect for Residents of The South Coast Air Basin - January 12, 2020
- No-Burn Day - Mandatory Wood-Burning Ban in Effect for Residents of The South Coast Air Basin - January 13, 2020

- South Coast AQMD to host 7th Annual Martin Luther King, Jr. Day of Service Luncheon - January 16, 2020
- South Coast AQMD issues violation to Delta Airlines for jet fuel release that impacted Los Angeles area schools, public - January 17, 2020
- Air pollution reduction program launched in Eastern Coachella Valley Environmental Justice Communities - January 21, 2020
- No-Burn Day - Mandatory Wood-Burning Ban in Effect for Residents of The South Coast Air Basin - January 25, 2020
- South Coast AQMD Issues Windblown Dust Advisory for Portions of Los Angeles, Orange, Riverside, and San Bernardino counties - January 29, 2020
- Award-Winning Air Quality App now available in Spanish, first agency in California - January 30, 2020

Media/Google Campaign:

- In January, the *Right to Breathe* Google Ads played 4.09M times (Impressions), received 2.13M Views (counted when users watch at least 30 seconds of the ad), and were clicked 7.73K times.

Check Before You Burn:

- Seventeen no-burn days have been declared since November 1, 2019
- 15,805 people reached on Check Before You Burn Facebook Ads

Social Media Notable Posts:

- No-Burn Day Announcement (January 3, 2020): 17,122 Twitter Impressions
- Clean Air Awards Port of Long Beach Video (January 9, 2020): 2,795 Twitter Impressions
- Clean Truck Display Photos (January 10, 2020): 2,646 Twitter Impressions
- Check Before You Burn Announce (January 12, 2020): 2,807 Facebook Users Reached
- Check Before You Burn Reminder (January 13, 2020): 6,163 Twitter Impressions
- AQ Complaint Graphic (January 15, 2020): 1,847 Facebook Users Reached
- AB 617 Wilmington Stream Reminder (January 16, 2020): 1,607 Twitter Impressions
- Legal Internship (January 16, 2020): 1,234 Facebook Users Reached
- Delta NOV Press Release (January 17, 2020): 1,247 Facebook Users Reached
- MLK Coverage (January 18, 2020): 1,407 Twitter Impressions
- San Bernardino AB617 Live Stream Reminder (January 23, 2020): 1,704 Twitter Impressions

- CBYB Announcement (January 25, 2020): 2,017 Facebook Users Reached
- CBYB Reminder (January 26, 2020): 13,966 Twitter Impressions

OUTREACH TO COMMUNITY GROUPS AND FEDERAL, STATE, AND LOCAL GOVERNMENTS

Field visits and/or communications were conducted with elected officials or staff from the following cities:

Alhambra	Glendora	San Bernardino
Anaheim	Hermosa Beach	San Dimas
Arcadia	Highland	San Gabriel
Azusa	Indio	San Marino
Baldwin Park	Irwindale	Santa Ana
Buena Park	La Cañada Flintridge	Sierra Madre
Chino Hills	La Puente	South El Monte
City of Industry	La Verne	South Pasadena
Claremont	Laguna Niguel	Torrance
Coachella	Manhattan Beach	Temple City
Covina	Monrovia	Tustin
Cypress	Monterey Park	Walnut
Diamond Bar	Ontario	West Covina
Duarte	Placentia	Yucaipa
El Monte	Pomona	
Fountain Valley	Rosemead	

Visits and/or communications were conducted with elected officials and/or staff from the following state and federal offices:

- | | |
|---|---------------------------------------|
| • U.S. Senator Dianne Feinstein | • Senator Susan Rubio |
| • U.S. Senator Kamala Harris | • Senator Jeff Stone |
| • U.S. Representative Grace Napolitano | • Senator Tom Umberg |
| • U.S. Representative Harley Rouda | • Assemblymember Ian Calderon |
| • U.S. Representative Lucille Roybal-Allard | • Assemblymember Ed Chau |
| • U.S. Representative Raul Ruiz | • Assemblymember Tyler Diep |
| • Senator Bob Archuleta | • Assemblymember Eduardo Garcia |
| • Senator Ling Ling Chang | • Assemblymember Chris Holden |
| • Senator Connie Leyva | • Assemblymember Cottie Petrie-Norris |
| • Senator Anthony Portantino | • Assemblymember Bianca Rubio |

Staff represented South Coast AQMD and/or provided updates or a presentation to the following governmental agencies and business organizations:

Augustine Band of Cahuilla Indians
Cabazon Band of Mission Indians
City of San Bernardino Fleet Management
Coachella Valley Association of Governments
Department of Toxic Substances Control
Greater Coachella Valley Chamber of Commerce
Inland Valley Development Agency
Long Beach Chamber of Commerce
Mecca Library
Morongo Band of Mission Indians
Omnitrans
Pasadena Chamber of Commerce
Riverside County Department of Health
Riverside County Department of Waste Resources
Riverside County Public Library
San Bernardino County Fleet Management
San Bernardino County Sheriff's Department
San Bernardino County Transportation Authority
San Gabriel Valley Council of Governments
San Gabriel Valley Economic Partnership
Santa Ana Chamber of Commerce
SoCal Gas Company
Southern California Association of Governments
Sunline Transit
Torrance Fire Department
Torres Martinez Desert Cahuilla Indians
Twentynine Palms Band of Mission Indians

Staff represented South Coast AQMD and/or provided updates or a presentation to the following community and educational groups and organizations:

Alianza, Coachella Valley
Beaumont High School
Bell Gardens High School
Boyle Heights STEM High School
Cabrillo High School
Clinicas Salud del Pueblo
Coachella Valley Environmental Justice Task Force
College of the Desert
Comite Civico del Valle
Cypress High School

Downtown Business Magnet STEM High School
Edgewood High School
El Monte Union High School District
Garfield High School
Indio Boys and Girls Club
Jordan High School
Leadership Council for Justice and Accountability
Lideres Campesinas
Lutheran Social Services
Mecca Boys and Girls Club
Redlands East Valley High School
Science Academy Magnet STEM High School
South El Monte High School
Theodore Roosevelt High School
Torrance Unified School District
Tree People
Washington Preparatory High School

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BOARD MEETING DATE: March 6, 2020

AGENDA NO. 13

REPORT: Hearing Board Report

SYNOPSIS: This reports the actions taken by the Hearing Board during the period of January 1 through January 31, 2020.

COMMITTEE: No Committee Review

RECOMMENDED ACTION:
Receive and file.

Julie Prussack
Chairman of Hearing Board

ft

Two summaries are attached: **January 2020 Hearing Board Cases and Rules From Which Variances and Orders for Abatement Were Requested in 2020**. An index of South Coast AQMD Rules is also attached.

The total number of appeals filed during the period January 1 to January 31, 2020 is 0.

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BOARD MEETING DATE: March 6, 2020

AGENDA NO. 14

REPORT: Civil Filings and Civil Penalties Report

SYNOPSIS: This reports the monthly penalties from January 1, 2020 through January 31, 2020, and legal actions filed by the General Counsel's Office from January 1 through January 31, 2020. An Index of South Coast AQMD Rules is attached with the penalty report.

COMMITTEE: No Committee Review

RECOMMENDED ACTION:
Receive and file this report.

Bayron T. Gilchrist
General Counsel

BTG:ew

There are no Civil Filings for January 2020. The penalty report is attached.

Attachments

January 2020 Penalty Report

Index of South Coast AQMD Rules and Regulations

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
General Counsel's Office**

January 2020 Settlement Penalty Report

Total Penalties

Civil Settlements:	\$1,612,400.00
MSPAP Settlements:	\$16,420.00
Hearing Board Settlements:	\$89,687.50

Total Cash Settlements:	\$1,718,507.50
Total SEP Value:	\$0.00

Fiscal Year through 1 / 2020 Cash Total:	\$11,281,592.36
Fiscal Year through 1 / 2020 SEP Value Only Total:	\$0.00

Fac ID	Company Name	Rule Number	Settled Date	Init	Notice Nbr	Total Settlement
Civil Settlements						
5137	ACCU CROME PLATING CO INC	1469	1/17/2020	WBW	P69451	\$500.00
150235	BREITBURN OPERATING L.P.	203 2004(f)(1)	1/15/2020	KER	P63261 P64430	\$2,000.00
141413	LOWE'S HIW INC	1143	1/2/2020	BST	P67019	\$1,600,000.00
12372	MISSION CLAY PRODUCTS	2004	1/24/2020	SH	P57885	\$2,500.00
188195	SIERRA ROOF INC	1403	1/17/2020	WBW	P66434	\$5,000.00
186276	TRAN NGUYEN	1403	1/15/2020	NSF	P66458	\$2,400.00
Total Civil Settlements:						\$1,612,400.00

Fac ID	Company Name	Rule Number	Settled Date	Init	Notice Nbr	Total Settlement
MSPAP Settlements						
187032	CORONEL ENTERPRISES	403 403.1	1/23/2020	GC	P63142	\$2,080.00
108165	HILL CRANE SERVICE INC	13 CCR 2460	1/23/2020	GC	P68515	\$1,440.00
28602	LA CITY, SCH DIST SUN VALLEY GARAGE	461(e)(2)	1/9/2020	TF	P69652	\$800.00
7937	LA UNI SCH DIST, BSC BUS GARAGE	461(e)(2)	1/9/2020	TF	P66834	\$800.00
25987	ORANGE, COUNTY OF TRANSPORTATION AUTHORI	203(b)	1/9/2020	TF	P68905	\$250.00
178261	RICH PRODUCTS CORPORATION	203(b)	1/9/2020	TF	P68562	\$250.00
100591	RUSH TRUCK CENTER OF CA INC	203(a) 1171(c)(1)(A)(i)	1/9/2020	TF	P65864	\$2,400.00
189327	SRG CONTRACTORS	403	1/9/2020	TF	P69358	\$400.00
189327	SRG CONTRACTORS	403	1/9/2020	TF	P69353	\$1,000.00
127841	THE TEECOR GROUP, INC.	1403	1/9/2020	TF	P69410	\$1,500.00
123928	TOMMIES TRUCK PAINT	1151	1/23/2020	TF	P63975	\$500.00
178670	TORRANCE 76	461 41960.2	1/9/2020	TF	P67680	\$2,000.00
188276	TRISHA T TRAN	1403	1/9/2020	TF	P66467 P66468	\$500.00

Fac ID	Company Name	Rule Number	Settled Date	Init	Notice Nbr	Total Settlement
176929	UNITED RENTALS, INC N05	461(c)	1/23/2020	TF	P69051	\$800.00
159937	VAHE HOVNANIAN, S & J SHELL	203(a) 461	1/9/2020	TF	P69608	\$1,200.00
187417	YOUR WAY TREE SERVICE	13 CCR 2458	1/9/2020	TF	P66788	\$500.00

Total MSPAP Settlements: \$16,420.00

Fac ID	Company Name	Rule Number	Settled Date	Init	Notice Nbr	Total Settlement
Hearing Board Settlements						
191012	CLIMATE INDUSTRIES, INC. dba HOWARD INDUSTRIES	1111	1/15/2020	MJR	6153-2	\$49,687.50
104234	MISSION FOODS CORPORATION	202 203(b) 1153.1 1303	1/23/2020	KCM	5400-4	\$25,000.00
10966	WEBER METALS INC	402 3002 H&S 41700	1/3/2020	DH	6136-1	\$15,000.00

Total Hearing Board Settlements: \$89,687.50

**SOUTH COAST AQMD'S RULES AND REGULATIONS INDEX
FOR JANUARY 2020 PENALTY REPORT**

REGULATION II - PERMITS

Rule 202 Temporary Permit to Operate
Rule 203 Permit to Operate

REGULATION IV - PROHIBITIONS

Rule 402 Nuisance
Rule 403 Fugitive Dust - Pertains to solid particulate matter emitted from man-made activities
Rule 403.1 Wind Entrainment of Fugitive Dust
Rule 461 Gasoline Transfer and Dispensing

REGULATION XI - SOURCE SPECIFIC STANDARDS

Rule 1111 NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces
Rule 1143 Consumer Paint Thinners & Multi-Purpose Solvents
Rule 1151 Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations
Rule 1153.1 Emissions of Oxides of Nitrogen from Commercial Food Ovens
Rule 1171 Solvent Cleaning Operations

REGULATION XIII - NEW SOURCE REVIEW

Rule 1303 Requirements

REGULATION XIV - TOXICS

Rule 1403 Asbestos Emissions from Demolition/Renovation Activities
Rule 1469 Hexavalent Chromium Emissions from Chrome Plating and Chromic Acid Anodizing Operations

REGULATION XX - REGIONAL CLEAN AIR INCENTIVES MARKET (RECLAIM)

Rule 2004 RECLAIM Program Requirements

REGULATION XXX - TITLE V PERMITS

Rule 3002 Requirements for Title V Permits

CALIFORNIA HEALTH AND SAFETY CODE

41700 Violation of General Limitations
41960.2 Gasoline Vapor Recovery

CALIFORNIA CODE OF REGULATIONS

13 CCR 2458 Portable Equipment Recordkeeping and Reporting
13 CCR 2460 Portable Equipment Testing Requirements

[↑ Back to Agenda](#)

BOARD MEETING DATE: March 6, 2020

AGENDA NO. 15

REPORT: Lead Agency Projects and Environmental Documents Received

SYNOPSIS: This report provides a listing of CEQA documents received by the South Coast AQMD between January 1, 2020 and January 31, 2020, and those projects for which the South Coast AQMD is acting as lead agency pursuant to CEQA.

COMMITTEE: Mobile Source, February 21, 2020, Reviewed

RECOMMENDED ACTION:
Receive and file.

Wayne Natri
Executive Officer

PF:SN:JW:LS:AM

CEQA Document Receipt and Review Logs (Attachments A and B) – Each month, the South Coast AQMD receives numerous CEQA documents from other public agencies on projects that could adversely affect air quality. A listing of all documents received during the reporting period January 1, 2020 through January 31, 2020 is included in Attachment A. A list of active projects from previous reporting periods for which South Coast AQMD staff is continuing to evaluate or has prepared comments is included in Attachment B. A total of 43 CEQA documents were received during this reporting period and 22 comment letters were sent.

The Intergovernmental Review function, which consists of reviewing and commenting on the adequacy of the air quality analysis in CEQA documents prepared by other lead agencies, is consistent with the Board's 1997 Environmental Justice Guiding Principles and Environmental Justice Initiative #4. As required by the Environmental Justice Program Enhancements for FY 2002-03, approved by the Board in October 2002, each attachment notes proposed projects where the South Coast AQMD has been contacted regarding potential air quality-related environmental justice concerns. The South Coast AQMD has established an internal central contact to receive information on projects with potential air quality-related environmental justice concerns. The public may contact the

South Coast AQMD about projects of concern by the following means: in writing via fax, email, or standard letters; through telephone communication; and as part of oral comments at South Coast AQMD meetings or other meetings where South Coast AQMD staff is present. The attachments also identify, for each project, the dates of the public comment period and the public hearing date, if applicable. Interested parties should rely on the lead agencies themselves for definitive information regarding public comment periods and hearings as these dates are occasionally modified by the lead agency.

At the January 6, 2006 Board meeting, the Board approved the Workplan for the Chairman's Clean Port Initiatives. One action item of the Chairman's Initiatives was to prepare a monthly report describing CEQA documents for projects related to goods movement and to make full use of the process to ensure the air quality impacts of such projects are thoroughly mitigated. In response to describing goods movement, CEQA documents (Attachments A and B) are organized to group projects of interest into the following categories: goods movement projects; schools; landfills and wastewater projects; airports; general land use projects, etc. In response to the mitigation component, guidance information on mitigation measures was compiled into a series of tables relative to: off-road engines; on-road engines; harbor craft; ocean-going vessels; locomotives; fugitive dust; and greenhouse gases. These mitigation measure tables are on the CEQA webpages portion of the South Coast AQMD's website at: <http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies>. Staff will continue compiling tables of mitigation measures for other emission sources.

Staff focuses on reviewing and preparing comments for projects: where the South Coast AQMD is a responsible agency; that may have significant adverse regional air quality impacts (e.g. special event centers, landfills, goods movement); that may have localized or toxic air quality impacts (e.g. warehouse and distribution centers); where environmental justice concerns have been raised; and which a lead or responsible agency has specifically requested South Coast AQMD review. If staff provided written comments to the lead agency as noted in the column "Comment Status," there is a link to the "South Coast AQMD Letter" under the Project Description. In addition, if staff testified at a hearing for the proposed project, a notation is provided under the "Comment Status." If there is no notation, then staff did not provide testimony at a hearing for the proposed project.

During the period January 1, 2020 through January 31, 2020, the South Coast AQMD received 43 CEQA documents. Attachment B lists documents that are ongoing active projects. Of the 60 documents listed in Attachments A and B:

- 22 comment letters were sent;
- 21 documents were reviewed, but no comments were made;
- 15 documents are currently under review;
- 0 document did not require comments (e.g., public notices);
- 0 document were not reviewed; and
- 2 documents were screened without additional review.

(The above statistics are from January 1, 2020 to January 31, 2020, and may not include the most recent “Comment Status” updates in Attachments A and B.)

Copies of all comment letters sent to lead agencies can be found on the South Coast AQMD’s CEQA webpage at the following internet address:
<http://www.aqmd.gov/home/regulations/ceqa/commenting-agency>.

South Coast AQMD Lead Agency Projects (Attachment C) – Pursuant to CEQA, the South Coast AQMD periodically acts as lead agency for stationary source permit projects. Under CEQA, the lead agency is responsible for determining the type of CEQA document to be prepared if the proposal for action is considered to be a “project” as defined by CEQA. For example, an Environmental Impact Report (EIR) is prepared when the South Coast AQMD, as lead agency, finds substantial evidence that the project may have significant adverse effects on the environment. Similarly, a Negative Declaration (ND) or Mitigated Negative Declaration (MND) may be prepared if the South Coast AQMD determines that the project will not generate significant adverse environmental impacts, or the impacts can be mitigated to less than significance. The ND and MND are written statements describing the reasons why projects will not have a significant adverse effect on the environment and, therefore, do not require the preparation of an EIR.

Attachments C to this report summarizes the active projects for which the South Coast AQMD is lead agency and is currently preparing or has prepared environmental documentation. As noted in Attachment C, the South Coast AQMD continued working on the CEQA documents for two active projects during January.

Attachments

- A. Incoming CEQA Documents Log
- B. Ongoing Active Projects for Which South Coast AQMD Has or Will Conduct a CEQA Review
- C. Active South Coast AQMD Lead Agency Projects

ATTACHMENT A*
INCOMING CEQA DOCUMENTS LOG
January 1, 2020 to January 31, 2020

SOUTH COAST AQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
Goods Movement LAC200109-02 Pacific Crane Maintenance Company Chassis Repair and Storage Facility	The proposed project consists of demolition of 69,982 square feet of existing structures, and construction of a 68,000-square-foot chassis repair service canopy on 31 acres. The project is located at 895 Reeves Avenue on the southeast corner of State Route 47 and Navy Way within the Port of Los Angeles. Comment Period: 1/9/2020 - 2/10/2020 Public Hearing: N/A	Negative Declaration	City of Los Angeles Harbor Department	Document reviewed - No comments sent
Warehouse & Distribution Centers LAC200103-01 Greenleaf Business Center	The proposed project consists of construction of a 216,500-square-foot warehouse on 25.33 acres. The project is located on the northwest corner of Greenleaf Avenue and Los Nietos Road. Reference LAC191119-03 Comment Period: N/A Public Hearing: N/A	Response to Comments	City of Santa Fe Springs	Document reviewed - No comments sent
Warehouse & Distribution Centers RVC200121-01 Latitude Business Park	The proposed project consists of construction of 1,074,771 square feet of industrial and warehouse uses on 75 acres. The project is located on the northwest corner of Tom Barns Street and Temescal Canyon Road. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/February/RVC200121-01.pdf Comment Period: 1/8/2020 - 2/8/2020 Public Hearing: N/A	Notice of Intent to Adopt a Mitigated Negative Declaration	City of Corona	South Coast AQMD staff commented on 2/7/2020
Warehouse & Distribution Centers SBC200115-01 Industrial Project - Phelan DRC2018-00912	The proposed project consists of demolition of existing buildings and construction of three warehouses totaling 510,847 square feet on 11.73 acres. The project is located on the northwest corner of Ninth Street and Vineyard Avenue. Reference SBC191205-03 Comment Period: N/A Public Hearing: N/A	Response to Comments	City of Rancho Cucamonga	Document reviewed - No comments sent

*Sorted by Land Use Type (in order of land uses most commonly associated with air quality impacts), followed by County, then date received.

- Project has potential environmental justice concerns due to the nature and/or location of the project.

Documents received by the CEQA Intergovernmental Review program but not requiring review are not included in this report.

**ATTACHMENT A
INCOMING CEQA DOCUMENTS LOG
January 1, 2020 to January 31, 2020**

SOUTH COAST AQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
<i>Waste and Water-related</i> ORC200110-02 Capistrano Greenery Composting Operation at the Prima Deshecha Landfill	The proposed project consists of construction of a green waste composting facility with a receiving capacity of 204 tons per day of green wastes diverted from landfills on an 18.6-acre portion of 1,530 acres. The project is located at 32250 Avenida La Plata on the southeast corner of Avenida La Plata and Prima Deshecha in the City of San Juan Capistrano. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/February/ORC200110-02.pdf Comment Period: 1/10/2020 - 2/10/2020 Public Hearing: 5/5/2020	Mitigated Negative Declaration	Orange County Department of Waste and Recycling	South Coast AQMD staff commented on 2/6/2020
<i>Transportation</i> ORC200107-02 State Route 133 Operational Improvements Project	The proposed project consists of construction of a one-mile auxiliary lane on State Route 133 (SR-133) between the intersection of SR-133 and Interstate 405 (Post Mile (PM) 8.3) and the intersection of SR-133 and Irvine Center Drive (PM 9.3) in the City of Irvine. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/February/ORC200107-02.pdf Comment Period: 1/7/2020 - 2/6/2020 Public Hearing: N/A	Mitigated Negative Declaration	California Department of Transportation	South Coast AQMD staff commented on 2/4/2020
<i>Transportation</i> ORC200110-01 State Route 241/State Route 91 Tolloed Express Lanes Connector Project	The proposed project consists of construction of 8.7 miles of freeway lanes to connect between State Route 241 (SR-241) and SR-91. The project traverses through the cities of Anaheim, Yorba Linda, and Corona in Orange and Riverside counties. Reference ORC161108-10, ORC150602-06, and ORC150313-04 Comment Period: 1/10/2020 - 2/18/2020 Public Hearing: N/A	Final Supplemental Environmental Impact Report/ Environmental Impact Statement	California Department of Transportation	Document reviewed - No comments sent
<i>Transportation</i> ORC200115-03 Lincoln Avenue Widening Project from West Street to Harbor Boulevard	The proposed project consists of widening of a 2,440-foot segment of Lincoln Avenue between West Street and Harbor Boulevard. Comment Period: 1/16/2020 - 2/5/2020 Public Hearing: 3/24/2020	Notice of Intent to Mitigated a Negative Declaration	City of Anaheim	Document reviewed - No comments sent

- Project has potential environmental justice concerns due to the nature and/or location of the project.
Documents received by the CEQA Intergovernmental Review program but not requiring review are not included in this report.

**ATTACHMENT A
INCOMING CEQA DOCUMENTS LOG
January 1, 2020 to January 31, 2020**

SOUTH COAST AQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
<i>Transportation</i> RVC200122-01 General Plan Amendment 19-2502	The proposed project consists of amendments to the City's General Plan circulation element to realign a 5,390-linear-foot roadway along Sun Lakes Boulevard between South Highland Home Road and Sunset Avenue. <p align="center">Comment Period: 1/17/2020 - 2/5/2020 Public Hearing: 3/4/2020</p>	Notice of Intent to Adopt a Negative Declaration	City of Banning	Document reviewed - No comments sent
<i>Transportation</i> SBC200102-01 Highland Redlands Regional Connector Project	The proposed project consists of construction of 4.7 miles of bikeways and walkways. The project is located along Streater Avenue and Orange Street between Baseline Street to the north and West Pioneer Avenue to the south in the cities of Highland and Redlands. <p align="center">Comment Period: 1/3/2020 - 2/3/2020 Public Hearing: N/A</p>	Mitigated Negative Declaration	City of Highland	Document reviewed - No comments sent
<i>Institutional (schools, government, etc.)</i> LAC200114-01 California Highway Patrol Baldwin Park Area Office Replacement Project	The proposed project consists of demolition of an existing office building, and construction of a 36,740-square-foot office building, a 6,925-square-foot automobile service facility, a 148-foot steel communications tower, a fueling service station with two pumps, and a 3,300-square-foot fueling canopy on a six-acre portion of 237 acres. The project is located on the northwest corner of East Campus Drive and South Campus Drive within the California Polytechnic State University, Pomona in Los Angeles County. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/February/LAC200114-01.pdf <p align="center">Comment Period: 1/10/2020 - 2/10/2020 Public Hearing: N/A</p>	Notice of Intent to Adopt a Mitigated Negative Declaration	California Highway Patrol	South Coast AQMD staff commented on 2/4/2020
<i>Institutional (schools, government, etc.)</i> LAC200117-01 Hilgard Faculty Housing Project	The proposed project consists of construction of 100 residential units totaling 120,000 square feet with subterranean parking on 0.6 acres. The project is located on the northeast corner of Hilgard Avenue and Lindbrook Drive in the community of Westwood Village within the City of Los Angeles. <p align="center">Comment Period: 1/16/2020 - 2/14/2020 Public Hearing: 2/4/2020</p>	Mitigated Negative Declaration	Regents of the University of California	Document reviewed - No comments sent

- Project has potential environmental justice concerns due to the nature and/or location of the project. Documents received by the CEQA Intergovernmental Review program but not requiring review are not included in this report.

**ATTACHMENT A
INCOMING CEQA DOCUMENTS LOG
January 1, 2020 to January 31, 2020**

SOUTH COAST AQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
<i>Institutional (schools, government, etc.)</i> LAC200124-04 Shenandoah Street Elementary School Comprehensive Modernization Project	The proposed project consists of demolition of 33,684 square feet of existing buildings, modernization of 33,216 square feet of existing buildings, and construction of a 32,290-square-foot building with 19 classrooms on 7.6 acres. The project is located at 2450 Shenandoah Street on the northeast corner of Shenandoah Street and Beverlywood Street in the community of South Robertson. Comment Period: 1/15/2020 - 2/17/2020 Public Hearing: 1/29/2020	Notice of Intent to Adopt a Mitigated Negative Declaration	Los Angeles Unified School District	Document reviewed - No comments sent
<i>Institutional (schools, government, etc.)</i> RVC200123-03 Riverside County Desert Hot Springs Library Project	The proposed project consists of construction of a 15,000-square-foot library on a 2.2-acre portion of 14.8 acres. The project is located on the northeast corner of Palm Drive and Park Lane in the City of Desert Hot Springs. Comment Period: 1/22/2020 - 2/10/2020 Public Hearing: N/A	Mitigated Negative Declaration	Riverside County Economic Development Agency	Document reviewed - No comments sent
<i>Institutional (schools, government, etc.)</i> RVC200123-04 Riverside County French Valley Library Project	The proposed project consists of construction of a 25,000-square-foot library on a 2.9-acre portion of 11.5 acres. The project is located on the northeast corner of State Route 79 and Skyview Road in the community of French Valley. Comment Period: 1/22/2020 - 2/10/2020 Public Hearing: N/A	Mitigated Negative Declaration	Riverside County Economic Development Agency	Document reviewed - No comments sent
<i>Institutional (schools, government, etc.)</i> RVC200123-05 Riverside County Menifee Library Project	The proposed project consists of construction of a 20,000-square-foot library on a 2.1-acre portion of 4.7 acres. The project is located on the northwest corner of Menifee Road and La Piedra Road in the City of Menifee. Comment Period: 1/22/2020 - 2/10/2020 Public Hearing: N/A	Mitigated Negative Declaration	Riverside County Economic Development Agency	Document reviewed - No comments sent

- Project has potential environmental justice concerns due to the nature and/or location of the project. Documents received by the CEQA Intergovernmental Review program but not requiring review are not included in this report.

**ATTACHMENT A
INCOMING CEQA DOCUMENTS LOG
January 1, 2020 to January 31, 2020**

SOUTH COAST AQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
<i>Institutional (schools, government, etc.)</i> SBC200114-02 Church of the Woods	The proposed project consists of construction of a 68,401-square-foot church with 600 seats and a 1,500-square-foot maintenance building on a 13.6-acre portion of 27.1 acres. The project is located on the northwest corner of State Route 18 and Daley Canyon Road in the community of Rimforest. Reference SBC190115-02 Comment Period: N/A Public Hearing: 1/23/2020	Final Environmental Impact Report	County of San Bernardino	Document reviewed - No comments sent
<i>Medical Facility</i> LAC200114-07 656 South San Vicente Medical Office Project	The proposed project consists of demolition of 13,963 square feet of facilities, and construction of 140,305 square feet of medical offices and 5,000 square feet of retail uses on 0.76 acres. The project is located on the northeast corner of San Vicente Boulevard and Orange Street in the community of Wilshire. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/LAC200114-07.pdf Comment Period: 1/14/2020 - 2/13/2020 Public Hearing: 1/28/2020	Notice of Preparation	City of Los Angeles	South Coast AQMD staff commented on 1/21/2020
<i>Retail</i> ORC200108-01 Euclid-Hazard 7-Eleven Service Station	The proposed project consists of construction of a 3,045-square-foot convenience store, a gasoline service station with four pumps, and a 1,800-square-foot fueling canopy on 0.64 acres. The project is located at 813 North Euclid Street on the southeast corner of North Euclid Street and West Hazard Avenue. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/ORC200108-01.pdf Comment Period: 1/6/2020 - 1/26/2020 Public Hearing: 1/27/2020	Notice of Intent to Adopt a Mitigated Negative Declaration	City of Santa Ana	South Coast AQMD staff commented on 1/22/2020
<i>Retail</i> RVC200110-03 MA19041 - Van Buren/Rutile Commercial Project	The proposed project consists of construction of 86,440 square feet of retail and restaurant uses, a 5,034-square-foot car wash facility, a gasoline service station with six pumps, and a 3,456-square-foot fueling canopy on 15.9 acres. The project is located on the southeast corner of Van Buren Boulevard and Rutile Street. Reference RVC190301-11 http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/RVC200110-03.pdf Comment Period: 1/10/2020 - 1/29/2020 Public Hearing: N/A	Site Plan	City of Jurupa Valley	South Coast AQMD staff commented on 1/21/2020

- Project has potential environmental justice concerns due to the nature and/or location of the project.
Documents received by the CEQA Intergovernmental Review program but not requiring review are not included in this report.

**ATTACHMENT A
INCOMING CEQA DOCUMENTS LOG
January 1, 2020 to January 31, 2020**

SOUTH COAST AQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
General Land Use (residential, etc.) LAC200114-06 Vesting Tentative Tract Map 82852	The proposed project consists of demolition of existing vehicle repair facilities and construction of 13 residential units totaling 34,388 square feet on 1.5 acres. The project is located at 788 Francesca Drive on the near the southeast corner of Francesca Drive and Amar Road. Comment Period: 1/8/2020 - 2/11/2020 Public Hearing: N/A	Site Plan	City of Walnut	Document reviewed - No comments sent
General Land Use (residential, etc.) LAC200123-02 1490 West Mission Boulevard Apartments	The proposed project consists of demolition of an existing 1,100-square-foot building and construction of an 83,025-square-foot building with 41 residential units and subterranean parking on 1.2 acres. The project is located near the southeast corner of West Mission Boulevard and South Dudley Street. Comment Period: 1/22/2020 - 2/11/2020 Public Hearing: N/A	Notice of Intent to Adopt a Mitigated Negative Declaration	City of Pomona	Document reviewed - No comments sent
General Land Use (residential, etc.) ORC200109-01 The Bowery Mixed-Use Project	The proposed project consists of demolition of 212,121 square feet of industrial uses, and construction of 1,150 residential units and 80,000 square feet of commercial, retail, and restaurant uses on 14.58 acres. The project is located on the northwest corner of Red Hill Avenue and East Warner Avenue. Reference ORC190808-03 and ORC190801-16 http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/February/ORC200109-01.pdf Comment Period: 1/3/2020 - 2/18/2020 Public Hearing: N/A	Notice of Availability of a Draft Environmental Impact Report	City of Santa Ana	South Coast AQMD staff commented on 2/13/2020
General Land Use (residential, etc.) ORC200116-01 Brea Mall Mixed Use Project	The proposed project consists of demolition of an existing 161,990-square-foot building and a 12-acre surface parking lot, and construction of 312 residential units totaling 380,947 square feet and 311,615 square feet of retail uses on 17.5 acres. The project is located near the southeast corner of South Randolph Avenue and East Birch Street. Reference ORC190816-04 Comment Period: 1/16/2020 - 3/2/2020 Public Hearing: N/A	Draft Environmental Impact Report	City of Brea	Document reviewed - No comments sent

- Project has potential environmental justice concerns due to the nature and/or location of the project. Documents received by the CEQA Intergovernmental Review program but not requiring review are not included in this report.

**ATTACHMENT A
INCOMING CEQA DOCUMENTS LOG
January 1, 2020 to January 31, 2020**

SOUTH COAST AQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
General Land Use (residential, etc.) RVC200109-03 Legado Specific Plan	The proposed project consists of construction of 1,061 residential uses, 225,000 square feet of commercial uses, and 14.8 acres of recreational uses on 331 acres. The project will also include 6.3 acres of open space. The project is located on the southeast corner of Rouse Road and Encanto Drive. Reference RVC101110-01 Comment Period: 1/9/2020 - 2/24/2020 Public Hearing: N/A	Draft Environmental Impact Report	City of Menifee	Document reviewed - No comments sent
Plans and Regulations LAC200124-02 Descanso Gardens Master Plan	The proposed project consists of development of policies and programs to guide future park improvements and resource management with a planning horizon of 2035 on 149 acres. The project is located at 1418 Descanso Drive on the southwest corner of Descanso Drive and Encinas Drive in the City of La Cañada Flintridge. Comment Period: 1/27/2020 - 2/26/2020 Public Hearing: N/A	Notice of Intent to Adopt a Mitigated Negative Declaration	Los Angeles County Department of Parks and Recreation	Document reviewed - No comments sent
Plans and Regulations ORC200107-03 Vegetation Management Program	The proposed project consists of controlled burning of 25 acres to 310 acres of grassland and vegetation. The project is located near the southeast corner of Bell Canyon Road and Grey Rock within Casper's Park and Starr Ranch Audubon in the cities of Mission Viejo and Rancho San Margarita. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/ORC200107-03.pdf Comment Period: N/A Public Hearing: N/A	Initial Project Consultation	Orange County Fire Authority	South Coast AQMD staff commented on 1/16/2020
Plans and Regulations SBC200114-04 Eucalyptus Business Park Specific Plan Amendment	The proposed project consists of amendments to the City's General Plan transportation element to update truck route location maps. The project encompasses 29.7 square miles and is bounded by City of Montclair to the north, City of Ontario to the east, State Route 91 to the south, and City of Chino Hills to the west. Comment Period: 1/13/2020 - 2/3/2020 Public Hearing: 2/3/2020	Notice of Intent to Adopt a Negative Declaration	City of Chino	Document reviewed - No comments sent

- Project has potential environmental justice concerns due to the nature and/or location of the project.
Documents received by the CEQA Intergovernmental Review program but not requiring review are not included in this report.

ATTACHMENT A
INCOMING CEQA DOCUMENTS LOG
January 1, 2020 to January 31, 2020

SOUTH COAST AQMD LOG-IN NUMBER	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
PROJECT TITLE				
<i>Plans and Regulations</i>	The proposed project consists of amendments to zoning and land use designation from Single Residential to Industrial and Mining for one acre. The project is located on the northwest corner of East Baseline Road and North Meridian Avenue in the community of Muscoy. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/SBC200122-02.pdf	Site Plan	San Bernardino County	South Coast AQMD staff commented on 1/28/2020
SBC200122-02				
PROJ-2019-00073				
	Comment Period: 1/22/2020 - 2/11/2020	Public Hearing: N/A		

- Project has potential environmental justice concerns due to the nature and/or location of the project.
 Documents received by the CEQA Intergovernmental Review program but not requiring review are not included in this report.

ATTACHMENT B
ONGOING ACTIVE PROJECTS FOR WHICH SOUTH COAST AQMD HAS
OR IS CONTINUING TO CONDUCT A CEQA REVIEW

SOUTH COAST AQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
<i>Industrial and Commercial</i> RVC191217-03 Agua Mansa Commerce Park Specific Plan	The proposed project consists of construction of 4,216,000 square feet of industrial uses, 264,000 square feet of business and retail uses, and 70.9 acres of open space on 302.8 acres. The project is located on the southeast corner of Rubidoux Boulevard and El Rivino Road. Reference RVC181219-07, RVC181023-01, RVC180509-01, RVC180503-05, RVC171128-09, RVC170705-15, RVC161216-03, and RVC161006-06 http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/RVC191217-03.pdf Comment Period: 12/17/2019 - 1/31/2020 Public Hearing: N/A	Draft Environmental Impact Report	City of Jurupa Valley	South Coast AQMD staff commented on 1/31/2020
<i>Industrial and Commercial</i> RVC191227-06 Pennington Industrial Project	The proposed project consists of construction of three industrial buildings totaling 91,140 square feet on 5.01 acres. The project is located on the southeast corner of Chaney Street and Minthorn Street. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/RVC191227-06.pdf Comment Period: 12/23/2019 - 1/21/2020 Public Hearing: 2/4/2020	Notice of Intent to Adopt a Mitigated Negative Declaration	City of Lake Elsinore	South Coast AQMD staff commented on 1/7/2020
<i>Waste and Water-related</i> LAC191127-02 East San Pedro Bay Ecosystem Restoration Feasibility Study	The proposed project consists of evaluation of aquatic ecosystem function and structure to restore and improve biodiversity for kelp, rocky reef, and eelgrass habitats. The project encompasses 18 square miles and is located offshore in the eastern portion of San Pedro Bay. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/LAC191127-02.pdf Comment Period: 11/29/2019 - 1/27/2020 Public Hearing: N/A	Draft Integrated Feasibility Report/ Environmental Impact Statement/ Environmental Impact Report	United States Department of the Army, Army Corps of Engineers	South Coast AQMD staff commented on 1/14/2020
<i>Waste and Water-related</i> ORC191120-02 Lower Newport Harbor Confined Aquatic Disposal Facility Construction Project	The proposed project consists of construction of a facility to receive up to 156,900 cubic yards of ocean dredging materials. The project encompasses 844 acres and is located offshore between Lido Isle Island and Bay Island in Lower Newport Harbor. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/ORC191120-02.pdf Comment Period: 11/18/2019 - 1/17/2020 Public Hearing: 12/4/2019	Notice of Preparation	City of Newport Beach	South Coast AQMD staff commented on 1/7/2020

- Project has potential environmental justice concerns due to the nature and/or location of the project.

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OR IS CONTINUING TO CONDUCT A CEQA REVIEW**

SOUTH COAST AQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
<i>Waste and Water-related</i> RVC191219-07 San Jacinto River Stage 3 Master Drainage Plan	The proposed project consists of demolition of eight culverts, and construction of an embankment 10,000 feet in length and six feet in height and a 1.5-mile stormwater pipeline. The project is located along San Jacinto River between Ramona Express Highway in the City of Perris to Railroad Canyon near the community of Quail Valley in Riverside County. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/RVC191219-07.pdf Comment Period: 10/21/2019 - 11/20/2019 Public Hearing: N/A	Notice of Preparation (received after close of comments)	Riverside County Flood Control and Water Conservation District	South Coast AQMD staff commented on 1/2/2020
<i>Institutional (schools, government, etc.)</i> LAC191206-02 Wedgeworth K-8 School and Residential Development Project	The proposed project consists of demolition of existing school facilities and construction of an 82,998-square-foot elementary school to accommodate an increase in enrollment capacity from 600 to 1,200 students on 20 acres. The project will also include construction of 160 residential units. The project is located at 16494 Wedgeworth Drive on the northwest corner of Wedgeworth Drive and Ridge Park Drive in the community of Hacienda Heights within Los Angeles County. Reference LAC190801-12 http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/LAC191206-02.pdf Comment Period: 12/5/2019 - 1/21/2020 Public Hearing: 2/27/2020	Draft Environmental Impact Report	Hacienda La Puente Unified School District	South Coast AQMD staff commented on 1/21/2020
<i>Institutional (schools, government, etc.)</i> ORC191217-02 Chapman University Specific Plan Amendment No. 7	The proposed project consists of a project boundary expansion from 58.37 acres to 72.75 acres to accommodate an increase in enrollment capacity from 8,700 students to 10,185 students. The project is located near the southwest corner of Everett Place and Shaffer Street. Reference ORC150519-06 http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/ORC191217-02.pdf Comment Period: 12/12/2019 - 1/27/2020 Public Hearing: 1/16/2020	Notice of Preparation	City of Orange	South Coast AQMD staff commented on 1/7/2020
<i>Institutional (schools, government, etc.)</i> RVC191217-04 Hazelden Betty Ford Center Preliminary Development Plan	The proposed project consists of demolition of 51,694 square feet of residential buildings with 80 beds, and construction of 61,870 square feet of residential buildings with 92 beds and 29,148 square feet of medical and office uses on 26.22 acres. The project is located near the northwest corner of Vista Del Sol and Country Club Drive. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/RVC191217-04.pdf Comment Period: 12/16/2019 - 1/16/2020 Public Hearing: 1/8/2020	Notice of Preparation	City of Rancho Mirage	South Coast AQMD staff commented on 1/7/2020

- Project has potential environmental justice concerns due to the nature and/or location of the project.

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ONGOING ACTIVE PROJECTS FOR WHICH SOUTH COAST AQMD HAS
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SOUTH COAST AQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
Retail RVC191220-05 Beyond Food Mart, Gas Station with Drive Thru and Car Wash, Conditional Use Permit 18-05248	The proposed project consists of construction of a 7,250-square-foot convenience store, a 1,870-square-foot car wash facility, a gasoline service station with 10 fueling pumps, and a 5,320-square-foot fueling canopy on 1.75 acres. The project is located on the southeast corner of Nuevo Road and Murrieta Road. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/RVC191220-05.pdf Comment Period: 12/18/2019 - 1/6/2020 Public Hearing: N/A	Mitigated Negative Declaration	City of Perris	South Coast AQMD staff commented on 1/2/2020
General Land Use (residential, etc.) RVC191203-02 Menifee North Specific Plan 260, Amendment No. 3 (SPA 2010-090) Palomar Crossings	The proposed project consists of construction of 721 residential units totaling 637,000 square feet and 246,312 square feet of commercial uses on 63.24 acres. The project is located on the northeast corner of Palomar Road and State Route 74. Reference RVC190301-05 http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/RVC191203-02.pdf Comment Period: 12/3/2019 - 1/21/2020 Public Hearing: N/A	Draft Environmental Impact Report	City of Menifee	South Coast AQMD staff commented on 1/21/2020
Plans and Regulations ALL191210-01 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy	The proposed project consists of development of a long-range transportation plan and land use policies, strategies, actions, and programs to identify and accommodate current and future mobility goals, policies, and needs for the next 25 years. The project encompasses 38,000 square miles and includes counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. Reference ALL190123-01 http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/ALL191210-01.pdf Comment Period: 12/9/2019 - 1/24/2020 Public Hearing: 1/9/2020	Draft Program Environmental Impact Report	Southern California Association of Governments	South Coast AQMD staff commented on 1/24/2020

- Project has potential environmental justice concerns due to the nature and/or location of the project.

ATTACHMENT C
ACTIVE SOUTH COAST AQMD LEAD AGENCY PROJECTS
THROUGH FEBRUARY 29, 2020

PROJECT DESCRIPTION	PROPONENT	TYPE OF DOCUMENT	STATUS	CONSULTANT
<p>The Phillips 66 (formerly ConocoPhillips) Los Angeles Refinery Ultra Low Sulfur Diesel project was originally proposed to comply with federal, state and South Coast AQMD requirements to limit the sulfur content of diesel fuels. Litigation regarding the CEQA document was filed. Ultimately, the California Supreme Court concluded that the South Coast AQMD had used an inappropriate baseline and directed the South Coast AQMD to prepare an EIR, even though the project has been built and has been in operation since 2006. The purpose of this CEQA document is to comply with the Supreme Court's direction to prepare an EIR.</p>	<p>Phillips 66 (formerly ConocoPhillips), Los Angeles Refinery</p>	<p>Environmental Impact Report (EIR)</p>	<p>The Notice of Preparation/Initial Study (NOP/IS) was circulated for a 30-day public comment period on March 26, 2012 to April 26, 2012. The consultant submitted the administrative Draft EIR to South Coast AQMD in late July 2013. The Draft EIR was circulated for a 45-day public review and comment period from September 30, 2014 to November 13, 2014 and two comment letters were received. South Coast AQMD staff edits on the draft responses to comments were incorporated into a draft Final EIR which is undergoing review.</p>	<p>Environmental Audit, Inc.</p>
<p>Quemetco is proposing to modify existing South Coast AQMD permits to allow the facility to recycle more batteries and to eliminate the existing daily idle time of the furnaces. The proposed project will increase the rotary feed drying furnace feed rate limit from 600 to 750 tons per day and increase the amount of total coke material allowed to be processed. In addition, the project will allow the use of petroleum coke in lieu of or in addition to calcined coke, and remove one existing emergency diesel-fueled internal combustion engine (ICE) and install two new emergency natural gas-fueled ICEs.</p>	<p>Quemetco</p>	<p>Environmental Impact Report (EIR)</p>	<p>A Notice of Preparation/Initial Study (NOP/IS) was released for a 56-day public review and comment period from August 31, 2018 to October 25, 2018, and 154 comment letters were received. Two CEQA scoping meetings were held on September 13, 2018 and October 11, 2018 in the community. South Coast AQMD staff received a preliminary Draft EIR on December 20, 2019 which is undergoing review.</p>	<p>Trinity Consultants</p>

BOARD MEETING DATE: March 6, 2020

AGENDA NO. 16

REPORT: Rule and Control Measure Forecast

SYNOPSIS: This report highlights South Coast AQMD rulemaking activities and public hearings scheduled for 2020.

COMMITTEE: No Committee Review

RECOMMENDED ACTION:
Receive and file.

Wayne Nastri
Executive Officer

PMF:SN:SR:AK:ZS

2020 MASTER CALENDAR

The 2020 Master Calendar provides a list of proposed or proposed amended rules for each month, with a brief description, and a notation in the third column indicating if the rulemaking is for the 2016 AQMP, Toxics, AB 617 BARCT, or Other. Projected emission reductions will be determined during rulemaking.

The following symbols next to the rule number indicate if the rulemaking will be a potentially significant hearing, will reduce criteria pollutants, or is part of the RECLAIM transition. Symbols have been added to indicate the following:

- * *This rulemaking is a potentially significant hearing.*
- + *This rulemaking will reduce criteria air contaminants and assist toward attainment of ambient air quality standards.*
- # *This rulemaking is part of the transition of RECLAIM to a command-and-control regulatory structure.*

* Potentially significant hearing

+ Reduce criteria air contaminants and assist toward attainment of ambient air quality standards

Part of the transition of RECLAIM to a command-and-control regulatory structure

The following table summarizes changes to the schedule since last month’s Rule and Control Measure Forecast Report. Staff will continue to work with all stakeholders as these projects move forward.

212	Standards for Approving Permits and Issuing Public Notice
Rule 212 is being added to May 2020, with no proposed amendments, to provide notice that the rule will be submitted to U.S. EPA for SIP approval.	
218	Continuous Emission Monitoring
218.1	Continuous Emission Monitoring Performance Specifications
218.2	Enhanced Requirements for Continuous Emission Monitoring
218.3	Enhanced Requirements for Continuous Emission Monitoring Performance Specifications
Proposed Amended Rules 218 and 218.1 have been moved from April to October 2020 to allow stakeholders additional time to review these complex rules. The revised provisions that enhance requirements for Continuous Emissions Monitoring Systems (CEMS) will be included in separate rules, Proposed Rules 218.2 and 218.3, to streamline implementation. As a result, Proposed Rules 218.2 and 218.3 will incorporate the revised provisions for CEMS for non-RECLAIM and former RECLAIM facilities. Proposed Rules 218.2 and 218.3 will eventually replace Rules 218 and 218.1. At full implementation, Rules 218 and 218.1 will be rescinded.	
1147	NO_x Reductions from Miscellaneous Sources NO_x Reductions from Large Miscellaneous Combustion Sources Implementation Schedule for NO_x Facilities
1147.1	
(Rule Number Changed to Aggregate Facilities) 1100	
Proposed Amended Rules 1147 and 1100 have been moved from August to September 2020 to allow staff to collect and analyze the data, and work with stakeholders. Proposed Amended Rule 1147 will include large miscellaneous combustion sources that were previously under Proposed Rule 1147.1.	
1147	NO_x Reductions from Miscellaneous Sources NO_x Reductions from Metal Melting and Heating Furnaces Implementation Schedule for NO_x Facilities
1147.2	
1100	
Proposed Amended Rules 1147.2 and 1100 have been moved from August to November 2020 to allow additional time to collect data and work with stakeholders.	
1150.3	NO_x Emission Reductions from Combustion Equipment at Landfills
Proposed Amended Rule 1150.3 has been moved from June to December 2020 to allow staffing changes and staff additional time to work with stakeholders.	
1179.1	NO_x Emission Reductions from Combustion Equipment at Publicly Owned Treatment Work Facilities

Proposed Amended Rule 1179.1 has been moved from June to October 2020 to allow staffing changes and staff additional time to work with stakeholders.	
2305	Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program
Proposed Rule 2305 is being moved from May to September 2020 to allow additional time to work with stakeholders. An update to the Governing Board is now scheduled for April.	
XXIII	Rail Indirect Source Rule
An update to the Governing Board is now scheduled for April.	

2020 MASTER CALENDAR

Month	Title and Description	Type of Rulemaking
April		
2305 UPDATE	<p>Update to Board on Warehouse Indirect Source Rule Staff will present a status update on the rulemaking progress for the Warehouse Indirect Source Rule. Proposed Rule 2305 will reduce emissions and facilitate local and regional emission reductions associated with warehouses and the mobile sources attracted to warehouses.</p> <p><i>Ian MacMillan 909.396.2431; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP/ AB 617 CERP
Reg. XXIII UPDATE	<p>Update to Board on Rail Yard Indirect Source Rule Staff will present a status update on the rulemaking progress for the Rail Yard Indirect Source Rule. Proposed rule(s) within Regulation XXIII would reduce emissions from mobile sources associated with rail yards.</p> <p><i>Ian MacMillan 909.396.2431; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP/ AB 617 CERP
May		
212	<p>Standards for Approving Permits and Issuing Public Notice Staff will be providing notices that Rule 212 will be submitted to U.S. EPA for SIP approval, with no proposed amendments.</p> <p><i>Michael Morris 909.396.3282; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other
Reg. III 1480	<p>Fees Toxics Monitoring Proposed amendments to Regulation III will incorporate the Consumer Price Index adjustment to reflect inflation pursuant to Rule 320. Other proposed amendments may be needed to update fees associated with existing programs and/or implementation of new or revised programs. Proposed Amended Rules 301 and 306 will incorporate fees that are specified in Rule 1480 for ambient monitoring. Consequently, Proposed Amended Rule 1480 will remove the fees that will be incorporated in Proposed Amended Rules 301 and 306.</p> <p><i>Ian MacMillan 909.396.3244; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other/ Toxics/ AB 617 CERP
445*	<p>Wood Burning Devices (PM 2.5 Contingency) Proposed Amended Rule 445 will include contingency provisions in the event the region fails to attain the PM2.5 federal ambient air quality standards or to meet any reasonable further progress requirements.</p> <p><i>Tracy Goss 909.396.3106; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP

2020 MASTER CALENDAR (Continued)

Month	Title and Description	Type of Rulemaking
June		
1117 ^{+#}	<p>Emissions of Oxides of Nitrogen from Glass Melting and Sodium Silicate Furnaces (Formerly Emissions of Oxides of Nitrogen from Glass Melting Furnaces)</p> <p>Proposed Amended Rule 1117 will establish NOx emission limits to reflect Best Available Retrofit Control Technology for glass melting furnaces and will apply to RECLAIM and non-RECLAIM facilities.</p> <p><i>Michael Morris 909.396.3282; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP/ AB 617 BARCT
August		
442.1 1107 1124 1136 1145 1171	<p>Usage of Solvent Coating of Metal Parts and Products Aerospace Assembly and Component Manufacturing Operations Wood Products Coatings Plastic, Rubber, Leather, and Glass Coatings Solvent Cleaning Operations</p> <p>Proposed Rule 442.1 will prohibit the sale, distribution, and application of materials that do not meet the VOC limits specified in Regulation XI rules. Proposed amendments may also be needed to prohibit circumvention of VOC limits in Rules 1107, 1124, 1136, 1145, and 1171.</p> <p><i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other
September		
1109 ^{*+#} 1109.1 ^{*+#}	<p>Emissions of Oxides of Nitrogen from Boilers and Process Heaters in Petroleum Refineries Reduction of Emissions of Oxides of Nitrogen from Refinery Equipment</p> <p>Proposed Rule 1109.1 will establish NOx emission limits to reflect Best Available Retrofit Control Technology for NOx emitting equipment at petroleum refineries and related operations, and include monitoring, reporting, and recordkeeping requirements. Rule 1109 is proposed to be rescinded.</p> <p><i>Michael Krause 909.396.2706; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP/ AB 617 BARCT/ AB 617 CERP

2020 MASTER CALENDAR (Continued)

Month	Title and Description	Type of Rulemaking
September (Continued)		
1147*+ 1100#	<p>NOx Reductions from Miscellaneous Sources Proposed Amended Rule 1147 will revise NOx emission limits to reflect Best Available Retrofit Control Technology for miscellaneous combustion sources and that will apply to RECLAIM and non-RECLAIM facilities.</p> <p>Implementation Schedule for NOx Facilities Proposed Amended Rule 1100 will establish the implementation schedule for Rule 1147 equipment at NOx RECLAIM and former NOx RECLAIM facilities. <i>Michael Krause 909.396.2706; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other/ AB 617 BARCT
2305*+	<p>Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program Proposed Rule 2305 will both reduce emissions and facilitate local and regional emission reductions associated with warehouses and the mobile sources attracted to warehouses. <i>Ian MacMillan 909.396.3244; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP/ AB 617 CERP
October		
218*# 218.1 218.2 (Added) 218.3 (Added)	<p>Continuous Emission Monitoring Continuous Emission Monitoring Performance Specifications Enhanced Requirements for Continuous Emission Monitoring System Enhanced Requirements for Continuous Emission Monitoring System Performance Specifications Proposed Amended Rules 218 and 218.1 will include existing provisions for continuous emissions monitoring systems for non-RECLAIM facilities with minor revisions. The revised provisions that enhance requirements for Continuous Emissions Monitoring Systems (CEMS) will be included in separate rules, Proposed Rules 218.2 and 218.3, to streamline implementation. As a result, Proposed Rules 218.2 and 218.3 will incorporate the revised provisions for CEMS for non-RECLAIM and former RECLAIM facilities. <i>Michael Krause 909.396.2706; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP

2020 MASTER CALENDAR (Continued)

Month	Title and Description	Type of Rulemaking
October (Continued)		
1179.1* ⁺	<p>NOx Emission Reductions from Combustion Equipment at Publicly Owned Treatment Work Facilities</p> <p>Proposed Rule 1179.1 will establish NOx emission limits for combustion equipment burning biofuels to reflect Best Available Retrofit Control Technology and include monitoring, reporting, and recordkeeping requirements at publicly owned treatment works.</p> <p style="text-align: center;"><i>Michael Morris 909.396.3282; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP/ AB 617 BARCT
1450*	<p>Control of Methylene Chloride Emissions</p> <p>Proposed Rule 1450 will reduce methylene chloride emissions from furniture stripping and establish monitoring, reporting, and recordkeeping requirements.</p> <p style="text-align: center;"><i>Michael Morris 909.396.3282; CEQA: Jillian Wong 909.396.3176; and Socio: Ian MacMillan 909.396.3244</i></p>	Toxics
1469.1*	<p>Spraying Operations Using Coatings Containing Chromium</p> <p>Proposed Amended Rule 1469.1 will establish additional requirements to address hexavalent chromium emissions from spraying operations using chromium primers or coatings.</p> <p style="text-align: center;"><i>Jillian Wong 909.396.3176; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Toxics/ AB 617 CERP
November		
1147* ⁺ 1147.2* ⁺ 1100* [#]	<p>NOx Reductions from Miscellaneous Sources</p> <p>NOx Reductions from Metal Melting and Heating Furnaces</p> <p>Proposed Rule 1147.2 will establish NOx emission limits to reflect Best Available Retrofit Control Technology for metal melting and heating furnaces and will apply to RECLAIM and non-RECLAIM facilities. Proposed Amended Rule 1147 will remove equipment that will be regulated under Proposed Rule 1147.2.</p> <p>Implementation Schedule for NOx Facilities</p> <p>Proposed Amended Rule 1100 will establish the implementation schedule for Rule 1147 and 1147.2 equipment at NOx RECLAIM facilities that are transitioning to command-and-control.</p> <p style="text-align: center;"><i>Michael Morris 909.396.3282; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP/ AB 617 BARCT
1407.1*	<p>Control of Toxic Air Contaminant Emissions from Chromium Alloy Melting Operations</p> <p>Proposed Rule 1407.1 will establish requirements to reduce point source and fugitive toxic air contaminant emissions from chromium alloy metal melting operations.</p> <p style="text-align: center;"><i>Michael Morris 909.396.2706; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Toxics/ AB 617 CERP

2020 MASTER CALENDAR (Continued)

Month	Title and Description	Type of Rulemaking
November (Continued)		
1435*	<p>Control of Emissions from Metal Heat Treating Processes Proposed Rule 1435 will establish requirements to reduce point source and fugitive toxic air contaminants including hexavalent chromium emissions from heat treating processes. Proposed Rule 1435 will also include monitoring, reporting, and recordkeeping requirements. <i>Jillian Wong 909.396.3176; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Toxics/ AB 617 CERP
December		
1147*+ 1147.1*+ (Formerly 1147.3)	<p>NOx Reductions from Miscellaneous Sources NOx Reductions for Equipment at Aggregate Facilities Proposed Rule 1147.1 will establish NOx emission limits to reflect Best Available Retrofit Control Technology for NOx equipment at aggregate facilities and will apply to RECLAIM and non-RECLAIM facilities. Proposed Amended Rule 1147 will remove equipment that will be regulated under Proposed Rule 1147.1. <i>Michael Krause 909.396.2706; CEQA: Jillian Wong 909.396.3176 and Socio: Ian MacMillan 909.396.3244</i></p>	AQMP/ AB 617 BARCT
1150.3*+	<p>NOx Emission Reductions from Combustion Equipment at Landfills Proposed Rule 1150.3 will establish NOx emission limits for combustion equipment burning biofuels to reflect Best Available Retrofit Control Technology and include monitoring, reporting, and recordkeeping requirements at landfills. <i>Michael Morris 909.396.3282; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP/ AB 617 BARCT
1426*	<p>Reduction of Toxic Air Contaminants from Metal Finishing Operations Proposed amendments to Rule 1426 will establish requirements to reduce nickel, cadmium, hexavalent chromium, and other air toxics from plating and related operations. Proposed Amended Rule 1426 will establish requirements to control point source and fugitive toxic air contaminant emissions. <i>Jillian Wong 909.396.3176; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Toxics/ AB 617 CERP
2202*	<p>On-Road Motor Vehicle Mitigation Options Proposed Amended Rule 2202 will streamline implementation for regulated entities, as well as reduce review and administration time for South Coast AQMD staff. Concepts may include program components to facilitate achieving average vehicle ridership (AVR) targets. <i>Carol Gomez 909.396.3264; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other

2020 MASTER CALENDAR (Continued)

Month		
December (Continued)	Title and Description	Type of Rulemaking
Reg. XXIII* ⁺	<p>Facility-Based Mobile Sources Proposed rules within Regulation XXIII would reduce emissions from indirect sources (e.g., mobile sources that visit facilities). The rule or set of rules that would be brought for Board consideration would reduce emissions from railyards.</p> <p align="center"><i>Ian MacMillan 909.396.3244; CEQA: Jillian Wong 909.396.3176 Socio: Ian MacMillan 909.396.3244</i></p>	AQMP/ Toxics/ AB 617 CERP

2020 To-Be-Determined

2020	Title and Description	Type of Rulemaking
209	<p>Transfer and Voiding of Permits Staff may propose amendments to clarify requirements for change of ownership and permits and the assessment of associated fees. <i>Michael Krause 909.396.2706; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other
219	<p>Equipment Not Requiring a Written Permit Pursuant to Regulation II Proposed Amended Rule 219 will add or revise equipment not requiring a written permit. <i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other
222	<p>Filing Requirements for Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation II Proposed Amended Rule 222 will add or revise equipment subject to filing requirements. <i>Michael Krause 909.396.2706; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other
223	<p>Emission Reduction Permits for Large Confined Animal Facilities Proposed Amended Rule 223 will seek additional ammonia emission reductions from large confined animal facilities by lowering the applicability threshold. Proposed amendments will implement BCM-04 in the 2016 AQMP. <i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP
407 [#]	<p>Liquid and Gaseous Air Contaminants Proposed Amended Rule 407 will update SOx emission limits to reflect Best Available Retrofit Control Technology, if needed, remove exemptions for RECLAIM facilities, and update monitoring, reporting, and recordkeeping requirements. <i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AB 617 BARCT
425	<p>Odors from Cannabis Processing Proposed Rule 425 will establish requirements for control of odors from cannabis processing. <i>Tracy Goss 909.396.3106; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other
431.1 [#]	<p>Sulfur Content of Gaseous Fuels Proposed Amended Rule 431.1 will assess exemptions, including RECLAIM, and update other provisions, if needed. <i>Michael Krause 909.396.2706; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AB 617 BARCT/ AB 617 CERP
431.2 [#]	<p>Sulfur Content of Liquid Fuels Proposed Amended Rule 431.2 will assess exemptions, including RECLAIM, and update other provisions, if needed. <i>Michael Krause 909.396.2706; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AB 617 BARCT/ AB 617 CERP

2020 To-Be-Determined (Continued)

2020	Title and Description	Type of Rulemaking
431.3 [#]	<p>Sulfur Content of Fossil Fuels Proposed Amended Rule 431.3 will assess exemptions, including RECLAIM, and update other provisions, if needed. <i>Michael Krause 909.396.2706; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AB 617 BARCT/ AB 617 CERP
461	<p>Gasoline Transfer and Dispensing Proposed Amended Rule 461 will reflect information from CARB, corrections, revisions, and additions to improve the effectiveness, enforceability, and clarity of the rule. <i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP/ Toxics
462	<p>Organic Liquid Loading Proposed Amended Rule 462 will incorporate the use of advanced techniques to detect fugitive emissions and Facility Vapor Leak. Other amendments may be needed to streamline implementation and add clarity. <i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other
463	<p>Organic Liquid Storage Proposed Amended Rule 463 will address the current test method and improve the effectiveness, enforceability, and clarity of the rule. Proposed amendments may also be needed to ensure consistency with Rule 1178. <i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other
468 [#]	<p>Sulfur Recovery Units Proposed Amended Rule 468 will update SO_x emission limits to reflect Best Available Retrofit Control Technology, if needed, remove exemptions for RECLAIM facilities, and update monitoring, reporting, and recordkeeping requirements. <i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AB 617 BARCT
469 [#]	<p>Sulfuric Acid Units Proposed Amended Rule 469 will update SO_x emission limits to reflect Best Available Retrofit Control Technology, if needed, remove exemptions for RECLAIM facilities, and update monitoring, reporting, and recordkeeping requirements. <i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AB 617 BARCT
1101 [#]	<p>Secondary Lead Smelters/Sulfur Oxides Proposed Amended Rule 1101 will update SO_x emission limits to reflect Best Available Retrofit Control Technology, if needed, remove exemptions for RECLAIM facilities, and update monitoring, reporting, and recordkeeping requirements. <i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AB 617 BARCT

2020 To-Be-Determined (Continued)

2020	Title and Description	Type of Rulemaking
1105 [#]	<p>Fluid Catalytic Cracking Units SOx Proposed Amended Rule 1105 will update SOx emission limits to reflect Best Available Retrofit Control Technology, if needed, remove exemptions for RECLAIM facilities, and update monitoring, reporting, and recordkeeping requirements.</p> <p><i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AB 617 BARCT/ AB 617 CERP
1110.2 ^{*+##}	<p>Emissions from Gaseous - and Liquid-Fueled Engines Proposed amendments may be needed for Rule 1110.2 to incorporate possible comments by U.S. EPA for approval in the SIP and/or to address use of emergency standby engines for Public Safety Power Shutoff programs.</p> <p><i>Michael Morris 909.396.3282; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP/ AB 617 BARCT
1111	<p>Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces Proposed amendments may be needed for Rule 1111 to address furnaces used in high altitude areas and/or weatherized furnaces.</p> <p><i>Michael Krause 909.396.2706; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP
1113	<p>Architectural Coatings Amendments may be needed to clarify applicability of the rule with respect to distribution.</p> <p><i>Dave DeBoer 909.396.2329; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other
1118 [*]	<p>Control of Emissions from Refinery Flares Proposed Amended Rule 1118 will revise provisions to further reduce flaring. The AB 617 Community Emission Reduction Plan has an emission reduction target to reduce flaring by 50 percent if feasible.</p> <p><i>Michael Krause 909.396.2706; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP/ AB 617 CERP
1119 [#]	<p>Petroleum Coke Calcining Operations – Oxides of Sulfur Proposed Amended Rule 1119 will update SOx emission limits to reflect Best Available Retrofit Control Technology, if needed, remove exemptions for RECLAIM facilities, and update monitoring, reporting, and recordkeeping requirements.</p> <p><i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AB 617 BARCT/ AB 617 CERP
1121 [*]	<p>Control of Nitrogen Oxides from Residential Type, Natural-Gas-Fired Water Heaters Proposed amendments may be needed further reduce NOx emissions from water heaters.</p> <p><i>Michael Krause 909.396.2706; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP

2020 To-Be-Determined (Continued)

2020	Title and Description	Type of Rulemaking
1133.3	<p>Emission Reductions from Greenwaste Composting Operations Proposed Amended Rule 1133.3 will seek additional VOCs and ammonia emission reductions from greenwaste and foodwaste composting. Proposed amendments will implement BCM-10 in the 2016 AQMP. <i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP
1134	<p>Emissions of Oxides of Nitrogen from Stationary Gas Turbines Proposed Amended Rule 1134 will revise monitoring, reporting, and recordkeeping provisions to reflect amendments to Proposed Amended Rules 218 and 218.1 and possibly other amendments to address comments from U.S. EPA and to streamline implementation. <i>Michael Morris 909.396.3282; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP/ AB 617 BARCT
1135	<p>Emissions of Oxides of Nitrogen from Electricity Generating Facilities Proposed Amended Rule 1135 will revise monitoring, reporting, and recordkeeping provisions to reflect amendments to Proposed Amended Rules 218 and 218.1 and possibly other amendments to address comments from U.S. EPA. <i>Michael Morris 909.396.3282; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP/ AB 617 BARCT
1138	<p>Control of Emissions from Restaurant Operations Proposed Amended Rule 1138 will further reduce emissions from char boilers. <i>Tracy Goss 909.396.3106; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP
1142	<p>Marine Tank Vessel Operations Proposed Amended Rule 1142 will address VOC and hydrogen sulfide emissions from marine tank vessel operations and provide clarifications. <i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other
1146 [#]	<p>Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters Proposed amendments to Rule 1146 may be needed to clarify provisions for industry-specific categories and to incorporate comments from U.S. EPA. <i>Michael Krause 909.396.2706; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other

2020 To-Be-Determined (Continued)

2020	Title and Description	Type of Rulemaking
1146.1 [#]	<p>Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters Proposed amendments to Rule 1146.1 may be needed to clarify provisions for industry-specific categories and to incorporate comments from U.S. EPA.</p> <p><i>Michael Krause 909.396.2706; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other
1146.2 [#]	<p>Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters Proposed Amended Rule 1146.2 will be revised to lower the NO_x emission limit to reflect Best Available Retrofit Control Technology.</p> <p><i>Michael Morris 909.396.3282; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP/ AB 617 BARCT
1148.1 [*]	<p>Oil and Gas Production Wells Proposed Amended Rule 1148.1 will evaluate exemptions under Rule 463 to harmonize implementation for low producers. Other proposed amendments may be needed to further reduce emissions from operations, implement early leak detection, odor minimization plans, and enhanced emissions and chemical reporting from oil and drilling sites consistent with the AB 617 Community Emission Reduction Plan.</p> <p><i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other/ AB 617 CERP
1148.2	<p>Notification and Reporting Requirements for Oil and Gas Wells and Chemical Suppliers Proposed amendments to Rule 1148.2 may be needed to improve notifications of well working activities to the community.</p> <p><i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other/ AB 617 CERP
1166	<p>Volatile Organic Compound Emissions from Decontamination of Soil Proposed Amended Rule 1166 will update requirements, specifically concerning notifications and usage of mitigation plans (site specific versus various locations).</p> <p><i>Michael Morris 909.396.3282; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other

2020 To-Be-Determined (Continued)

2020	Title and Description	Type of Rulemaking
1173	<p>Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants Proposed revisions to Rule 1173 are being considered based on recent U.S. EPA regulations and CARB oil and gas regulations and revisions to improve the effectiveness, enforceability, and clarity of the rule. Other proposed amendments may be needed to further reduce emissions from operations, implement early leak detection, odor minimization plans, and enhanced emissions and chemical reporting from oil and drilling sites consistent with the AB 617 Community Emission Reduction Plan. <i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other/ AB 617 CERP
1176	<p>VOC Emissions from Wastewater Systems Proposed Amended Rule 1176 will clarify the applicability of the rule to include bulk terminals under definition of "Industrial Facilities," and streamline and clarify provisions. <i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other/ AB 617 CERP
1178	<p>Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities Proposed Amended Rule 1178 will incorporate the use of more advanced detection methods for earlier leak detection and improve leak detection and repair programs for storage tanks to further reduce VOC emissions. Proposed amendments will implement one of the actions in the AB 617 Community Emission Reduction Plan. <i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AB 617 CERP
1180	<p>Refinery Fenceline and Community Air Monitoring Revisions to Rule 1180 could be considered to clarify applicability including modification or removal of the threshold exemption for petroleum refineries from the requirements of the rule. <i>Michael Krause 909.396.2706; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other
1403*	<p>Asbestos Emissions from Demolition/Renovation Activities Proposed Amended Rule 1403 will enhance implementation, improve rule enforceability, and align provisions with the applicable U.S. EPA National Emission Standard for Hazardous Air Pollutants (NESHAP) and other state and local requirements as necessary. <i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Toxics

2020 To-Be-Determined (Continued)

2020	Title and Description	Type of Rulemaking
1415 1415.1	<p>Reduction of Refrigerant Emissions from Stationary Air Conditioning Systems, and Reduction of Refrigerant Emissions from Stationary Refrigeration Systems</p> <p>Proposed Amended Rules 1415 and 1415.1 will align requirements with the proposed CARB Refrigerant Management Program and U.S. EPA’s Significant New Alternatives Policy Rule provisions relative to prohibitions on specific hydrofluorocarbons.</p> <p><i>David De Boer 909.396.2329; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Other
1420	<p>Emissions Standard for Lead</p> <p>Proposed Amended Rule 1420 will update requirements to address arsenic emissions to close a regulatory gap between Rule 1420 and Rule 1407 - Control of Emissions of Arsenic, Cadmium, and Nickel from Non-Ferrous Metal Melting Operations.</p> <p><i>Michael Morris 909.396.3282; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Toxics
1420.2	<p>Emission Standards for Lead from Metal Melting Facilities</p> <p>Proposed Amended Rule 1420.2 will update requirements to address arsenic emissions to close a regulatory gap between Rule 1420 and Rule 1407 - Control of Emissions of Arsenic, Cadmium, and Nickel from Non-Ferrous Metal Melting Operations.</p> <p><i>Michael Morris 909.396.3282; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Toxics
1445	<p>Control of Toxic Emissions from Laser Arc Cutting</p> <p>Proposed Rule 1445 will establish requirements to reduce toxic metal particulate emissions from laser arc cutting.</p> <p><i>TBD; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Toxics
1469*	<p>Hexavalent Chromium Emissions from Chromium Electroplating and Chromic Acid Anodizing Operations</p> <p>Proposed amendments to Rule 1469 may be needed to address use of chemical fume suppressants or other implementation issues.</p> <p><i>Jillian Wong 909.396.3176; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Toxics
1470	<p>Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines</p> <p>Proposed Amended Rule 1470 will establish additional provisions to reduce the exposure to diesel particulate from new and existing small (≤ 50 brake horsepower) diesel engines located near sensitive receptors. Proposed amendments may be needed to address use of engines during Public Safety Power Shutoffs.</p> <p><i>Michael Morris 909.396.3282; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Toxics

2020 To-Be-Determined (Continued)

2020	Title and Description	Type of Rulemaking
1472	<p>Requirements for Facilities with Multiple Stationary Emergency Standby Diesel-Fueled Internal Combustion Engines</p> <p>Proposed Amended Rule 1472 will remove provisions that are no longer applicable, update and streamline provisions, and assess the need for a Compliance Plans.</p> <p><i>Michael Morris 909.396.3282; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	Toxics
1480	<p>Toxics Monitoring</p> <p>Proposed amendments to Rule 1480 may be needed to remove fee provisions if they are incorporated in Regulation III.</p> <p><i>Jillian Wong 909.396.3176; CEQA: Jillian Wong 909.396.3176 and Socio: Ian MacMillan 909.396.3244</i></p>	Toxics/ AB 617 CERP
Reg. XIII [#]	<p>New Source Review</p> <p>Proposed Amended Regulation XIII will revise New Source Review provisions to address facilities that are transitioning from RECLAIM to a command-and-control regulatory structure. Staff may be proposing a new rule within Regulation XIII to address offsets for facilities that transition out of RECLAIM.</p> <p><i>Michael Morris 909.396.3282; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP
Reg. XX [#]	<p>RECLAIM</p> <p>Proposed Amended Regulation XX will address the transition of RECLAIM facilities to a command and control regulatory structure</p> <p><i>Michael Morris 909.396.3282; CEQA: Jillian Wong 909.396.3176; Socio: Ian MacMillan 909.396.3244</i></p>	AQMP
Reg. II, IV, XIV, XI, XIX, XXIII, XXIV, XXX and XXXV	<p>Various rule amendments may be needed to meet the requirements of state and federal laws, implement OEHHA's 2015 revised risk assessment guidance, changes from OEHHA to new or revised toxic air contaminants or their risk values, address variance issues/technology-forcing limits, to abate a substantial endangerment to public health or additional reductions to meet SIP short-term measure commitments. The associated rule development or amendments include, but are not limited to, South Coast AQMD existing, or new rules to implement the 2012 or 2016 AQMP measures. This includes measures in the 2016 AQMP to reduce toxic air contaminants or reduce exposure to air toxics from stationary, mobile, and area sources. Rule adoption or amendments may include updates to provide consistency with CARB Statewide Air Toxic Control Measures, or U.S. EPA's National Emission Standards for Hazardous Air Pollutants. Rule adoption or amendments may be needed to implement AB 617 including but not limited to BARCT rules, Community Emission Reduction Plans prepared pursuant to AB 617, or new or amended rules to abate a public health issue identified through ambient monitoring.</p>	Other/ AQMP/ Toxics/ AB 617 BARCT/ AB 617 CERP

BOARD MEETING DATE: March 6, 2020

AGENDA NO. 17

REPORT: Status Report on Major Ongoing and Upcoming Projects for Information Management

SYNOPSIS: Information Management is responsible for data systems management services in support of all South Coast AQMD operations. This action is to provide the monthly status report on major automation contracts and planned projects.

COMMITTEE: Administrative, February 14, 2020, Reviewed

RECOMMENDED ACTION:
Receive and file.

Wayne Natri
Executive Officer

RMM:MAH:XC:agg

Background

Information Management (IM) provides a wide range of information systems and services in support of all South Coast AQMD operations. IM's primary goal is to provide automated tools and systems to implement Board-approved rules and regulations, and to improve internal efficiencies. The annual Budget and Board-approved amendments to the Budget specify projects planned during the fiscal year to develop, acquire, enhance, or maintain mission-critical information systems.

Summary of Report

The attached report identifies each of the major projects/contracts or purchases that are ongoing or expected to be initiated within the next six months. Information provided for each project includes a brief project description and the schedule associated with known major milestones (issue RFP/RFQ, execute contract, etc.).

Attachment

Information Management Status Report on Major Ongoing and Upcoming Projects During the Next Six Months

ATTACHMENT
March 6, 2020 Board Meeting
Information Management Status Report on Major Ongoing and
Upcoming Projects During the Next Six Months

Project	Brief Description	Estimated Project Cost	Completed Actions	Upcoming Milestones
Office 365 Implementation	Acquire and implement Office 365 for South Coast AQMD staff	\$350,000	<ul style="list-style-type: none"> • Pre-assessment evaluation and planning completed • Board approved funding on October 5, 2018 • Developed implementation and migration plan • Acquired Office 365 licenses • Implemented Office 365 email (Exchange) and migrated all users • Trained staff in Office 365 Pro Plus desktop software 	<ul style="list-style-type: none"> • Implement Office 365 internal website (SharePoint) and migrate existing content
Permitting System Automation Phase 1	New Web application to automate the filing of permit applications with immediate processing and issuance of permits for specific application types: Dry Cleaners, Gas Stations and Automotive Spray Booths	\$694,705	<ul style="list-style-type: none"> • Automated 400A form filing, application processing, and online permit generation for Dry Cleaner, Automotive Spray Booth and Gas Station Modules deployed to production • Enhanced processing of school locations with associated parcels • Deployed upgraded GIS Map integration and enhanced sensitive receptor identification and distance measurement work 	<ul style="list-style-type: none"> • Continue Phase 1.1 project outreach support

Project	Brief Description	Estimated Project Cost	Completed Actions	Upcoming Milestones
Permitting System Automation Phase 2	Enhanced Web application to automate filing of permit applications, Rule 222 equipment and registration for IC engines; implement electronic permit folder and workflow for internal South Coast AQMD users	\$525,000	<ul style="list-style-type: none"> • Board approved initial Phase 2 funding December 2017 • Phase 2 project startup and detail planning completed May 2018 • Business process model approved • Board approved remaining Phase 2 funding October 5, 2018 • Permitting Automation Workflow/Engineer shadowing/interviewing completed • Report outlining recommendations for automation of Permitting Workflow completed • Development of application submittals and form filing of the first nine of 32 400-E forms completed • Development of application submittals and form filing for 23 types of equipment under Rule 222 completed and ready for testing • Deployment to production of top three most frequently used R222 forms: Negative Air Machines, Small Boilers, and Charbroilers completed 	<ul style="list-style-type: none"> • Complete User Testing for first nine 400-E forms • Complete User Acceptance Testing (UAT) and Deployment of remaining twenty-three R222 forms to production

Project	Brief Description	Estimated Project Cost	Completed Actions	Upcoming Milestones
Information Technology Review Implementation	Complete Board requested Information Technology review and initiate work on implementation of key recommendations	\$75,000 (funding included in \$350,000 Office 365 implementation project)	<ul style="list-style-type: none"> • Initiated Implementation Planning and Resource Requirements for key recommendations • Completed Microsoft Project Plan training for all IM Managers, Supervisors and Secretaries • Established internal Information Technology Steering Committee, members and charter • Configured and deployed Project Management software for IM team 	<ul style="list-style-type: none"> • Office 365 deployment
Permit Application Status and Dashboard Statistics	New Web application to allow engineers to update intermediate status of applications; create dashboard display of status summary with link to FIND for external users	\$100,000	<ul style="list-style-type: none"> • Board approved funding December 2017 • Project startup and detail planning completed • Development of Release 1 and application search module completed • User testing for data capture and user reports modules completed • Internal deployment of application for engineers to populate application related data completed • Enhancements requested by users completed • Development of requested enhancements and deployment to Staging Environment completed 	<ul style="list-style-type: none"> • Complete UAT of requested enhancements • Continue user data input for all open applications • Deploy external application (and link to FIND) for regulated community to view application related data

Project	Brief Description	Estimated Project Cost	Completed Actions	Upcoming Milestones
Document Conversion Services	Document Conversion Services to convert paper documents stored at South Coast AQMD facilities to electronic storage in OnBase	\$83,000	<ul style="list-style-type: none"> • Released RFQ October 5, 2018 • Approved qualified vendors January 4, 2019 • Executed purchase orders for scanning services • Converted over 1,207,893 rule administrative record documents 	<ul style="list-style-type: none"> • Convert over 2,000,000 contract documents
Replace Your Ride (RZR)	New Web application to allow residents to apply for incentives to purchase newer, less polluting vehicles	\$301,820	<ul style="list-style-type: none"> • Phase 2 Fund Allocation, Administration and Management Reporting modules deployed and in production • Final Phase 2 user requested enhancements: VIN Number, Case Manager, Auto e-mail and document library updates deployed to production • Phase 3 moved to production • Implemented Electric Vehicle Service Equipment and other requested modifications 	<ul style="list-style-type: none"> • Implementation of RZR and PeopleSoft Financial integration module
South Coast AQMD Mobile Application Enhancements	Enhancement of Mobile application with addition of advance notification, alternative fuel station search, media integration, infrastructure for hourly migration, and performance improvements	\$100,000	<ul style="list-style-type: none"> • Project charter released • Task order issued, evaluated and awarded • Code development of Phase 1, alternative fuel, media integration, and performance improvements completed • UAT of Phase 1 completed • Completed deployment to both Apple and Google App stores 	<ul style="list-style-type: none"> • Production support and outreach • Develop vision and scope for next phase of enhancements

Project	Brief Description	Estimated Project Cost	Completed Actions	Upcoming Milestones
Legal Division New System Development	Develop new web-based case management system for Legal Division to replace existing system	\$500,000	<ul style="list-style-type: none"> • Task order issued, evaluated and awarded • Project charter, finalized • Business Process Model, completed • Sprint 1, 2 and 3 functional and system design completed • Testing of Sprints 1–3: NOVs, MSPAP, settlements, civil and small claims completed • Sprint 4 functional and design requirements: criminal, bankruptcy, non-NOV cases and check registers completed • Sprint 5 functional and design requirements: investigative assignments completed • Deployment to IM servers and User Testing for Sprints 1-5 modules completed • OnBase and finance integration completed 	<ul style="list-style-type: none"> • Sprint 6 development: reports and data migration • UAT for Sprints 1-5 modules
Flare Event Notification – Rule 1118	Develop new web-based application to comply with Rule 1118 to improve current flare notifications to the public and staff	\$100,000	<ul style="list-style-type: none"> • Project charter released • Task order issued, evaluated and awarded • Requirement gathering and design for Sprint 1, 2, and 3 completed • Sprint 4, Public Portal implementation, completed • Major incident notification deployed • Refinery user training completed • Application demo completed 	<ul style="list-style-type: none"> • Phase II (administrative and reporting pages) development

Project	Brief Description	Estimated Project Cost	Completed Actions	Upcoming Milestones
Flare Event Notification – Rule 1118 (continued)			<ul style="list-style-type: none"> • Deployed to production on December 12, 2019, including major incident reporting on public portal 	
W Environmental Mitigation Action Plan Project	Develop a web application for Zero-Emission Class 8 Freight and Port Drayage Truck Project & Combustion Freight and Marine Project, and incentive programs, and maintain a database that will be queried for reporting to CARB	\$355,000	<ul style="list-style-type: none"> • Project charter document released • Task order issued, evaluated and awarded • Requirement gathering and design for Phase 1 application acceptance completed • System development for Phase 1 completed • Phase 1 UAT completed • Phase 1 Beta testing completed • Deployed to production successfully after December Board approval 	<ul style="list-style-type: none"> • Developing ranking and reporting systems in the admin module • Form creation for Class 8
AQ-SPEC Cloud Platform	Develop a cloud-based platform to manage and visualize data collected by low-cost sensors	\$385,500	<ul style="list-style-type: none"> • Project charter released • Task order issued, evaluated and awarded • Business requirements gathering completed • System architecture, data storage, and design data ingestion completed • Data transformations, calculations, and averaging completed • Dashboards, microsites, data migration completed • Release 2 UAT completed 	<ul style="list-style-type: none"> • Deployment to production

Project	Brief Description	Estimated Project Cost	Completed Actions	Upcoming Milestones
PeopleSoft Electronic Requisition	South Coast AQMD is implementing electronic requisition for PeopleSoft Financials. This will allow submittal of requisitions online, tracking multiple levels of approval, electronic archival, pre-encumbrance of budget, and streamlined workflow	\$75,800	<ul style="list-style-type: none"> • Project charter released • Task order issued, evaluated and awarded • Requirement gathering and system design completed • System setup and code development and user testing for Information Management completed • System setup and code development and UAT completed for AHR (Administrative and Human Resources) 	<ul style="list-style-type: none"> • Deployment to IM and AHR divisions • Integrated User Testing for other divisions
Annual Emission Reporting (AER) enhancement	AER is used by facilities to report annual emissions. Substantial enhancements are required to meet the requirements for Rule 301 changes and AB 617	\$275,800	<ul style="list-style-type: none"> • Project charter released • Task order issued, evaluated and awarded • Business requirements gathering completed • System architecture and system design completed • Development of Phase 1 completed • Phase 1 moved to production to begin January 1 reporting period • Phase 2 Development completed • Successfully deployed to production December 2019 	<ul style="list-style-type: none"> • Production support

Project	Brief Description	Estimated Project Cost	Completed Actions	Upcoming Milestones
Rule 1403 Enhancements	The Rule 1403 web application automates the Rule 1403 notification process. Enhancements to the system are now required to streamline the process and to meet the new rule requirements	\$68,575	<ul style="list-style-type: none"> • Project charter released • Task order issued, evaluated and awarded • Business requirements gathering completed • Development of Phase 1 completed • Development of Phase 2 completed 	<ul style="list-style-type: none"> • Complete System Integration Testing and UAT • System deployment to production
Renewal of HP Server Maintenance & Support	Purchase of maintenance and support services for servers and storage devices	\$120,000		<ul style="list-style-type: none"> • Board Letter for HP server maintenance and support on April 3, 2020 • Execute contract April 30, 2020

Projects that have been completed within the last 12 months are shown below.

Completed Projects	
Project	Date Completed
Mobile Application enhancements including Spanish language	January 23, 2020
Data Cable Infrastructure Installation	February 28, 2020
Prequalify Vendor List for PCs, Network Hardware, etc.	February 7, 2020
Annual Emissions Reporting System	December 31, 2019
Rule 1180 Fence Line Monitoring web site	December 31, 2019
Online filing of Rule 222 – Negative Air Machines, Small Boilers, and Charbroilers modules	December 13, 2019
Flare Notification System	December 12, 2019
Volkswagen Environmental Mitigation Application Filing Portal	December 7, 2019
CLASS Database Software Licensing and Support	November 30, 2019
Office 365 Suite Implementation of File Storage (OneDrive for Business)	November 22, 2019
Ingres Database Migration to Version 11	August 23, 2019
Renewal of OnBase Software Support	July 15, 2019
Telecommunications Service	July 15, 2019
AB 617 – Community Monitoring Data Display Web Application	July 9, 2019

Completed Projects (continued)	
Online filing of Rule 1415 – Reduction of Refrigerant Emissions System	June 5, 2019
South Coast AQMD Mobile Application for Android devices	May 30, 2019
Renewal of HP Server Maintenance & Support	April 30, 2019
Implementation of Enterprise Geographic Information System (EGIS) Phase II	March 11, 2019

BOARD MEETING DATE: March 6, 2020

AGENDA NO. 18

REPORT: FY 2019-20 Contract Activity

SYNOPSIS: This report lists the number of contracts let during the first six months of FY 2019-20, the respective dollar amounts, award type, and the authorized contract signatory for the South Coast AQMD.

COMMITTEE: No Committee Review

RECOMMENDED ACTION:
Receive and file.

Wayne Nastri
Executive Officer

SJ:DH:EA:tm

Background

The Board's Procurement Policy and Procedures requires staff to provide semi-annual reports to the Board on contract activity. This report identifies five categories of contract awards:

- 1) **New Awards** – new contracts for professional services and research projects;
- 2) **Other** – air monitoring station leases, Board Assistant agreements, or other miscellaneous lease agreements that generate revenue, e.g. lease of South Coast AQMD office space;
- 3) **Sponsorships** – contracts funding public events and technical conferences which provide air quality benefits;
- 4) **Modifications** – amendments to existing contracts usually reflecting changes in the project scope and/or schedule; and
- 5) **Terminated Contracts** – Partial/No Work Performed – modifications to contracts to reflect termination of a portion or all work which result in de-obligation of contract funding.

The report further specifies under New Awards, which contracts were awarded competitively, and which were awarded on a sole source basis. Within the first four categories, the level of approval (Board or Executive Officer) is indicated.

Summary

The total value of all contracts and contract modifications for this period (the first six months of FY 2019-20) was \$94,043,610.91, with 175 contracts and contract modifications totaling \$91,970,504 (98%) approved by the Board and 182 contracts and contract modifications totaling \$2,073,106.91 (2%) approved by the Executive Officer. This does not include contract modifications for termination with partial work or no work completed. Table 1 is a summary of the 382 contracts and modifications (including terminations and the associated amount of de-obligated funding) issued during this period.

Table 1: Contracts, Modifications and Amounts (including terminations)

CONTRACT CATEGORY	NUMBER	AMOUNT
NEW AWARDS	170	\$ 86,337,103.28
OTHER	32	909,751.63
SPONSORSHIPS	19	229,300.00
MODIFICATIONS	136	6,567,456.00
TERMINATIONS	25	-4,509,678.00
TOTAL	382	\$ 89,533,932.91

Of the total value for New Awards of \$86,337,103.28, \$82,395,800 or 95% was awarded through the competitive process. As shown in Table 2, contracts totaling \$2,073,106.91 were approved by the Executive Officer.

Table 2: Contracts Approved by Executive Officer

Contract Description	CONTRACT AMOUNT
Board Member Assistant contracts and contract modifications, as approved by the Board’s Administrative Committee	\$800,051.63
Technical consulting	\$323,480
Contract modifications for extensions of time or additional budgeted services from previously approved vendors	\$303,923
Sponsorships in advanced technologies and community and business outreach	\$229,300
Miscellaneous services including the lease of alternative fuel vehicles	\$34,639.60
Venue related services to support clean air outreach events including AB617 meetings	\$38,212.68
Facility improvements to the Diamond Bar Headquarters building	\$58,800
Air monitoring station licenses	\$109,700
Legal services	\$175,000
Total	\$2,073,106.91

Attachment

Contract Activity Report for the period July 1, 2019 through December 31, 2019.

South Coast AQMD
Contract Activity Report
July 1, 2019 - December 31, 2019

DEPT ID	DEPT NAME	CONTRACT NUMBER	FUND CODE	DESCRIPTION	VENDOR NAME	CONTRACT AMOUNT	FOOT NOTE
I. NEW AWARDS							
Competitive - Board Approved							
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C18178	77	PROP 1B TRUCK REPLACEMENT PROGRAM	LIBERTY LINE HAUL WEST, INC.	\$100,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C18183	77	PROP 1B TRUCK REPLACEMENT PROGRAM	ALTO XPRESS, INC.	\$300,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19072	77	REPOWER 2 MAIN ENGINES AND 1 AUXILIARY ENGINE ON A MARINE VESSEL	HARLEY MARINE SERVICES INC	\$1,951,007.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19198	32	REPOWER 2 MAIN ENGINES OF A MARINE VESSEL	LOS ANGELES COUNTY SHERIFF DEPT	\$163,200.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19235	75	MOA FOR SCHOOL ACCESS FOR AIR FILTRATION INSTALLATION	LOS ANGELES UNIFIED SCHOOL DISTRICT	\$0.00	1
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19236	77	PROP 1B TRUCK REPLACEMENT PROGRAM	CALPORTLAND COMPANY	\$2,500,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19242	77	PROP 1B TRUCK REPLACEMENT PROGRAM	ELIZABETH LITSAS	\$100,000.00	
27	INFORMATION MANAGEMENT	C19258	01	AIR MONITORING TELEMETRY PRIVATE INTERNET PROTOCOL (PIP) NETWORK	VERIZON BUSINESS NETWORK SERVICES INC	\$435,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19292	75	MOA RIALTO USD ACCESS FOR AIR FILTRATION INSTALLATION	RIALTO UNIFIED SCHOOL DISTRICT	\$0.00	1
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19294	75	MOA ACCESS TO SCHOOL FOR AIR FILTRATION INSTALLATION	AZUSA UNIFIED SCHOOL DISTRICT	\$0.00	1
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19309	81	PROP 1B TRUCK REPLACEMENT PROGRAM	J&J TRANSPORTATION VINSON, INC.	\$200,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19310	77	PROP 1B TRUCK REPLACEMENT PROGRAM	T&M PROJECTS INC. DBA T&M CONSTRUCTION	\$100,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19311	77	REPLACEMENT OF 29 ON-ROAD EQUIPMENT	NATIONAL READY MIXED CONCRETE CO.	\$1,664,528.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19329	77	PROP 1B TRUCK REPLACEMENT PROGRAM	MOUNTAIN VALLEY EXPRESS CO INC	\$1,000,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19330	77	PROP 1B TRUCK REPLACEMENT PROGRAM	AIR FAYRE CA INC.	\$280,000.00	

South Coast AQMD
Contract Activity Report
July 1, 2019 - December 31, 2019

DEPT ID	DEPT NAME	CONTRACT NUMBER	FUND CODE	DESCRIPTION	VENDOR NAME	CONTRACT AMOUNT	FOOT NOTE
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19332	32	REPLACEMENT OF 2 OFF-ROAD AGRICULTURAL EQUIPMENT	TRENCH SHORING COMPANY	\$347,936.00	
26	PLANNING RULE DEV & AREA SOURCES	C19334	27	APPLICATION OF SWIRL-PATTERN BURNER HEAD TECHNOLOGY WITH REDUCED NOx EMISSIONS CAPABLE OF MEETING THE FUTURE REQUIREMENT OF RULE 1111	BECKETT GAS, INC.	\$791,992.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19341	77	PROP 1B TRUCK REPLACEMENT PROGRAM	TRADELINK TRANSPORT, INC.	\$2,100,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19343	77	REPLACEMENT OF 19 ON-ROAD EQUIPMENT	GREEN FLEET SYSTEMS, LLC	\$1,854,647.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19354	32	REPLACEMENT OF 3 OFF-ROAD EQUIPMENT	SUNWEST FARMS LLC	\$223,847.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19355	32	REPLACEMENT OF 1 OFF-ROAD AGRICULTURAL EQUIPMENT	ALEXANDRA DATES, INC.	\$111,797.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19357	32	REPLACEMENT OF 4 OFF-ROAD AGRICULTURAL EQUIPMENT	VAN DRUNEN FARMS	\$785,855.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19358	32	REPOWER OF 1 MAIN ENGINE ON MARINE VESSEL - OPERATION ONLY	TAYLORED SEAFOOD	\$0.00	1
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19360	77	REPLACEMENT OF 1 ON-ROAD EQUIPMENT	MARTIN H. KARAM	\$73,647.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19361	32	REPLACEMENT OF 2 OFF-ROAD AGRICULTURAL EQUIPMENT	COTTONWOOD DAIRY	\$149,268.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19364	77	PROP 1B TRUCK REPLACEMENT PROGRAM	MAGDALENO CABANAS GARCIA	\$100,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19366	32	REPLACEMENT OF 4 OFF-ROAD AGRICULTURAL EQUIPMENT	AAA FARM, INC.	\$206,178.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19369	56	EFMP PROGRAM DISMANTLER	LKQ-PICK YOUR PART-1275	\$0.00	1
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19374	32	REPLACEMENT OF 1 OFF-ROAD AGRICULTURAL EQUIPMENT	RIVERBED DAIRY	\$176,485.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19375	32	REPLACEMENT OF 1 OFF-ROAD AGRICULTURAL EQUIPMENT	SHARMA GENERAL ENGINEERING CONTRACTORS	\$527,370.00	

**South Coast AQMD
Contract Activity Report
July 1, 2019 - December 31, 2019**

DEPT ID	DEPT NAME	CONTRACT NUMBER	FUND CODE	DESCRIPTION	VENDOR NAME	CONTRACT AMOUNT	FOOT NOTE
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19378	32	REPOWER 15 OFF-ROAD EQUIPMENT	RALPH D MITZEL INC	\$2,931,682.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19379	77	REPLACEMENT OF 1 ON-ROAD EQUIPMENT	CITY OF ARCADIA	\$11,263.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19380	77	REPLACEMENT OF 1 ON-ROAD VEHICLE	TKS LEASING	\$100,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19381	32	REPLACEMENT OF 1 OFF-ROAD AGRICULTURAL EQUIPMENT	CONEJO DATES, INC	\$40,283.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19382	32	REPLACEMENT OF 3 ON-ROAD EQUIPMENT	JPA CONSTRUCTION CLEAN-UP SERVICES INC.	\$237,905.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19389	32	REPLACEMENT OF 6 OFF-ROAD EQUIPMENT	SA RECYCLING LLC	\$625,402.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19393	77	REPLACEMENT OF 2 ON-ROAD EQUIPMENT	AMERICAN PACIFIC FORWARDERS INC	\$200,000.00	
26	PLANNING RULE DEV & AREA SOURCES	C19398	01	EVALUATION OF SOUTH COAST AQMD BARCT ASSESSMENT FOR PROPOSED RULE 1109.1	NORTON ENGINEERING CONSULTANTS, INC	\$100,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19399	77	EXPAND & OPERATE RENEWABLE NATURAL GAS FILLING STATION	RF DICKSON CO INC	\$548,492.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19400	77	CONSTRUCT AND OPERATE RENEWABLE NATURAL GAS FUELING STATION	NATIONAL READY MIXED CONCRETE CO.	\$1,113,794.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19401	77	EXPAND AND OPERATE AN EXISTING RENEWABLE NATURAL GAS FILLING STATION	CLEAN ENERGY	\$4,042,689.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19403	27	RENEWABLE NATURAL GAS UPGRADING, PIPELINE INTERCONNECT, NEAR ZERO EMISSION PROJECT	RIALTO BIOENERGY FACILITY LLC	\$4,365,801.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19404	77	CONSTRUCT & OPERATE A RENEWABLE NATURAL GAS FUELING STATION	FOOD EXPRESS, INC.	\$525,849.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19407	77	PROP 1B TRUCK REPLACEMENT PROGRAM	ROADEX CY, INC.	\$1,400,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19410	77	CONSTRUCT AND OPERATE 2 RENEWABLE NATURAL GAS FILLING STATIONS	AJR TRUCKING, INC.	\$1,279,800.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19411	32	REPLACEMENT OF 2 OFF-ROAD EQUIPMENT	ROBERT MCGINTY	\$112,618.00	

South Coast AQMD
Contract Activity Report
July 1, 2019 - December 31, 2019

DEPT ID	DEPT NAME	CONTRACT NUMBER	FUND CODE	DESCRIPTION	VENDOR NAME	CONTRACT AMOUNT	FOOT NOTE
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19412	77	EXPAND AND OPERATE RENEWABLE NATURAL GAS FILING STATION	CITY OF COMMERCE	\$866,305.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19413	32	REPLACEMENT OF 2 OFF-ROAD EQUIPMENT WITH 1 OFF-ROAD EQUIPMENT	SKIP EDMUNSON, INC.	\$1,147,254.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19414	32	REPLACEMENT OF 2 OFF-ROAD EQUIPMENT	RRM PROPERTIES, LTD	\$376,993.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19416	32	REPLACEMENT OF 3 OFF-ROAD AGRICULTURAL EQUIPMENT	DESERT EMPIRE PALMS	\$345,096.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19417	32	REPOWER 1 OFF-ROAD EQUIPMENT	MBA GRADING & DEMOLITION, INC.	\$168,206.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19418	32	REPLACEMENT OF 7 OFF-ROAD EQUIPMENT	QUALITY TURF INC	\$410,845.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19424	32	REPOWER 1 OFF-ROAD EQUIPMENT	TONY R CRISALLI, INC	\$123,731.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19425	77	REPLACEMENT OF 8 ON-ROAD ENGINES	SUPRA NATIONAL EXPRESS INC.	\$679,974.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19427	77	REPOWER OF 21 ON-ROAD EQUIPMENT	OMNITRANS	\$301,412.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19432	32	REPLACEMENT OF 3 OFF-ROAD EQUIPMENT	DESERT MIST FARMS LLC	\$401,116.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19433	77	REPLACEMENT OF 23 ON-ROAD VEHICLES	CAROLINA TRUCKING INC.	\$2,300,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19434	32	REPLACEMENT OF 6 OFF-ROAD EQUIPMENT	CAL CARTAGE WAREHOUSE & TRANSLOADING LLC	\$463,392.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19435	77	REPLACEMENT OF 1 OFF-ROAD EQUIPMENT	JAMES MCMINN, INC.	\$1,559,840.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19441	32	REPLACEMENT OF 3 OFF-ROAD EQUIPMENT	CALIFORNIA WASTE SERVICES LLC	\$119,190.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19442	77	REPLACEMENT OF 1 ON-ROAD EQUIPMENT	MORIS MUSHARBASH I INC.	\$46,729.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19447	32	REPLACEMENT OF 2 OFF-ROAD EQUIPMENT	ANTHONY VINEYARDS, INC.	\$230,160.00	

**South Coast AQMD
Contract Activity Report
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DEPT ID	DEPT NAME	CONTRACT NUMBER	FUND CODE	DESCRIPTION	VENDOR NAME	CONTRACT AMOUNT	FOOT NOTE
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19450	77	REPLACEMENT OF 2 ON-ROAD EQUIPMENT	TRICON TRANSPORTATION, INC.	\$113,864.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19451	77	CONSTRUCT & OPERATE 1 BATTERY CHARGING STATION	BANNING UNIFIED SCHOOL DISTRICT	\$397,500.00	
16	ADMINISTRATIVE & HUMAN RESOURCES	C19452	01	LANDSCAPE MAINTENANCE SERVICES	TROPICAL PLAZA NURSERY INC	\$277,515.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19456	32	REPLACEMENT OF 13 OFF-ROAD EQUIPMENT	LONG LIFE FARMS INC.	\$793,178.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19458	32	REPLACEMENT OF 1 OFF-ROAD EQUIPMENT	POWERLAND EQUIPMENT INC	\$90,880.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19460	77	REPLACEMENT OF 4 ON-ROAD EQUIPMENT	AIRPORT MOBIL, INC	\$154,607.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19461	77	REPLACEMENT OF 9 ON-ROAD EQUIPMENT	PLAIN LEASING INC	\$422,860.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19463	32	REPOWER OF 1 OFF-ROAD EQUIPMENT	BILL HIGGINS, INC.	\$147,107.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19465	77	REPLACEMENT OF 7 ON-ROAD VEHICLES	MLI LEASING LLC	\$181,595.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19466	32	REPLACEMENT OF 1 OFF-ROAD AGRICULTURAL EQUIPMENT	STEPHEN WESSELINK FARMS INC	\$393,424.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19468	27	DEPLOYMENT OF 110 ZERO-EMISSIONS CLASS 5 BATTERY-ELECTRIC PANEL VANS	CHANJE ENERGY, INC.	\$3,000,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19469	56	CASE MANAGEMENT AND REMOTE SENSING FOR ENHANCED FLEET MODERNIZATION	OPUS INSPECTION INC	\$550,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19470	32	REPOWER 9 OFF-ROAD EQUIPMENT	SUKUT CONSTRUCTION, INC.	\$2,363,555.00	
16	ADMINISTRATIVE & HUMAN RESOURCES	C20003	01	TREE TRIMMING AND PLANT CARE SERVICES	GOTHIC LANDSCAPE MAINTENANCE DIVISION	\$99,932.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20025	32,77	REPLACEMENT OF 15 OFF-ROAD AGRICULTURAL EQUIPMENT	T & R NURSERIES, INC.	\$834,536.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20026	77	REPLACEMENT OF 11 ON-ROAD EQUIPMENT	PACIFICA TRUCKS, LLC	\$693,384.00	

South Coast AQMD
Contract Activity Report
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DEPT ID	DEPT NAME	CONTRACT NUMBER	FUND CODE	DESCRIPTION	VENDOR NAME	CONTRACT AMOUNT	FOOT NOTE
26	PLANNING RULE DEV & AREA SOURCES	C20031	27	RESIDENTIAL ENERGY EFFICIENCY RETROFIT PROGRAM (COACHELLA VALLEY)	ALCAL SPECIALTY CONTRACTING, INC	\$966,667.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20037	77	REPLACEMENT OF 1 HEAVY-DUTY TRUCK	PACKAIR AIRFREIGHT INC.	\$50,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20044	27	FUEL CELL POWER GENERATION SYSTEM (1320 kW) FOR THE AQUARIUM OF THE PACIFIC	BIOFUELS AOP LONG BEACH, LLC	\$282,286.00	
16	ADMINISTRATIVE & HUMAN RESOURCES	C20045	01	ELEVATOR MAINTENANCE AND SERVICE	KONE INC.	\$158,417.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20050	77	PROP 1B TRUCK REPLACEMENT PROGRAM	DANMAR P&D CORP	\$150,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20051	54	COMMERCIAL HARBOR CRAFT NOX AND PM EMISSIONS REDUCTION TECHNOLOGY DEMONSTRATION	NETT TECHNOLOGIES INC.	\$1,338,750.00	
26	PLANNING RULE DEV & AREA SOURCES	C20058	31	AIR QUALITY MODELING AND "BIG DATA" ANALYSIS OF METEOROLOGICAL AND EMISSIONS IMPACTS ON AIR QUALITY	UNIVERSITY OF CALIFORNIA RIVERSIDE	\$188,798.00	
16	ADMINISTRATIVE & HUMAN RESOURCES	C20059	01	ELEVATOR MODERNIZATION AT SOUTH COAST AQMD HEADQUARTERS	KONE INC.	\$14,905,950.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20085	31	TECHNICAL ASSISTANCE FOR DEPLOYMENT AND DEMONSTRATION OF INFRASTRUCTURE AND MOBILE SOURCE APPLICATIONS	CALSTART, INC	\$150,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20086	80	TECHNICAL ASSISTANCE AND IMPLEMENTATION OF THE CARL MOYER PROGRAM INCLUDING THE SCHOOL BUS PROGRAM	CALSTART, INC	\$150,000.00	
26	PLANNING RULE DEV & AREA SOURCES	C20105	27	RESIDENTIAL ENERGY EFFICIENCY RETROFIT PROGRAM (SAN FERNANDO VALLEY)	ALCAL SPECIALTY CONTRACTING, INC	\$480,000.00	
27	INFORMATION MANAGEMENT	C20107	01	OFFICE DATA CABLE INFRASTRUCTURE	DIGITAL NETWORKS GROUP, INC.	\$273,125.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20110	01	CHARACTERIZATION CHAMBER SYSTEM FOR TESTING AIR MONITORING SENSOR DEVICES	RJ LEE GROUP INC	\$900,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G18356	80	PROCURE UP TO 4 PROPANE SCHOOL BUSES	INGLEWOOD UNIFIED SCHOOL DISTRICT	\$538,000.00	

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DEPT ID	DEPT NAME	CONTRACT NUMBER	FUND CODE	DESCRIPTION	VENDOR NAME	CONTRACT AMOUNT	FOOT NOTE
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G19376	80	REPLACEMENT OF 2 CNG FUEL TANKS ON SCHOOL BUSES	REDLANDS UNIFIED SCHOOL DISTRICT	\$40,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G19421	80	REPLACEMENT OF 2 CNG TANKS ON SCHOOL BUSES	DESERT SANDS UNIFIED SCHOOL DISTRICT	\$40,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G19422	80	REPLACEMENT OF 2 EXPIRED ONBOARD CNG TANKS IN PUBLIC SCHOOL BUSES	BONITA UNIFIED SCHOOL DISTRICT	\$40,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G19459	80	REPLACEMENT OF 5 CNG TANKS ON SCHOOL BUSES	WHITTIER UNION HIGH SCHOOL DISTRICT	\$100,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G20040	80	REPLACEMENT OF 3 CNG TANKS ON SCHOOL BUSES	ARCADIA UNIFIED SCHOOL DISTRICT	\$60,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G20041	80	REPLACEMENT OF 6 CNG TANKS ON SCHOOL BUSES	MORENO VALLEY UNIFIED SCHOOL DISTRICT	\$120,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G20057	80	REPLACEMENT OF 2 EXPIRED ONBOARD CNG TANKS IN CNG PUBLIC SCHOOL BUSES	LOS ALAMITOS UNIFIED SCHOOL DISTRICT	\$40,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G20062	80	REPLACEMENT OF 7 CNG FUEL TANKS ON SCHOOL BUSES	LAKE ELSINORE UNIFIED SCHOOL DISTRICT	\$140,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G20063	80	REPLACEMENT OF 14 CNG FUEL TANKS ON SCHOOL BUSES	COLTON JOINT UNIFIED SCHOOL DISTRICT	\$280,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G20075	80	REPLACEMENT OF 2 CNG TANKS ON SCHOOL BUSES	FULLERTON JOINT UNION HIGH SCHOOL DIST	\$40,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G20076	80	REPLACEMENT OF 1 CNG FUELING TANK ON A SCHOOL BUS	ALTA LOMA SCHOOL DISTRICT	\$20,000.00	
44	MSRC	ML14097	23	INSTALL EV CHARGING STATIONS WITH AT LEAST 38 CHARGING PORTS	COUNTY OF LOS ANGELES	\$104,400.00	
44	MSRC	ML16126	23	INSTALL BICYCLE RACKS; CONDUCT OUTREACH AND EDUCATION	CITY OF PALM SPRINGS	\$40,000.00	
44	MSRC	ML18068	23	PROCURE LIGHT-DUTY ZEVS, INSTALL EV CHARGING STATIONS & EXPAND CNG STATIONS	CITY OF MISSION VIEJO	\$125,690.00	
44	MSRC	ML18082	23	PROCURE MEDIUM-DUTY ZERO-EMISSION VEHICLES AND INSTALL EV CHARGING STATIONS	CITY OF LOS ANGELES	\$900,000.00	
44	MSRC	ML18084	23	INSTALL 2 EV CHARGING STATIONS	CITY OF SOUTH EL MONTE	\$30,000.00	
44	MSRC	ML18089	23	PROCURE 1 HEAVY-DUTY NEAR-ZERO EMISSION VEHICLE	CITY OF GLENDORA	\$50,760.00	

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44	MSRC	ML18094	23	INSTALL ELECTRIC VEHICLE CHARGING STATION	CITY OF LAGUNA WOODS	\$50,000.00	
44	MSRC	ML18096	23	PROCURE LIGHT-DUTY ZEV AND INSTALL EV CHARGING STATION	CITY OF HIGHLAND	\$70,210.00	
44	MSRC	ML18128	23	PURCHASE 2 LIGHT-DUTY ZERO EMISSION VEHICLES AND INSTALL 2 CHARGING STATIONS	CITY OF ALISO VIEJO	\$65,460.00	
44	MSRC	ML18135	23	PROCURE 3 LIGHT-DUTY ZERO EMISSION VEHICLE AND 1 HEAVY-DUTY NEAR-ZERO EMISSION VEHICLE	CITY OF AZUSA	\$55,000.00	
44	MSRC	ML18139	23	INSTALL BICYCLE LANE IMPROVEMENTS	CITY OF CALIMESA	\$50,000.00	
44	MSRC	ML18143	23	INSTALL 2 EV CHARGING STATIONS	CITY OF LA HABRA	\$80,700.00	
44	MSRC	ML18144	23	INSTALL 12 EV CHARGING STATIONS	CITY OF FONTANA	\$269,090.00	
44	MSRC	ML18154	23	PROCURE 2 LIGHT-DUTY ZEV'S AND INSTALL EV CHARGING STATIONS	CITY OF HEMET	\$30,000.00	
44	MSRC	ML18155	23	INSTALL 3 LEVEL II TYPE EV CHARGING STATIONS	CITY OF CLAREMONT	\$50,000.00	
44	MSRC	ML18157	23	PROCURE 1 MEDIUM-DUTY ZERO EMISSION VEHICLE	CITY OF LOS ANGELES	\$85,000.00	
44	MSRC	ML18159	23	PROCURE 9 LIGHT-DUTY ZEV'S AND INSTALL EV CHARGING STATIONS	CITY OF RIALTO	\$135,980.00	
44	MSRC	ML18169	23	INSTALL 12 EV CHARGING STATIONS	CITY OF ALHAMBRA	\$111,980.00	
44	MSRC	ML18174	23	PROCURE 1 HEAVY-DUTY NEAR-ZERO EMISSION VEHICLE	CITY OF BELL	\$25,000.00	
44	MSRC	ML18178	23	PROCURE 1 HEAVY-DUTY NEAR-ZERO EMISSIONS VEHICLE	CITY OF LA PUENTE	\$25,000.00	
44	MSRC	MS16125	23	SIGNAL SYNCHRONIZATION UPGRADES	SAN BERNARDINO COUNTY TRANSPORTATION	\$1,000,000.00	
44	MSRC	MS18066	23	INSTALL LIMITED ACCESS CNG FUELING STATION	EL DORADO NATIONAL	\$100,000.00	
44	MSRC	MS18102	23	IMPLEMENT OCFLEX PILOT PROGRAM	ORANGE CO TRANSPORTATION AUTHORITY	\$1,146,000.00	
44	MSRC	MS18106	23	EXPAND PUBLIC ACCESS CNG STATION AND TRAIN MECHANICS	RF DICKSON CO INC	\$265,000.00	
44	MSRC	MS18114	23	INSTALL LIMITED ACCESS CNG STATION	COUNTY OF LOS ANGELES	\$175,000.00	
44	MSRC	MS18116	23	INSTALL LIMITED ACCESS CNG FUELING STATION	COUNTY OF LOS ANGELES	\$175,000.00	
44	MSRC	MS18124	23	INSTALL CNG FUELING STATION	LOS ANGELES COUNTY SANITATION DISTRICTS	\$275,000.00	

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44	MSRC	MS21001	23	IMPLEMENT SPECIAL TRANSIT SERVICE TO DODGER STADIUM	LOS ANGELES COUNTY METROPOLITAN	\$1,148,742.00	
44	MSRC	MS21002	23	PROVIDE PROGRAMMATIC SERVICES TO THE MSRC	BETTER WORLD GROUP ADVISORS	\$250,000.00	
Subtotal						\$82,273,520.00	
Competitive-Executive Officer Approved							
16	ADMINISTRATIVE & HUMAN RESOURCES	C19396	01	WORKER'S COMPENSATION CLAIMS THIRD-PARTY ADMINISTRATOR	ADMINSURE, INC	\$63,480.00	
16	ADMINISTRATIVE & HUMAN RESOURCES	C20133	01	CAFETERIA CABINET RELAMINATION PROJECT	THOMAS HUGHES	\$58,800.00	
Subtotal						\$122,280.00	
Sole Source - Board Approved							
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19191	31	DEVELOPMENT OF SOFC-GT HYBRID TECHNOLOGY	UNIVERSITY OF CALIFORNIA - IRVINE	\$200,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19208	31	CONDUCT EMISSION STUDY ON USE OF ALTERNATIVE DIESEL BLENDS IN OFF-ROAD HEAVY DUTY ENGINES	UNIVERSITY OF CALIFORNIA RIVERSIDE	\$261,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19304	75	INSTALLATION AND MAINTENANCE OF AIR FILTRATION SYSTEMS IN SCHOOLS	IQAIR NORTH AMERICA, INC.	\$153,284.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19307	38,69	INSTALL AIR FILTRATION SYSTEMS IN SCHOOLS	IQAIR NORTH AMERICA, INC.	\$1,489,598.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19344	54	DEMONSTRATION OF RETROFITTING THE DUPLEX LOW NOx COMBUSTION TECHNOLOGY ON A NATURAL GAS-FIRED CRUDE OIL HEATER	CLEARSIGN COMBUSTION CORPORATION	\$220,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19439	31	NATURAL GAS ENGINE AND VEHICLES RESEARCH AND DEVELOPMENT	CUMMINS POWER GENERATION INC	\$250,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C19448	46	COMMUNITY LEADERSHIP AND ENGAGEMENT PROGRAM	CORDOBA CORPORATION	\$150,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C19449	46	COMMUNITY LEADERSHIP AND ENGAGEMENT PROGRAM	BAKEWELL MEDIA OF LA	\$150,000.00	

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44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20038	31	EXPANSION OF THE UCI HYDROGEN REFUELING STATION	UNIVERSITY OF CALIFORNIA - IRVINE	\$400,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20071	75	INSTALL AIR FILTRATION SYSTEMS IN SCHOOLS	IQAIR NORTH AMERICA, INC.	\$159,569.00	
Subtotal						\$3,433,451.00	

Sole Source - Executive Officer Approved

35	LEGISLATIVE & PUBLIC AFFAIRS	C20024	01	ORANGE COUNTY FAITH BASED OUTREACH	FRUITION CONSULTING LLC	\$25,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20029	01	LOS ANGELES INTERAGENCY TASK FORCE MEETING - SEPTEMBER 25, 2019	CALIFORNIA COMMUNITY FOUNDATION	\$775.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20034	01	MEDIA SOFTWARE AGREEMENT FOR MONITORING AND DISSEMINATION OF MEDIA INFORMATION RELATED TO SOUTH COAST AQMD MISSION.	CISION US INC	\$17,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20049	01	ENVIRONMENTAL JUSTICE CONFERENCE - VENUE SETUP/RENTAL	LEVY PREMIUM FOODSERVICE PARTNERSHIP	\$800.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20054	01	LEASE 1 2019 HYUNDAI KONA ELECTRIC VEHICLE	PUENTE HILLS HYUNDAI	\$29,639.60	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20064	01	PROVIDE LIVESCAN CERTIFICATION SERVICES	RISK CONTROL STRATEGIES, INC.	\$5,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20066	01	5TH ANNUAL ENVIRONMENTAL JUSTICE CONFERENCE	YOUTH LEADERSHIP INSTITUTE	\$900.00	
26	PLANNING RULE DEV & AREA SOURCES	C20078	01	SOUTH COAST AQMD PARTNERSHIP WITH CANSAC-CEFA	DESERT RESEARCH INSTITUTE	\$10,000.00	
08	LEGAL	C20081	01	PROVIDE LEGAL ADVICE FOR STATE CONTROLLER AUDIT	PROSKAUER ROSE LLP	\$75,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20082	01	PROVIDE AUDIO/VISUAL SERVICES AT THE 2019 CLEAN AIR AWARDS EVENT	AUDIO VISUAL SERVICES GROUP DBA PSAV	\$5,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20087	01	MEDIA RELATIONS CONSULTING SERVICES	BERNARD C. PARKS, JR.	\$75,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20089	01	MUSICAL ENTERTAINMENT SERVICES FOR 31ST ANNUAL CLEAN AIR AWARDS	LOS ANGELES UNIFIED SCHOOL DISTRICT	\$400.00	

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35	LEGISLATIVE & PUBLIC AFFAIRS	C20090	01	OUTREACH TO AB 617 COMMUNITIES	BREATHE CALIFORNIA OF LOS ANGELES COUNTY	\$75,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20094	01	NOVEMBER 7, 2019 FAITH BASED LEADERS BREAKFAST VENUE RENTAL	DELHI CENTER	\$1,700.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20095	01	SOUTH COAST AQMD MARTIN LUTHER KING JR. DAY OF SERVICE VENUE	CALIFORNIA SCIENCE CENTER FOUNDATION	\$5,000.00	
26	PLANNING RULE DEV & AREA SOURCES	C20096	01	PUBLIC NOTIFICATION MEETING FOR KIRKHILL, INC. VENUE FEE	BREA OLINDA UNIFIED SCHOOL DISTRICT	\$540.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20101	01	FAITH-BASED OUTREACH AND EVENT ORGANIZATION	GENESIS 1 CONSULTING GROUP	\$75,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20106	01	CATERING FOR AB617 COMMUNITY STEERING COMMITTEE MEETING ON 10/23/2019	CHOURA VENUE SERVICES	\$887.68	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20115	01	LEGISLATIVE REPRESENTATION IN SACRAMENTO IN SUPPORT OF SOUTH COAST AQMD'S LEGISLATIVE AGENDA	CAMPBELL STRATEGY & ADVOCACY	\$75,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20116	01	VENUE FOR NOVEMBER 14, 2019 CITY TERRACE COMMUNITY MEETING - COGEN LANDFILL	COUNTY OF LOS ANGELES	\$500.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20120	01	CARB AND SOUTH COAST AQMD RAIL YARDS MEETING AT SALESIAN HIGH SCHOOL	ROMAN CATHOLIC ARCHBISHOP OF LOS ANGELES	\$1,200.00	
08	LEGAL	C20127	01	COUNSEL; NHTSA DISTRICT COURT LITIGATION	SLOVER & LOFTUS	\$25,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20134	01	LOS ANGELES INTERAGENCY TASK FORCE MEETING VENUE	CALIFORNIA COMMUNITY FOUNDATION	\$500.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20135	01	VENUE FOR RULE 1180 COMMUNITY MEETING	CITY OF EL SEGUNDO	\$1,010.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20141	01	VENUE RENTALS FOR COACHELLA AB617 MEETINGS	CITY OF COACHELLA	\$2,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20146	01	HUNTINGTON PARK AB617 MEETING VENUE	CITY OF HUNTINGTON PARK	\$0.00	1
Subtotal						\$507,852.28	

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II. OTHER							
Board Assistant							
Board Administrative Committee Reviewed/Executive Officer Approved							
02	GOVERNING BOARD	C20000	01	BOARD ASSISTANT SERVICES FOR BEN BENOIT	THOMAS ALAN GROSS	\$1.00	
02	GOVERNING BOARD	C20001	01	BOARD ASSISTANT SERVICES FOR BEN BENOIT	RUTHANNE TAYLOR BERGER	\$86,000.00	
02	GOVERNING BOARD	C20002	01	BOARD ASSISTANT SERVICES FOR DR. WILLIAM A. BURKE	P & L CONSULTING, LLC	\$118,872.00	
02	GOVERNING BOARD	C20004	01	BOARD ASSISTANT SERVICES FOR MICHAEL CACCIOTTI	FRANK CARDENAS AND ASSOCIATES	\$7,320.00	
02	GOVERNING BOARD	C20005	01	BOARD ASSISTANT SERVICES FOR JOE BUSCAINO	JACOB LEE HAIK	\$64,337.00	
02	GOVERNING BOARD	C20006	01	BOARD ASSISTANT SERVICES FOR LISA BARTLETT	JAMES DAVID DINWIDDIE III	\$44,734.00	
02	GOVERNING BOARD	C20007	01	BOARD ASSISTANT SERVICES FOR BEN BENOIT	CITY OF WILDOMAR	\$32,872.00	
02	GOVERNING BOARD	C20008	01	BOARD ASSISTANT SERVICES FOR MICHAEL CACCIOTTI	SHO TAY	\$6,750.00	
02	GOVERNING BOARD	C20009	01	BOARD ASSISTANT SERVICES FOR MICHAEL CACCIOTTI	TIMOTHY PHILLIP SANDOVAL	\$11,484.00	
02	GOVERNING BOARD	C20010	01	BOARD ASSISTANT SERVICES FOR MICHAEL CACCIOTTI	WILLIAM GLAZIER	\$7,320.00	
02	GOVERNING BOARD	C20011	01	BOARD ASSISTANT SERVICES FOR VANESSA DELGADO	MARIA TERESA ACOSTA	\$30,000.00	
02	GOVERNING BOARD	C20012	01	BOARD ASSISTANT SERVICES FOR MICHAEL CACCIOTTI	BENJAMIN S WONG	\$6,750.00	
02	GOVERNING BOARD	C20013	01	BOARD ASSISTANT SERVICES FOR JANICE HAHN	DIANE MOSS	\$42,724.00	
02	GOVERNING BOARD	C20014	01	BOARD ASSISTANT SERVICES FOR VANESSA DELGADO	CRISTIAN RIESGO	\$3,252.00	
02	GOVERNING BOARD	C20015	01	BOARD ASSISTANT SERVICES FOR VANESSA DELGADO	SANDRA HERNANDEZ	\$15,000.00	
02	GOVERNING BOARD	C20016	01	BOARD ASSISTANT SERVICES FOR V. MANUEL PEREZ	GUILLERMO GONZALEZ	\$74,389.00	
02	GOVERNING BOARD	C20017	01	BOARD ASSISTANT SERVICES FOR JUDITH MITCHELL	MARISA KRISTINE PEREZ	\$65,496.96	
02	GOVERNING BOARD	C20018	01	BOARD ASSISTANT SERVICES FOR LARRY MCCALLON	RONALD KETCHAM	\$39,624.00	

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02	GOVERNING BOARD	C20019	01	BOARD ASSISTANT SERVICES FOR JANICE RUTHERFORD	COUNTY OF SAN BERNARDINO	\$64,337.00	
02	GOVERNING BOARD	C20020	01	BOARD ASSISTANT SERVICES FOR JANICE RUTHERFORD	COUNTY OF SAN BERNARDINO	\$1.00	
02	GOVERNING BOARD	C20021	01	BOARD ASSISTANT SERVICES FOR DWIGHT ROBINSON	MATTHEW AUGUST HOLDER	\$39,624.00	
02	GOVERNING BOARD	C20043	01	BOARD ASSISTANT SERVICES FOR JANICE HAHN	COUNTY OF LOS ANGELES	\$39,163.67	
Subtotal						\$800,051.63	
Other - Executive Officer Approved							
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19336	01	LICENSE AGREEMENT FOR TEMPORARY AIR MONITORING SITE	CITY OF LOS ANGELES	\$0.00	1
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19349	01	AIR MONITORING SITE LICENSE AGREEMENT	500 SOUTH 7TH AVENUE LLC	\$12,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19426	01	ACCESS LICENSE AGREEMENT FOR AIR MONITORING SITE LAUSD	LOS ANGELES UNIFIED SCHOOL DISTRICT	\$0.00	1
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19430	01	AIR MONITORING SITE LICENSE AGREEMENT	CITY OF LONG BEACH	\$70,200.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20091	01	AIR MONITORING SITE LICENSE AGREEMENT	LOS ANGELES COUNTY FIRE DEPARTMENT	\$500.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20102	01	AIR MONITORING SITE LICENSE AGREEMENT	JUDSON BAPTIST CHURCH	\$6,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20103	01	AIR MONITORING SITE LICENSE AGREEMENT	ST. LUKE HOLY BAPTIST CHURCH	\$6,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20130	01	AIR MONITORING SITE LICENSE AGREEMENT	PORT OF LONG BEACH	\$6,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20131	01	AIR MONITORING SITE LICENSE AGREEMENT - WILMINGTON	FIRST UNITED METHODIST CHURCH	\$6,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20137	01	AIR MONITORING SITE LICENSE AGREEMENT	LEEWARD BAY MARINA	\$3,000.00	
Subtotal						\$109,700.00	

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III. SPONSORSHIPS							
Sponsorship -Executive Officer Approved							
35	LEGISLATIVE & PUBLIC AFFAIRS	C19457	01	COSPONSOR 2019 JAZZ AT ST. ANDREWS FESTIVAL	LOS ANGELES BROTHERHOOD CRUSADE	\$5,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20022	01	COSPONSOR THE 2020 AIR SENSORS INTERNATIONAL CONFERENCE	UNIVERSITY OF CALIFORNIA-DAVIS	\$50,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20028	01	THE LATINA PUBLIC SERVICE ACADEMY'S ANNUAL SUMMER FUNDRAISING RECEPTION	THE LATINA PUBLIC SERVICE ACADEMY	\$1,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20035	01	COSPONSOR SBCC 7TH ANNUAL THRIVING TOGETHER BENEFIT	SOUTH BAY CENTER FOR COUNSELING	\$2,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20036	01	SPONSOR THE CAFCP 20TH ANNIVERSARY EVENT	FRONTIER ENERGY INC	\$10,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20042	01	SPONSOR 7TH ANNUAL RENDEZVOUS BACK TO ROUTE 66	SAN BERNARDINO AREA CHAMBER OF COMMERCE	\$2,500.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20046	01	SPONSOR THE RADLAUNCH PROGRAM	RADTECH INTERNATIONAL NORTH AMERICA,INC.	\$5,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20053	01	COSPONSOR THE 2019 SOCAL WORK TRUCK SHOW	MOTOR TREND GROUP, LLC	\$20,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20055	01	COSPONSOR THE LOS ANGELES NATIONAL DRIVE ELECTRIC WEEK 2019 EVENT "CHARGE UP LA"	PLUG IN AMERICA	\$1,800.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20060	01	2019 LEGACY LA 2ND ANNUAL GALA SPONSORSHIP	LEGACY LA YOUTH DEVELOPMENT CORP.	\$10,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20067	01	CRUISIN' REUNION SPONSORSHIP	ROUTE 66 REUNION	\$5,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20069	01	COSPONSOR 2019 RIVERSIDE AND SANTA MONICA ALT CAR EXPO & CONFERENCE	PLATIA PRODUCTIONS	\$21,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20077	01	14TH ANNUAL TASTE OF SOUL 2019 FAMILY FESTIVAL	LOS ANGELES SENTINEL, INC	\$50,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20080	01	DELHI CENTER 50TH ANNIVERSARY EVENT SPONSORSHIP - LA EPOCA DE ORO	DELHI CENTER	\$2,500.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20098	01	CO-SPONSOR THE 30TH REAL WORLD EMISSIONS WORKSHOP	COORDINATING RESEARCH COUNCIL INC	\$5,000.00	

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44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20099	01	COSPONSOR CALETC 2019 LOS ANGELES AUTO SHOW EVENTS	CALIFORNIA ELECTRIC TRANSP. COALITION	\$8,500.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20104	01	COSPONSOR 2020 RENEWABLE GAS 360 SYMPOSIUM	GLADSTEIN, NEANDROSS & ASSOCIATES	\$25,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20111	01	COSPONSOR 21ST ANNUAL GENERAL ASSEMBLY	SOUTH BAY CITIES	\$2,500.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C20113	01	SPONSOR COMITE CIVICO DEL VALLE ENVIRONMENTAL HEALTH LEADERSHIP SUMMIT	COMITE CIVICO DEL VALLE, INC	\$2,500.00	
Subtotal						\$229,300.00	

IV. MODIFICATIONS

Board Approved

44	SCIENCE & TECHNOLOGY ADVANCEMENT	C12376	31	TECHNICAL ASSISTANCE FOR AIR POLLUTION FORMATION AND CONTROL, ADVANCED TRANSPORTATION TECHNOLOGIES AND SYSTEMS, EMISSIONS MEASUREMENTS AND ANALYSIS, ALTERNATIVE FUEL TECHNOLOGIES, SUSTAINABLE ENERGY SYSTEMS, AND OFF-ROAD VEHICLES AND EQUIPMENT	UNIVERSITY OF CALIFORNIA, RIVERSIDE	\$150,000.00	
08	LEGAL	C12702	01	LEGAL ADVICE FOR LAWSUITS AND ADMINISTRATIVE PROCEEDINGS	SHUTE MIHALY & WEINBERGER LLP	\$25,000.00	
04	FINANCE	C14150	57	CITY OF EL MONTE LAMBERT PARK PROJECT	CITY OF EL MONTE	\$4,862.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C14184	31	DC FAST CHARGING NETWORK PROVIDER	CLEAN FUEL CONNECTION INC	\$40,000.00	
08	LEGAL	C14191	01	PROVIDE LEGAL SERVICES CONCERNING EXIDE BANKRUPTCY PROCEEDINGS	KLEE, TUCHIN, BOGDANOFF & STERN LLP	\$230,000.00	
08	LEGAL	C16063	01	SPECIALIZED LEGAL SERVICES	HOGAN LOVELLS US LLP	\$35,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C17207	67	DEVELOPMENT AND DEMONSTRATION OF UP TO 12 CLASS 8 BATTERY ELECTRIC DRAYAGE TRUCKS	PETERBILT MOTORS	\$76,000.00	
08	LEGAL	C18104	01	PROVIDE EMPLOYMENT AND LABOR LAW SERVICES	FISHER & PHILLIPS, LLP	\$50,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C18138	01	SACRAMENTO LEGISLATIVE REPRESENTATION	CALIFORNIA ADVISORS LLC	\$39,500.00	

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35	LEGISLATIVE & PUBLIC AFFAIRS	C18138	01	SACRAMENTO LEGISLATIVE REPRESENTATION	CALIFORNIA ADVISORS LLC	\$143,000.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C18139	01	STRATEGIC CONSULTING SERVICES FOR LEGISLATION REPRESENTATION IN SACRAMENTO, CALIFORNIA	JOE A GONSALVES & SON	\$143,000.00	
27	INFORMATION MANAGEMENT	C18288	01	SHORT- AND LONG-TERM SYSTEMS DEVELOPMENT, MAINTENANCE AND SUPPORT SERVICES	VARUN ETECHNOLOGIES GROUP, INC	\$380,500.00	
27	INFORMATION MANAGEMENT	C18292	01	SHORT- AND LONG-TERM SYSTEMS DEVELOPMENT, MAINTENANCE AND SUPPORT SERVICES	PRELUDE SYSTEMS, INC.	\$275,800.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C19215	01	WASHINGTON DC LEGISLATIVE REPRESENTATION	CARMEN GROUP, INC	\$222,090.00	
35	LEGISLATIVE & PUBLIC AFFAIRS	C19216	01	WASHINGTON DC LEGISLATIVE REPRESENTATION	CASSIDY & ASSOCIATES, INC	\$216,000.00	
08	LEGAL	C19229	01	LEGAL ADVICE IN RELATION TO LEGISLATIVE AUTHORITY TO ADOPT A SALES TAX	KAUFMAN LEGAL GROUP, A PROFESSIONAL CORP	\$30,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19356	32	REPOWER 17 ENGINES OF AGRICULTURAL EQUIPMENT	PEED EQUIPMENT COMPANY	\$2,105,294.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19414	32	REPLACE 2 OFF-ROAD EQUIPMENT	RRM PROPERTIES, LTD	\$179,687.00	
08	LEGAL	C20081	01	PROVIDE LEGAL ADVICE FOR STATE CONTROLLER AUDIT	PROSKAUER ROSE LLP	\$150,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G18338	80	ALTERNATIVE FUEL SCHOOL BUS REPLACEMENT PROGRAM	ANAHEIM ELEMENTARY SCHOOL DISTRICT	\$348,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G18339	80	LOWER-EMISSION SCHOOL BUS REPLACEMENT INCENTIVE PROGRAM	ANAHEIM UNION HIGH SCHOOL DISTRICT	\$390,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G18353	80	PURCHASE 15 PROPANE SCHOOL BUSES WITH FIRE SUPPRESSION SYSTEMS AND ASSOCIATED INFRASTRUCTURE	GARDEN GROVE UNIFIED SCHOOL DISTRICT	\$390,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G18357	80	ALTERNATIVE FUEL SCHOOL BUS REPLACEMENT PROGRAM	LA HABRA CITY SCHOOL DISTRICT	\$26,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G18359	80	PURCHASE 1 PROPANE SCHOOL BUS WITH FIRE SUPPRESSION SYSTEM	NEWHALL SCHOOL DISTRICT	\$4,000.00	

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44	SCIENCE & TECHNOLOGY ADVANCEMENT	G18366	80	LOWER-EMISSION SCHOOL BUS REPLACEMENT INCENTIVE PROGRAM	REDLANDS UNIFIED SCHOOL DISTRICT	\$176,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G18372	80	ALTERNATIVE FUEL SCHOOL BUS REPLACEMENT PROGRAM	SAVANNA SCHOOL DISTRICT	\$4,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G18376	80	ALTERNATIVE SCHOOL BUS REPLACEMENT PROGRAM	WEST COVINA UNIFIED SCHOOL DISTRICT	\$26,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G18377	80	LOWER-EMISSION SCHOOL BUS REPLACEMENT INCENTIVE PROGRAM	WESTMINSTER SCHOOL DISTRICT	\$8,000.00	
44	MSRC	ML12091	23	INSTALL EV CHARGING STATIONS	CITY OF BELLFLOWER	\$0.00	6
44	MSRC	ML18163	23	PROCURE 3 LIGHT-DUTY ZEVS AND INSTALL EV CHARGING STATIONS	CITY OF SAN CLEMENTE	\$10,000.00	
44	MSRC	MS16030	23	PROGRAMMATIC OUTREACH SERVICES ON BEHALF OF THE MSRC	BETTER WORLD GROUP ADVISORS	\$15,000.00	
44	MSRC	MS18003	23	DESIGN, HOST, AND MAINTAIN MSRC WEBSITE	GEOGRAPHICS	\$7,500.00	
44	MSRC	MS18007	23	TECHNICAL ADVISOR FOR MSRC	RAYMOND GORSKI	\$363,300.00	
Subtotal						\$6,263,533.00	

Executive Officer Approved

08	LEGAL	C10052	01	PROVIDE EMPLOYEE RELATIONS LITIGATION SERVICES	LIEBERT CASSIDY WHITMORE	\$30,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C11543	32	REPOWER 12 OFF-ROAD EQUIPMENT	SA RECYCLING LLC	\$0.00	6
08	LEGAL	C13060	01	LITIGATION COUNSEL	PAUL HASTINGS LLP	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C13305	32	REPOWER 2 MAIN ENGINES ON 1 MARINE VESSEL	TODD PHILLIPS / TONNAGE SPORTFISHING	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C13441	80	REPLACE UP TO 20 DIESEL LOCOMOTIVES	SO CALIFORNIA REGIONAL RAIL AUTHORITY	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C14091	32	REPOWER 2 MAIN AND AUXILIARY ENGINES ON 1 MARINE VESSEL	REDONDO BEACH SPORTFISHING LLC	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C14312	81	PROP 1B TRUCK REPLACEMENT PROGRAM	SAN LUIS BUTANE DISTRIBUTORS, INC.	\$0.00	11
27	INFORMATION MANAGEMENT	C15587	01	SHORT AND LONG-TERM SYSTEMS DEVELOPMENT, MAINTENANCE AND SUPPORT SERVICES	PRELUDE SYSTEMS, INC.	\$0.00	6

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44	SCIENCE & TECHNOLOGY ADVANCEMENT	C15609	31	INSTALLATION OF RIVERSIDE RENEWABLE HYDROGEN FUELING STATION	ITM POWER INC	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C15680	31	DEVELOP A DETAILED TECHNOLOGY AND ECONOMICS BASED ROADMAP FOR THE ADOPTION OF ADVANCED COMMERCIAL VEHICLE TECHNOLOGIES TO REDUCE NITROGEN OXIDES (NOx) AND GREENHOUSE GAS (GHG) EMISSIONS THROUGH 2050 WITH EMPHASIS ON THE YEARS 2023 AND 2032.	NATIONAL RENEWABLE ENERGY LAB	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C15680	31	DEVELOP A DETAILED TECHNOLOGY AND ECONOMICS BASED ROADMAP FOR THE ADOPTION OF ADVANCED COMMERCIAL VEHICLE TECHNOLOGIES TO REDUCE NITROGEN OXIDES (NOx) AND GREENHOUSE GAS (GHG) EMISSIONS THROUGH 2050 WITH EMPHASIS ON THE YEARS 2023 AND 2032.	NATIONAL RENEWABLE ENERGY LAB	\$0.00	6
26	PLANNING RULE DEV & AREA SOURCES	C16033	01	EVALUATION OF POTENTIAL HEALTH EFFECTS FROM AIR POLLUTION	JOHN R FROINES	\$0.00	6
26	PLANNING RULE DEV & AREA SOURCES	C16034	01	EVALUATE POTENTIAL HEALTH EFFECTS FROM AIR POLLUTION	MICHAEL T. KLEINMAN	\$0.00	6
16	ADMINISTRATIVE & HUMAN RESOURCES	C16037	01	INSURANCE CONSULTANT/BROKERAGE SERVICES	ALLIANT INSURANCE SERVICES INC	\$74,000.00	
26	PLANNING RULE DEV & AREA SOURCES	C16214	01	PROVIDE ASSISTANCE WITH CEQA SERVICES FOR SOUTH COAST AQMD RULE PROJECTS	PLACEWORKS INC	\$0.00	6
08	LEGAL	C16392	01	LEGAL ADVICE AND REPRESENTATION FOR SO CAL GAS LITIGATION	HUANG YBARRA GELBERG & MAY LLP	\$25,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C17114	01	APPLICATION OF NEXT GENERATION AIR MONITORING METHODS TO CHARACTERIZE HAZARDOUS AIR POLLUTANT EMISSIONS FROM REFINERIES AND ASSESS POTENTIAL IMPACTS TO SURROUNDING COMMUNITIES	FLUXSENSE AB	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C17127	32	REPOWER OF 2 MAIN ENGINES OF A MARINE VESSEL	CATALINA CLASSIC CRUISES	\$0.00	6

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08	LEGAL	C17131	01	CONSULTING EXPERT	KENNETH A. MANASTER	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C17158	32	REPOWER 1 MAIN ENGINE OF A MARINE VESSEL	JOHN MELLO	\$0.00	0
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C17186	01	ENGAGE, EDUCATE, AND EMPOWER CALIFORNIA COMMUNITIES ON THE USE AND APPLICATIONS OF LOW-COST AIR MONITORING SENSORS	SONOMA TECHNOLOGY INC	\$0.00	11
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C17203	01	ENGAGE, EDUCATE, AND EMPOWER CALIFORNIA COMMUNITIES ON THE USE AND APPLICATIONS OF "LOW-COST" AIR MONITORING SENSORS	UNIVERSITY OF CALIFORNIA-LOS ANGELES	\$0.00	11
04	FINANCE	C17213	01	PROVIDE INVESTMENT CONSULTING SERVICES TO SOUTH COAST AQMD	PFM ASSET MANAGEMENT LLC	\$23,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C17247	32	REPLACEMENT OF 4 OFF-ROAD AGRICULTURAL EQUIPMENT	OOSTDAM DAIRY	\$0.00	11
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C17277		CONDUCT MARKET ANALYSIS FOR ZERO-EMISSION HEAVY-DUTY TRUCKS IN GOODS MOVEMENT	UNIVERSITY OF SOUTHERN CALIFORNIA	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C17278	31	TO DEVELOP FREIGHT LOADING STRATEGIES FOR ZERO-EMISSION HEAVY-DUTY TRUCKS IN GOODS MOVEMENT	UNIVERSITY OF SOUTHERN CALIFORNIA	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C17348	81	PROP 1B TRUCK REPLACEMENT PROGRAM	XIN LI	\$0.00	11
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C17359	01	ENGAGE, EDUCATE, AND EMPOWER CALIFORNIA COMMUNITIES ON USE AND APPLICATIONS OF "LOW COST" AIR MONITORING SENSORS	COMITE CIVICO DEL VALLE, INC	\$10,000.00	
08	LEGAL	C17407	01	LEGAL ADVICE REGARDING THE CALIFORNIA COASTAL ACT AND RELATED MATTERS AS WELL AS REPRESENTATION OF THE SOUTH COAST AQMD BEFORE THE CALIFORNIA COASTAL COMMISSION	GAINES & STACEY, LLP	\$0.00	6
16	ADMINISTRATIVE & HUMAN RESOURCES	C18021	01	WEST INLAND EMPIRE EMPLOYMENT RELATIONS CONSORTIUM	LIEBERT CASSIDY WHITMORE	\$3,985.00	
26	PLANNING RULE DEV & AREA SOURCES	C18115	68	CITY OF TORRANCE COMMUNITY AIR MONITORING NETWORK	CITY OF TORRANCE	\$0.00	6
35	LEGISLATIVE & PUBLIC AFFAIRS	C18137	01	SACRAMENTO LEGISLTATIVE REPRESENTATION	QUINTANA, WATTS & HARTMANN LLC	\$39,500.00	

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44	SCIENCE & TECHNOLOGY ADVANCEMENT	C18186	81	PROP 1B TRUCK REPLACEMENT PROGRAM	TOTAL TRANSPORTATION SERVICES, INC	\$0.00	11
26	PLANNING RULE DEV & AREA SOURCES	C18196	01	PROVIDE POINT SOURCE MODELING ASSISTANCE IN PERMITTING BACKLOG	CASTLE ENVIRONMENTAL CONSULTING, LLC	\$25,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C18201	81	PROP 1B TRUCK REPLACEMENT PROGRAM	ECOLOGY AUTO PARTS, INC.	\$0.00	11
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C18240	56	PROVIDE TECHNICAL ASSISTANCE TO THE ENHANCED FLEET MODERNIZATION PROGRAM	CLEAN FUEL CONNECTION INC	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C18258	46	RESEARCH OF HEXAVALENT CHROMIUM EMISSIONS FROM INDUSTRIAL HEAT TREATING FURNACES	UNIVERSITY OF CALIFORNIA RIVERSIDE	\$0.00	6
26	PLANNING RULE DEV & AREA SOURCES	C18263	01	CONDUCT A NATIONWIDE ECONOMIC IMPACTS EVALUATION OF ACCELERATED DEPLOYMENT OF ZERO AND NEAR-ZERO NOX EMISSIONS TECHNOLOGIES IN THE HEAVY-DUTY TRUCK SECTOR BY 2032	ICF RESOURCES, LLC	\$0.00	6
26	PLANNING RULE DEV & AREA SOURCES	C18263	01	CONDUCT A NATIONWIDE ECONOMIC IMPACTS EVALUATION OF ACCELERATED DEPLOYMENT OF ZERO AND NEAR-ZERO NOX EMISSIONS TECHNOLOGIES IN THE HEAVY-DUTY TRUCK SECTOR BY 2032	ICF RESOURCES, LLC	\$25,000.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C18283	01	APPLICATION OF HYPERSPECTRAL THERMAL-INFRARED IMAGING TO CHARACTERIZE AND QUANTIFY AIR TOXICS WITHIN THE SOUTH COAST AIR BASIN	THE AEROSPACE CORPORATION	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C18315	32	REPOWER 2 ENGINES ON 1 MARINE VESSEL	HAVE A PLAN, LLC	\$0.00	11
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C18321	32	REPLACE 2 OFF-ROAD, DUAL ENGINE EQUIPMENT WITH 1 OFF-ROAD DUAL ENGINE EQUIPMENT	SKIP EDMUNSON, INC.	\$0.00	11
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C18322	32	REPLACEMENT OF 4 OFF-ROAD AGRICULTURAL EQUIPMENT	MARVO HOLSTEINS	\$0.00	11
16	ADMINISTRATIVE & HUMAN RESOURCES	C18324	01	ARCHITECTURAL DESIGN AND SERVICES FOR IRRIGATION AND LANDSCAPE	ARCHITERRA DESIGN GROUP	\$10,000.00	

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26	PLANNING RULE DEV & AREA SOURCES	C18380	01	LITERATURE REVIEW AND EMPIRICAL STUDY OF RESIDENTIAL VISIBILITY BENEFITS OF CLEAN AIR	INDUSTRIAL ECONOMICS INCORPORATED	\$0.00	6
26	PLANNING RULE DEV & AREA SOURCES	C18381	01	LITERATURE REVIEW OF PUBLIC WELFARE BENEFITS OF CLEAN AIR	INDUSTRIAL ECONOMICS INCORPORATED	\$0.00	6
26	PLANNING RULE DEV & AREA SOURCES	C18381	01	LITERATURE REVIEW OF PUBLIC WELFARE BENEFITS OF CLEAN AIR	INDUSTRIAL ECONOMICS INCORPORATED	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19032	77	REPOWER 1 MAIN ENGINE AND 1 AUXILIARY ENGINE OF A MARINE VESSEL	BRYAN KEITH BISHOP	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19038	77	REPOWER 1 MAIN ENGINE ON 1 MARINE VESSEL	SEA TOW NEWPORT BEACH/LA	\$0.00	11
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19045	77	REPOWER OF 2 MAIN ENGINES OF A MARINE VESSEL	EXODUS CHARTERS, INC.	\$0.00	11
16	ADMINISTRATIVE & HUMAN RESOURCES	C19046	01	DESIGN, ENGINEERING AND BIDDING DOCUMENTS FOR REPLACEMENT OF LIEBERT AIR CONDITIONING UNITS	GOSS ENGINEERING, INC	\$8,400.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19050	77	REPOWER OF 1 MAIN ENGINE OF A MARINE VESSEL	JOSHUA FISHER	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19061	77	REPOWER 2 MAIN ENGINES OF A MARINE VESSEL	JMJ SPORTFISHING, INC.	\$0.00	11
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19066	77	REPOWER 2 MAIN ENGINES OF 2 MARINE VESSELS	CARNAGE FISH CO.	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19066	77	REPOWER 2 MAIN ENGINES OF 2 MARINE VESSELS	CARNAGE FISH CO.	\$0.00	11
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19067	77	REPOWER 2 MAIN ENGINES OF A MARINE VESSEL	CLINTON NGUYEN	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19069	77	REPOWER 1 MAIN ENGINE AND 1 AUXILIARY ENGINE OF A MARINE VESSEL	DUNG VAN NGUYEN	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19070	77	REPOWER 2 MAIN ENGINES OF A MARINE VESSEL	DANIEL HERNANDEZ PRODUCTIONS, INC	\$0.00	11
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19083	77	REPLACEMENT OF 1 OFF-ROAD AGRICULTURAL EQUIPMENT	JC FARMING INC.	\$0.00	11
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19097	77	REPLACEMENT OF 1 OFF-ROAD EQUIPMENT	CAPLINGER CONSTRUCTION, INC	\$0.00	11

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27	INFORMATION MANAGEMENT	C19156	01	SHORT AND LONG-TERM SYSTEMS DEVELOPMENT, MAINTENANCE AND SUPPORT SERVICES	AGREEYA SOLUTIONS, INC	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19166	31	REPLACEMENT OF 29 DIESEL AND GASOLINE POWERED AIRPORT SHUTTLE BUSES	PHOENIX CARS, LLC	\$0.00	4
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19185	17	REPLACEMENT OF 2 HEAVY-DUTY DRAYAGE TRUCKS	MDB TRANSPORTATION INC	\$0.00	11
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19187	17	HEAVY-DUTY DRAYAGE TRUCK REPLACEMENT	NFI INDUSTRIES, INC	\$0.00	11
04	FINANCE	C19222	22,23	AUDIT OF AB 2766 FEE REVENUE RECIPIENTS FOR FISCAL YEARS 2015-16 & 2016-17	SIMPSON & SIMPSON, CPAs	\$0.00	6
04	FINANCE	C19222	22,23	AUDIT OF AB 2766 FEE REVENUE RECIPIENTS FOR FISCAL YEARS 2015-16 & 2016-17	SIMPSON & SIMPSON, CPAs	\$0.00	6
16	ADMINISTRATIVE & HUMAN RESOURCES	C19231	01	SUBSCRIPTION AGREEMENT FOR THE MENTORING PROGRAM	TRIPLE CREEK ASSOCIATES, INC.	\$1,500.00	
16	ADMINISTRATIVE & HUMAN RESOURCES	C19268	01	ELEVATOR MODERNIZATION, ENGINEERING AND DESIGN	INFRASTRUCTURE ENGINEERS	\$3,538.00	
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19312	01	TECHNICAL EXPERTISE FOR LABORATORY - NEEDED FOR THE ANALYSIS OF ASBESTOS IN BUILDING MATERIAL AND ANALYSIS OF FALLOUT MATERIAL, IN SUPPORT OF RULE 1403	SANDRA L ESSNER	\$25,000.00	
26	PLANNING RULE DEV & AREA SOURCES	C19318	27	HIGH EFFICIENCY AND LOW-NOx COMBO RIBBON BURNER COMBUSTION SYSTEM DEMONSTRATION	GAS TECHNOLOGY INSTITUTE	\$0.00	11
26	PLANNING RULE DEV & AREA SOURCES	C19335	01	PACIFIC RIM INITIATIVE FOR MARITIME EMISSION REDUCTIONS: COLLABORATION WITH CHINESE PORT CITIES	FUNG RESEARCH LIMITED	\$0.00	6
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C20055	01	COSPONSOR THE LOS ANGELES NATIONAL DRIVE ELECTRIC WEEK 2019 EVENT "CHARGE UP LA"	PLUG IN AMERICA	\$0.00	11
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G18355	80	LOWER EMISSION SCHOOL BUS REPLACEMENT INCENTIVE PROGRAM	HUNTINGTON BEACH UNION HIGH SCH DISTRICT	\$0.00	11
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G19048	80	REPLACE 1 CNG FUEL TANK ON 1 SCHOOL BUS	RIM OF THE WORLD UNIFIED SCHOOL DISTRICT	\$0.00	11
44	SCIENCE & TECHNOLOGY ADVANCEMENT	G19195	80	REPLACE 4 CNG TANKS ON SCHOOL BUSES	BELLFLOWER USD	\$0.00	11

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44	MSRC	ML12045	23	INSTALL CNG STATION	CITY OF BALDWIN PARK	\$0.00	6
44	MSRC	ML12090	23	INSTALL 1 LEVEL III TYPE PUBLICLY ACCESSIBLE EV CHARGING STATION	CITY OF PALM SPRINGS	\$0.00	6
44	MSRC	ML12091	23	INSTALL EV CHARGING STATIONS	CITY OF BELLFLOWER	\$0.00	11
44	MSRC	ML14018	23	PURCHASE 27 HEAVY-DUTY NATURAL GAS VEHICLES	CITY OF LOS ANGELES	\$0.00	6
44	MSRC	ML14023	23	UPGRADE VEHICLE MAINTENANCE FACILITY IN WESTCHESTER	COUNTY OF LOS ANGELES	\$0.00	6
44	MSRC	ML14024	23	UPGRADE MAINTENANCE FACILITY IN BALDWIN PARK	COUNTY OF LOS ANGELES	\$0.00	6
44	MSRC	ML14030	23	BICYCLE INFRASTRUCTURE & EDUCATION	COUNTY OF LOS ANGELES	\$0.00	6
44	MSRC	ML14030	23	BICYCLE INFRASTRUCTURE & EDUCATION	COUNTY OF LOS ANGELES	\$0.00	6
44	MSRC	ML14096	23	SAN GABRIEL BIKE TRAIL UNDERPASS IMPROVEMENTS	COUNTY OF LOS ANGELES	\$0.00	6
44	MSRC	ML16034	23	IMPLEMENT "COMPLETE STREETS" PROJECT	CITY OF RIVERSIDE	\$0.00	6
44	MSRC	ML16039	23	INSTALL EV CHARGING STATIONS	CITY OF TORRANCE	\$0.00	6
44	MSRC	ML16040	23	INSTALL EV CHARGING STATIONS	CITY OF EASTVALE	\$0.00	6
44	MSRC	ML16054	23	IMPLEMENT "COMPLETE STREETS" PROJECT	CITY OF YUCAIPA	\$0.00	6
44	MSRC	ML16057	23	IMPLEMENT COUNTY LINE ROAD "COMPLETE STREETS" PROJECT	CITY OF YUCAIPA	\$0.00	6
44	MSRC	ML16077	23	IMPLEMENT PEDESTRIAN IMPROVEMENTS AND BIKE SHARING	CITY OF RIALTO	\$0.00	6
44	MSRC	ML18019	23	PURCHASE 2 LIGHT-DUTY ZEVS AND EVSE	CITY OF HIDDEN HILLS	\$0.00	6
44	MSRC	ML18022	23	SYNCHRONIZE TRAFFIC SIGNALS ON PALM DRIVE	CITY OF DESERT HOT SPRINGS	\$0.00	6
44	MSRC	ML18034	23	INSTALL ELECTRIC VEHICLE CHARGING STATIONS	CITY OF CALABASAS	\$0.00	6
44	MSRC	ML18039	23	PROCURE 1 HEAVY-DUTY ZERO EMISSION VEHICLE (ZEV) AND INSTALL 1 LEVEL III FAST CHARGE ELECTRIC VEHICLE CHARGING STATION	CITY OF REDLANDS	\$0.00	6
44	MSRC	ML18044	23	UPGRADE AND INSTALL ELECTRIC VEHICLE CHARGING STATIONS	CITY OF MALIBU	\$0.00	6
44	MSRC	ML18056	23	INSTALL EV CHARGING STATIONS	CITY OF CHINO	\$0.00	11
44	MSRC	ML18081	23	INSTALL 2 EV CHARGING STATIONS	CITY OF BEAUMONT	\$0.00	6
44	MSRC	MS16090	23	IMPLEMENT TRANSIT STATION IMPROVEMENTS	LOS ANGELES COUNTY METROPOLITAN	\$0.00	6

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44	MSRC	MS16096	23	INSTALLATION OF EV CHARGING INFRASTRUCTURE	SAN BERNARDINO COUNTY TRANSPORTATION	\$0.00	6
44	MSRC	MS16124	23	EXTENDED FREEWAY SERVICE PATROL SERVICE	RIVERSIDE COUNTY TRANSPORTATION COMM	\$0.00	6
44	MSRC	MS18002	23	IMPLEMENT "GO HUMAN" PROGRAM	SOUTHERN CALIFORNIA ASSOCIATION OF GOVT	\$0.00	6
44	MSRC	MS18014	23	ELECTRIC VEHICLE INFRASTRUCTURE SPATIAL PLANNING ANALYSIS	UNIVERSITY OF CALIFORNIA-LOS ANGELES	\$0.00	6
44	MSRC	MS18112	23	INSTALL LIMITED ACCESS CNG STATION	BANNING UNIFIED SCHOOL DISTRICT	\$0.00	6
Subtotal						\$303,923.00	

V. TERMINATED CONTRACTS-PARTIAL/NO WORK PERFORMED

44	SCIENCE & TECHNOLOGY ADVANCEMENT	C11555	31	DEMONSTRATE HYDROGEN REFUELING STATION AT UCLA	UNIVERSITY OF CALIFORNIA-LOS ANGELES	-\$400,000.00	7
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C16150	32	REPLACEMENT OF 3 AND REPOWER OF 5 OFF-ROAD VEHICLES	SHARMA GENERAL ENGINEERING CONTRACTORS	-\$300,504.00	7
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C17236	81	PROP 1B TRUCK REPLACEMENT PROGRAM	FRESH LINK LOGISTICS LLC	-\$200,000.00	7
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C17403	81	PROP 1B TRUCK REPLACEMENT PROGRAM	FENCECORP, INC.	-\$120,000.00	7
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C17404	81	PROP 1B TRUCK REPLACEMENT PROGRAM	FENCE WORKS INC.	-\$80,000.00	7
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C18124	81	PROP 1B TRUCK REPLACEMENT PROGRAM	AJR TRUCKING, INC.	-\$1,820,000.00	7
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C18218	81	PROP 1B TRUCK REPLACEMENT PROGRAM	HENEAN TRUCKING INC	-\$400,000.00	7
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C18307	23	REPLACEMENT OF 5 OFF-ROAD AGRICULTURAL EQUIPMENT	PRADO RECREATION INC	-\$156,110.00	7
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C18330	32	REPLACEMENT OF 10 OFF-ROAD AGRICULTURAL EQUIPMENT	PASTIME LAKES HOLDINGS, LLC	-\$11,181.00	7
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C18394	32	REPLACEMENT OF 11 OFF-ROAD EQUIPMENT	GRIFFITH COMPANY	-\$409,932.00	7

South Coast AQMD
Contract Activity Report
July 1, 2019 - December 31, 2019

DEPT ID	DEPT NAME	CONTRACT NUMBER	FUND CODE	DESCRIPTION	VENDOR NAME	CONTRACT AMOUNT	FOOT NOTE
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19039	77	REPLACEMENT OF 1 OFF-ROAD AGRICULTURAL EQUIPMENT	COLD CREEK ESTATES, LLC	-\$93.00	7
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19042	77	REPOWER 1 MAIN ENGINE OF A MARINE VESSEL	SAN PEDRO PRIDE INC	-\$38,697.00	7
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19107	77	REPLACEMENT OF 6 OFF-ROAD VEHICLES	BALI CONSTRUCTION INC	-\$375.00	7
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19114	77	REPLACEMENT OF 8 OFF-ROAD AGRICULTURAL EQUIPMENT	DOUBLE D PIPELINE, INC.	-\$969.00	7
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19115	77	REPLACEMENT OF 18 EXISTING OFF-ROAD EQUIPMENT WITH 9 NEW OFF-ROAD EQUIPMENT	SUKUT CONSTRUCTION, INC.	-\$11,945.00	7
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19120	77	REPOWER 5 OFF-ROAD EQUIPMENT	C5 EQUIPMENT RENTALS, LLC	-\$2,907.00	7
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19144	77	REPLACEMENT OF 26 OFF-ROAD AGRICULTURAL EQUIPMENT	LONG LIFE FARMS INC.	-\$70,481.00	7
44	SCIENCE & TECHNOLOGY ADVANCEMENT	C19351	32	REPLACEMENT OF 2 OFF-ROAD EQUIPMENT	CM BACKHOE SERVICE, INC.	-\$92,516.00	7
44	MSRC	ML12043	23	PURCHASE 2 HEAVY DUTY CNG VEHICLES	CITY OF HEMET	-\$30,000.00	7
44	MSRC	ML12043	23	PURCHASE 2 HEAVY-DUTY CNG VEHICLES	CITY OF HEMET	-\$30,000.00	7
44	MSRC	ML14062	23	EXPAND EXISTING CNG FUELING STATION	CITY OF SAN FERNANDO	-\$61,412.00	7
44	MSRC	ML18032	23	PURCHASE 1 HEAVY-DUTY EV AND 1 HEAVY-DUTY NEAR-ZERO VEHICLE	CITY OF ARCADIA	-\$50,000.00	7
44	MSRC	ML18040	23	INSTALL ELECTRIC VEHICLE CHARGING STATIONS	CITY OF AGOURA HILLS	-\$32,086.00	7
44	MSRC	MS16029	23	BIKEWAY IMPROVEMENTS PROJECTS	ORANGE CO TRANSPORTATION AUTHORITY	-\$15,470.00	7
44	MSRC	MS16106	23	EXPAND CNG STATION	CITY OF LAWNSDALE	-\$175,000.00	7
Subtotal						-\$4,509,678.00	

South Coast AQMD
Contract Activity Report
July 1, 2019 - December 31, 2019

DEPT ID	DEPT NAME	CONTRACT NUMBER	FUND CODE	DESCRIPTION	VENDOR NAME	CONTRACT AMOUNT	FOOT NOTE
	<u>SPECIAL FUNDS</u>				<u>FOOTNOTES</u>		
17	ADV. TECH, OUTREACH & EDU FUND				1		NO FIXED VALUE
22	AIR QUALITY IMPROVEMENT FUND				2		RATES VARY - NO FIXED VALUE
23	MSRC FUND				3		REVENUE CONTRACT - NO AMOUNT SHOWN
27	AIR QUALITY INVESTMENT FUND				4		NO COST - COST REALLOCATION
31	CLEAN FUELS FUND				5		CHANGED TO EMPLOYEE STATUS
32	CARL MOYER FUND - SB1107 ACCOUNT				6		NO COST- TIME EXTENSION
33	SCHOOL BUS REPLACEMENT PROGRAM				7		DE-OBLIGATION OF FUNDING
34	ZERO EMISSION VEHICLE INCENTIVE PROGRAM				8		COMPETITIVE SOLICITATION ISSUED BY ANOTHER GOVERNMENT AGENCY
35	AES SETTLEMENT PROJECTS FUND				9		NO COST - AIR MONITORING/LICENSE AGR
36	RULE 1309.1 PRIORITY RESERVE FUND				10		CNG VEHICLE PARTNERSHIP SELECTION
37	CARB ERC BANK FUND				11		NO COST - CHANGE IN TERMS
38	LADWP SETTLEMENT PROJECTS FUND				12		FEDERAL GOVERNMENT PASS-THRU
39	STATE EMISSIONS MITIGATION FUND				13		AT DIRECTION OF LEGISLATIVE COMMITTEE
40	NATURAL GAS VEHICLE PARTNERSHIP FUND				14		OPTIONAL YEAR RENEWAL/MULTI-YR CONTRACT
45	CBE/CBO SETTLEMENT AGREEMENT FUND				15		TRUCK GRANT PAID TO CASCADE SIERRA SOLUTIONS THROUGH LEASE-TO-OWN PROGRAM. THIS CONTRACT IS FOR OPERATION AND REPORTING ONLY.
46	BP ARCO SETTLEMENT FUND				16		AMOUNT UTILIZED MAY BE LESS THAN CONTRACT AMOUNT.
48	HEALTH EFFECTS RESEARCH FUND						
49	CEQA GHG MITIGATION FUND						
50	DOE ARRA-PLUG-IN HYBRID ELECTRIC VEHICLES						
51	DOE ARRA-LNG CORRIDOR EXPANSION						
52	TRAPAC SCHOOL AIR FILTRATION						
53	EMISSION REDUCTION AND OUTREACH FUND						
56	HEROS II PROGRAM FUND						
58	AB1318 MITIGATION FEES FUND						
59	VOUCHER INCENTIVE PROGRAM FUND (VIP)						
68	EXXONMOBIL SETTLEMENT PROJECTS FUND						
75	AIR FILTRATION FUND						
77	COMMUNITY AIR PROTECTION AB 134 FUND						
80	CARL MOYER FUND - AB923 ACCOUNT						
81	PROPOSITION 1B - GOODS MOVEMENT FUND						
82	PROPOSITION 1B - LOWER EMISSION SCHOOL BUS						

 Back to Agenda

BOARD MEETING DATE: March 6, 2020

AGENDA NO. 19

PROPOSAL: Report of RFPs Scheduled for Release in March

SYNOPSIS: This report summarizes the RFPs for budgeted services over \$100,000 scheduled to be released for advertisement for the month of March.

COMMITTEE: Administrative, February 14, 2020, Reviewed

RECOMMENDED ACTION:

Approve the release of RFPs for the month of March.

Wayne Nastri
Executive Officer

SJ:tm

Background

At its January 10, 2020 meeting, the Board approved a revised Procurement Policy and Procedure. Under the revised policy, RFPs for budgeted items over \$100,000, which follow the Procurement Policy and Procedure, no longer require individual Board approval. However, a monthly report of all RFPs over \$100,000 is included as part of the Board agenda package and the Board may, if desired, take individual action on any item. The report provides the title and synopsis of the RFP, the budgeted funds available, and the name of the Deputy Executive Officer/Assistant Deputy Executive Officer responsible for that item. Further detail including closing dates, contact information, and detailed proposal criteria will be available online at <http://www.aqmd.gov/grants-bids> following Board approval on March 6, 2020.

Outreach

In accordance with South Coast AQMD's Procurement Policy and Procedure, a public notice advertising the RFPs and inviting bids will be published in the Los Angeles Times, the Orange County Register, the San Bernardino Sun, and Riverside County's

Press Enterprise newspapers to leverage the most cost-effective method of outreach to the South Coast Basin.

Additionally, potential bidders may be notified utilizing South Coast AQMD's own electronic listing of certified minority vendors. Notice of the RFPs will be emailed to the Black and Latino Legislative Caucuses and various minority chambers of commerce and business associations and placed on the Internet at South Coast AQMD's website (<http://www.aqmd.gov>) where it can be viewed by making the selection "Grants & Bids."

Proposal Evaluation

Proposals received will be evaluated by applicable diverse panels of technically qualified individuals familiar with the subject matter of the project or equipment and may include outside public sector or academic community expertise.

Attachment

Report of RFPs Scheduled for Release in March 2020

**March 6, 2020 Board Meeting
Report on RFPs Scheduled for Release on March 6, 2020**

(For detailed information visit SCAQMD's website at
<http://www.aqmd.gov/nav/grants-bids> following Board approval on March 6, 2020)

RESEARCH AND DEVELOPMENT OR SPECIAL TECHNICAL EXPERTISE

RFP#P2020-08 Issue Request for Proposal for Consultant OLVERA/2309
Services for 457 Deferred Compensation Plan

The current contract for fiduciary consultant services that provides advice, analysis, and administrative services for the administration of the South Coast AQMD 457 Deferred Compensation plan expires July 31, 2020. This action is to issue an RFP to solicit proposals from licensed financial consulting firms interested in providing these services to South Coast AQMD for the next three-year period. Funds for this contract have been requested in the proposed FY 2020-21 Budget and will be requested in successive fiscal years.

RFP#P2020-09 Issue RFP for Health Insurance Brokerage OLVERA/2309
Services

The current contract for health insurance brokerage services expires July 31, 2020. This action is to issue an RFP to solicit proposals from licensed health insurance brokerage firms interested in providing these services to South Coast AQMD for the next three-year period. Funds for this contract have been requested in the proposed FY 2020-21 Budget and will be requested in successive fiscal years.

BOARD MEETING DATE: March 6, 2020

AGENDA NO. 21

REPORT: Administrative Committee

SYNOPSIS: The Administrative Committee held a meeting on Friday, February 14, 2020. The following is a summary of the meeting.

RECOMMENDED ACTION:
Receive and file.

Dr. William A. Burke, Chair
Administrative Committee

nv

Committee Members

Present: Dr. William A. Burke/Chair (videoconference)
Council Member Ben Benoit/Vice Chair (videoconference)
Council Member Michael Cacciotti (videoconference)

Absent: Council Member Judith Mitchell

Call to Order

Chair Burke called the meeting to order at 10:00 a.m.

DISCUSSION ITEMS:

1. **Board Members' Concerns:** None to report.
2. **Chairman's Report of Approved Travel:** As noted on the travel report, Council Member Joe Buscaino will attend the National League of Cities, Energy, Environment & Natural Resources Committee as it relates to air quality on behalf of the South Coast AQMD in Washington, D.C. on March 7-11, 2020.
3. **Report of Approved Out-of-Country Travel:** None to report.
4. **Review March 6, 2020 Governing Board Agenda:** None to report.
5. **Approval of Compensation for Board Member Assistant(s)/Consultant(s):** Barbara Baird, Chief Deputy Counsel, reported that cost reallocation was

assigned to the following existing Board Consultants: Ruthanne Taylor-Berger, Dan York, Thomas Gross, Mark Taylor, Andrew Silva and Matthew Holder. In addition, Council Member Benoit selected an additional Board Consultant, Tricia Almiron.

Moved by Benoit; seconded by Cacciotti, unanimously approved.

Ayes: Burke, Benoit, Cacciotti
Noes: None
Absent: Mitchell

ACTION ITEM:

6. **Execute Contract for Independent Audit Services for FYs Ending June 30, 2020, 2021, and 2022:** Sujata Jain, Deputy Executive Officer/Chief Financial Officer, reported that the Board approved issuance of an RFP for independent financial audit services. Two proposals were submitted. BCA Watson Rice, LLP and Simpson & Simpson CPAs provided presentations to the committee for consideration. Council Member Cacciotti inquired if BCA Watson Rice, LLP has ever been disciplined by the California Board of Accountancy. Ms. Helen Chu responded that her company is in good standing. Council Member Benoit inquired if they are looking into ensuring that public notifications are being accurately done. Ms. Chu responded it is part of their procedures.

Council Member Caccotti inquired if Simpson & Simpson CPAs have ever uncovered fraud, unprofessional conduct or negligence and if yes, how was it handled? Mr. Joe Moussa responded that his company has not seen fraud or negligence too often. They have situations where a company doesn't know rules and regulations or doesn't follow internal controls. In those cases, his company will provide input in the form of management letters to provide guidance on how to follow policies. Dr. Burke inquired if Simpson & Simpson has been sold since the last audit. Mr. Moussa responded the owners have remained, but they have reorganized the audit team. Harvey Eder, Public Solar Power Coalition, provided public comment on fossil fuels.

The Administrative Committee selected BCA Watson Rice, LLP.

Moved by Burke; seconded by Benoit, unanimously approved.

Ayes: Burke, Benoit, Cacciotti
Noes: None
Absent: Mitchell

DISCUSSION ITEMS:

7. **Status Report on Major Ongoing and Upcoming Projects for Information Management:** Ron Moskowitz, Chief Information Officer/Information

Management reported that the Spanish mobile application recently went live and has increased to 1,000 new installs. Three weeks of user training on the newly developed legal system has begun. Staff is working on displaying the public speaker timer on the video wall. Dr. Burke would like a switch to give a Board Member an option to keep the microphone on beyond the allotted time period. Mr. Moskowitz responded that it is being researched. Dr. Burke inquired as to updating the audio-visual system in the auditorium. Mr. Moskowitz responded that staff can look into modernizing the system and develop proposals. Mr. Eder provided public comment regarding the ACLU and expressed concerns about benzene and natural gas.

8. **South Coast AQMD's FY 2019-20 Second Quarter ended December 31, 2019 Budget vs. Actual (Unaudited):** Sujata Jain provided a summary of the budget vs. actual and then displayed some comparisons for revenue and expenditures, and a five-year projection. Dr. Burke inquired whether penalty funds are in the General Fund or in a separate account. Ms. Jain responded that money for collected penalties go to the General Fund. Ms. Baird stated that there have been individual special accounts for large penalties.

ACTION ITEMS:

9. **Report of RFPs Scheduled for Release in March:** Sujata Jain reported that this item is to release two RFPs, 1) consultant services for Deferred Compensation Plan; and 2) Health Insurance Brokerage services.

Moved by Cacciotti; seconded by Benoit, unanimously approved.

Ayes: Burke, Benoit, Cacciotti
Noes: None
Absent: Mitchell

10. **Appropriate Funds and Amend Contract for Consultant Services for South Coast AQMD's Why Healthy Air Matters High School Program:** Derrick Alatorre, Deputy Executive Officer, Legislative, Public Affairs & Media reported that the Board approved the implementation of an air quality education program at 100 high schools in environmental justice communities. The Lee Andrews Group was contracted to support implementation. The contract with the Lee Andrews Group expires on April 17, 2020 and staff recommends a one-year contract extension. Dr. Burke stated that he has received complimentary comments regarding this program. Council Member Cacciotti is very supportive of this program but would like staff to take a short video on how they are implementing the curriculum. Mr. Eder provided public comment stating that climate change should be discussed in the school system. He also expressed concerns about natural gas.

Moved by Cacciotti; seconded by Benoit, unanimously approved.

Ayes: Burke, Benoit, Cacciotti
Noes: None
Absent: Mitchell

11. **Issue Purchase Order to Promote “The Right to Breathe” Video:** Derrick Alatorre reported that this item is to add \$500,000 to the Google AdWords campaign for 12 months to promote the “The Right to Breathe” video. The funding will come from the BP ARCO settlement fund. Mr. Eder provided public comment regarding climate change. He recommended that climate change impacts and premature deaths be added to the video. He suggested using penalty money to help small businesses and advocated for use of solar power.

Moved by Benoit; seconded by Cacciotti, unanimously approved.

Ayes: Burke, Benoit, Cacciotti
Noes: None
Absent: Mitchell

WRITTEN REPORTS:

12. **Local Government & Small Business Assistance Advisory Group Minutes for the December 13, 2019 Meeting:** Mr. Alatorre reported that this item is a written report.
13. **Environmental Justice Advisory Group Minutes for the October 25, 2019 Meeting:** Mr. Alatorre reported that this item is a written report.

OTHER MATTERS:

14. **Other Business:** None.
15. **Public Comment:** Mr. Eder commented on the Solar New Deal.
16. **Next Meeting Date:** The next regular Administrative Committee meeting is scheduled for March 13, 2020 at 10:00 a.m.

Adjournment

The meeting adjourned at 11:19 a.m.

Attachments

Local Government & Small Business Assistance Advisory Group Minutes for the December 13, 2019 meeting

Environmental Justice Advisory Group Minutes for the October 25, 2019 meeting



South Coast Air Quality Management District

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LOCAL GOVERNMENT & SMALL BUSINESS ASSISTANCE ADVISORY GROUP FRIDAY, DECEMBER 13, 2019 MEETING MINUTES

MEMBERS PRESENT:

Council Member Ben Benoit, LGSBA Chairman (Board Member)
Supervisor Janice Rutherford (Board Member)
Felipe Aguirre
Paul Avila, P.B.A. & Associates
Geoffrey Blake, Metal Finishers of Southern California
La Vaughn Daniel, DancoEN
John DeWitt, JE DeWitt, Inc.
Bill LaMarr, California Small Business Alliance
Rita Loof, RadTech International
Eddie Marquez, Roofing Contractors Association
David Rothbart, Los Angeles County Sanitation Districts

MEMBERS ABSENT:

Supervisor V. Manuel Perez (Board Member)
Mayor Pro Tempore Rachelle Arizmendi, City of Sierra Madre
Todd Campbell, Clean Energy
Mayor Cynthia Moran, City of Chino Hills
Council Member Carlos Rodriguez, City of Yorba Linda

OTHERS PRESENT:

Tom Gross, Board Member Consultant (*Benoit*)

SOUTH COAST AQMD STAFF:

Derrick Alatorre, Deputy Executive Officer
Fabian Wesson, Asst. Deputy Executive Officer/Public Advisor
Nancy Feldman, Principal Deputy District Counsel
De Groeneveld, Sr. Information Technology Specialist
Elaine-Joy Hills, Air Quality Specialist

Agenda Item #1 - Call to Order/Opening Remarks

Chair Ben Benoit called the meeting to order at 11:36 a.m.

Agenda Item #2 – Approval of November 8, 2019 Meeting Minutes/Review of Follow-Up/Action Items

Chair Benoit called for approval of the November 8, 2019 meeting minutes. The minutes were approved unanimously.

Agenda Item #3 – Review of Follow Up/Action Items

Mr. Derrick Alatorre provided a response to the action item from the previous meeting, and indicated that information regarding the VW mitigation program was emailed to the members along with the agenda packet.

Agenda Item #4 – Approval of Local Government & Small Business Assistance Advisory Group 2019 Accomplishments and 2020 Goals & Objectives

Mr. Alatorre presented and requested approval of the 2019 Accomplishments and for items to be included in the 2020 Goals & Objectives.

Ms. Rita Loof requested for a more specific procedure on how LGSBA Advisory Group will express its sentiments and include it in the Goals and Objectives. Mr. Alatorre responded that in the previous meeting, Ms. Nancy Feldman provided information regarding what the group is authorized to do, and how Council Member Rodriguez expressed interest in having the group to be able to provide a letter to the Governing Board regarding support of the public on issues with Rule 1403. Staff is unable to draft the letter; however, the group can provide one. Ms. Loof requested that the procedures be specified and memorialized in a document for reference purposes. Chair Benoit suggested that the request be included in a formal document for future member use. Mr. Alatorre stated that he will discuss making amendments to the charter with Ms. Feldman, and Chair Benoit indicated that the amended charter will have to be approved by the Governing Board.

Action Item #1: Amend LGSBA charter to include procedures for expressing members' sentiments.

Mr. David Rothbart indicated that there are two items that will impact businesses and air districts that the California Air Resources Board (CARB) is working on. CARB plans on expanding the list of constituents in Assembly Bill (AB) 2588, which may impact permittees. The other subject matter is CARB's Criteria Pollutant & Toxic Emissions Reporting (CTR) Program. Mr. Rothbart commented that both of these efforts overlap, and recommended discussion on the potential impacts to businesses or any permittee related to these items be included in the 2020 Goals and Objectives.

Mr. Bill LaMarr commented that advisory groups would communicate with their sponsoring committees, but not circumvent the committees to the full Governing Board. Therefore, recommended not to bypass the committee sponsoring LGSBA.

Mr. John DeWitt inquired if it is possible to measure, through the Multiple Air Toxics Exposure Study (MATES) program and do an independent survey of the real cost of the various rules and regulations, and their actual impact on the air versus computer programs. Mr. Alatorre will talk to staff and determine if that is possible. If so, this topic will be included in the 2020 Goals and Objectives. Mr.

DeWitt stated that when you do a budget on performance goals, if you're not measuring the results against the cost, there will be challenges along the road. Mr. Alatorre indicated that when a new rule is developed, a socioeconomic study is completed. Mr. DeWitt commented he is aware of the study; however, analyses of the results are not completed after the fact. Mr. Alatorre replied that the South Coast Basin is in severe nonattainment, we do have a long way to go, and concurred that it will be costly.

Action Item #2: Discuss with staff the possibility of measuring real cost of various rules and regulations and actual impacts through MATES program and independent survey.

Mr. LaMarr stated that staff asserts that the adoption of a rule will result in a specified emissions reduction. However, there has not been a retrospective analysis on whether the rule has achieved the reduction goals. Emissions are going down, which are attributable to all the rules. As we get lower and lower, it becomes more costly. Mr. LaMarr commented that there should be an effort, in concert with regulated sources, on how it can be done as socioeconomic studies are just projections. Mr. LaMarr further requested a discussion on a "look back" analysis on some rules. Mr. Alatorre reiterated that we are in severe nonattainment, and the last thing we want is to be mandated by federal government.

Supervisor Janice Rutherford requested to add two subpoints to #1 of the 2020 Goals and Objectives: 1. an update to the 2016 Air Quality Management Plan (AQMP) and development of the 2022 AQMP; and 2. Progress in meeting the 2023 attainment deadline, with a subpoint on the contingency plan adopted by the Governing Board, specifically on the Federal challenges.

Ms. Loof expressed support for comments made by Mr. DeWitt and Mr. LaMarr and analyze "bang for your buck."

Agenda Item #5 –Monthly Report on Small Business Assistance Activities

No comments.

Agenda Item #6 - Other Business

No other business discussed.

Agenda Item #7- Public Comment

No comments.

Agenda Item #8 – Next Meeting Date

The next regular Local Government & Small Business Assistance Advisory Group meeting is scheduled for Friday, January 17, 2020 at 11:30 a.m.

Adjournment

The meeting adjourned at 11:55 p.m.



South Coast Air Quality Management District



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ENVIRONMENTAL JUSTICE ADVISORY GROUP FRIDAY, OCTOBER 25, 2019 MEETING MINUTES

MEMBERS PRESENT:

Rhetta Alexander, Valley Interfaith Council
Dr. Lawrence Beeson, Loma Linda University, School of Public Health
Suzanne Bilodeau, Knott's Berry Farm
Kerry Doi, Pacific Asian Consortium in Employment
Dr. Afif El-Hasan, American Lung Association
Mary Figueroa, Riverside Community College
Humberto Lugo, Community Member
Daniel Morales, National Alliance for Human Rights
David McNeill, Baldwin Hills Conservancy
Rafael Yanez, Member of the Public
Donald Smith, 136th Street Block Club

MEMBERS ABSENT:

Ben Benoit, South Coast AQMD Governing Board Member
Manuel Arredondo, Coachella Valley School District, Retiree
Paul Choe, Korean Drycleaners & Laundry Association
Myron Hale, SLMQM
Dr. Monique Hernandez, California State University, Los Angeles
Dr. Jill Johnston, University of Southern California
Maria Elena Kennedy, Quail Valley Task Force
Evelyn Knight, Long Beach Economic Development Commission
Angelo Logan, Occidental College & East Yard Communities for Environmental Justice

SOUTH COAST AQMD STAFF:

Fabian R. Wesson, Assistant Deputy Executive Officer/Public Advisor
Nancy Feldman, Principal Deputy District Counsel
Dr. Jo Kay Ghosh, Health Effects Officer
Alicia A. Rodriguez, Senior Public Information Specialist
Gina Triviso, Senior Public Information Specialist
Stephano Padilla, Staff Assistant
Daniei Brown, Career Development Intern

Agenda Item #1: Call to Order/Opening Remarks

Fabian Wesson called the meeting to order at 12:01 p.m.

Agenda Item #2: Approval of July 26, 2019 Meeting Minutes

Mary Figueroa moved to approve the July 26, 2019 meeting minutes. Daniel Morales seconded the motion. The minutes were approved unanimously.

Agenda Item #3: Review of Follow-Up/Action Items

There were no follow-up items from the previous meeting

Agenda Item #4: AB 617 Updates

Gina Triviso presented updates on AB 617 implementation in the three communities within the South Coast Air Basin.

Rhetta Alexander asked how results are measured and when can the community expect to see a report. Ms. Triviso explained that results will vary per community. Year 1 communities will meet quarterly for the next five years to discuss improvements, data, and continue to gather feedback from the selected communities. Dr. Jo Kay Ghosh confirmed the timeline and explained that a major part of these plans is diesel reduction. Dr. Ghosh explained that Year 2 communities are awaiting California Air Resources Board (CARB) approval. In the meantime, South Coast AQMD has begun monitoring within the communities and conducting idling truck sweeps.

David McNeill asked why the South Los Angeles areas were denied Year 1 status by CARB. Dr. Ghosh explained that there were many community submissions for Year 1 and only ten communities across the state were awarded funding.

Humberto Lugo commented that there can be more inter-agency cooperation for community sweeps of idling trucks.

Rafael Yanez suggested that the next inter-agency task force meeting should include a discussion about providing additional regulatory efforts. He expressed that agencies should be proactive in addressing community concerns.

Kerry Doi asked if South Coast AQMD has goals for each cycle of the AB 617 Program. Dr. Ghosh explained that the Community Emission Reduction Plans have specific timelines and goals, such as amending emissions rules.

Ms. Alexander asked if heavy-duty diesel trucks were found as a major source of pollution, how the community would switch to low emitting trucks. Dr. Ghosh explained that South Coast AQMD has incentive programs for fleets to replace their trucks with newer, lower-emission vehicles. Mr. Yanez mentioned that there should be enforcement measures along with incentive programs.

Agenda Item #5: Overview of Environmental Justice Conference

Alicia Rodriguez provided an overview of South Coast AQMD's 5th Annual Environmental Justice Conference on September 12, 2019.

Ms. Alexander asked if the conference led to any progressive solutions. Ms. Rodriguez confirmed that attendees shared progressive ideas and opportunities for future collaboration. She also stressed the importance of finding solutions to the global climate crisis.

Ms. Figueroa asked if there are plans to host the conference in the Inland Empire. Ms. Wesson replied that she liked the idea of moving it around in order to include those that needed to be there. She added that there are facilities in Riverside that can host the conference as well.

Mr. McNeill asked if the "Estamos Aqui: A Community Documentary" was available and where. Ms. Rodriguez stated that it was a private screening but that there was a two-minute trailer available and would send the link.

ACTION ITEM: E-mail Advisory Group the link to the documentary trailer.

Mr. McNeill requested that future conferences be located near public transportation. He asked if agencies or companies sponsored the conference and if notes from the break-out sessions can be shared with the group. Ms. Rodriguez confirmed that session notes will be shared with the group.

ACTION ITEM: Share with Advisory Group conference break-out session notes.

Mr. Yanez recommended Ontario for next year's conference. He noted that break-out sessions need more time.

Ms. Figueroa asked Mr. Yanez to define community science. Mr. Yanez provided a brief description and his experience as a community scientist. Ms. Rodriguez added that an overview of community science will be shared with the group.

ACTION ITEM: Agendize community science overview.

Agenda Item #6: Member Updates

Dr. Lawrence Beeson shared that several Loma Linda University students are studying long-term effects of ambient air pollution.

Mr. Morales shared that University of California, Riverside received a \$16 million grant from the National Institutes of Health (NIH) to study dust issues in Coachella.

Donald Smith stated his community has been focused on the effects of particle pollution on street and road disintegration in the City of Compton.

Mr. McNeill informed the Advisory Group that the comment period opened for Baldwin Hills Community Standard District. He further stated he is working with CARB to coordinate community meetings for their Study of Neighborhood Air near Petroleum Sources focused on installing monitoring units to gather data in Baldwin Hills and other cities throughout the state.

Mr. Yanez shared that he is working with the City of Los Angeles to address street sweeping issues in Boyle Heights.

Agenda Item #7 - Other Business

There was no other business.

Agenda Item #8- Public Comment

There was no public comment.

Agenda Item #9: Next Meeting Date

The next regular EJAG meeting is scheduled for Friday, January 24, 2020 at 12:00 pm.

Adjournment

The meeting was adjourned at 1:30 pm.

BOARD MEETING DATE: March 6, 2020

AGENDA NO. 22

REPORT: Investment Oversight Committee

SYNOPSIS: The Investment Oversight Committee held a meeting on Friday, February 21, 2020. The following is a summary of the meeting.

RECOMMENDED ACTION:
Receive and file.

Michael A. Cacciotti, Chair
Investment Oversight Committee

SJ:tm

Committee Members

Present: Council Member Michael Cacciotti, Chair (teleconference)
Richard Dixon
Patrick Pearce

Absent: Dr. William A. Burke, Vice Chair
Senator Vanessa Delgado (Retired)
Brent Mason

Call to Order

Council Member Michael Cacciotti called the meeting to order at 12:01 p.m.

DISCUSSION ITEMS:

1. *Quarterly Report of Investments:* The Committee reviewed the quarterly investment report that was provided to the Board. For the month of December 2019, the South Coast AQMD's weighted average yield on total investments of \$879,969,282 from all sources was 1.87%. The allocation by investment type was 89.29% in the Los Angeles County Pooled Surplus Investment Fund (PSI) and 10.71% in the State of California Local Agency Investment Fund (LAIF) and Special Purpose Investments (SPI). The one-year Treasury Bill rate as of December 31, 2018 was 1.59%.
2. *Financial Market Update:* Sarah Meacham from PFM Asset Management provided the Committee with information on current investment markets, economic

conditions, and the overall outlook. Predictions of a recession are lessening. The stock market rallied with an annual gain of approximately 31%. Some of the increase is due to the correction in December of 2018. Even though yields are falling, the yield curve has normalized, and longer-term investments are giving higher yield. Although GDP increased by 1.9 %, it fell in the fourth quarter mainly due to the Coronavirus. The current market is strong with unemployment at 3.5%. The housing market is still strong due to falling mortgage rates. Future uncertainties exist due to the upcoming election and the results of Brexit and trade tensions in Asia. Councilmember Cacciotti requested that a slide with information on the U.S. trade deficit with China, U.S. budget deficit, and interest paid on the Federal budget deficit be included in the next presentation to the Committee.

ACTION ITEM:

3. Approval of Annual Investment Policy and Delegation of Authority to Los Angeles County Treasurer to Invest South Coast AQMD funds: The South Coast AQMD adopts an Annual Investment Policy which, if done, is required to be considered at a public meeting of the Board. The following revisions to the Annual Investment Policy were recommended: 1) A change of title of the Assistant Deputy Executive Officer to Chief Financial Officer to match organizational changes in July 2019; 2) Change to South Coast AQMD to reference SCAQMD; and 3) changes to the *Implementation* to be consistent with the Los Angeles County’s “Delegation of Authority to Invest and Annual Adoption of the Treasurer and Tax Collector Investment Policy.” State law also requires the South Coast AQMD to annually renew its delegation of authority to its treasurer, the Los Angeles County Treasurer, to invest or to reinvest funds of the local agency. Staff recommended renewal of this delegation of authority.

Moved by Dixon; seconded by Pearce; unanimously approved.

OTHER MATTERS:

4. Other Business

There was no other business.

5. Public Comment Period

There were no public comments.

6. Next Meeting Date

The next regular meeting of the Investment Oversight Committee is scheduled for May 15, 2020 at noon.

Adjournment

The meeting adjourned at 12:35 p.m.

[↑ Back to Agenda](#)

BOARD MEETING DATE: March 6, 2020

AGENDA NO. 23

REPORT: Legislative Committee

SYNOPSIS: The Legislative Committee held a meeting on Friday, February 14, 2020. The following is a summary of the meeting.

Agenda Item	Recommendation/Action
H.R. 2616 (DeSaulnier, Porter, and Rouda) Clean Corridors Act of 2019	Withdrawn

RECOMMENDED ACTION:

Receive and file this report.

Supervisor Janice Rutherford, Acting Chair
Legislative Committee

DJA:LTO:PFC:sg

Committee Members

Present: Dr. William A. Burke (videoconference)
Senator Vanessa Delgado (Ret.) (videoconference)
Supervisor Janice Rutherford (videoconference)

Absent: Council Member Judith Mitchell/Chair
Council Member Joe Buscaino/Vice Chair
Supervisor V. Manuel Perez

Call to Order

Supervisor Janice Rutherford was appointed to the committee as Chair for this meeting only. The meeting was called to order at 9:03 a.m.

DISCUSSION ITEMS:

1. Update on Federal Legislative Issues

South Coast AQMD's federal legislative consultants (Carmen Group, Cassidy & Associates, and Kadesh & Associates) each provided a written report on various key Washington, D.C. issues.

Mr. Gary Hoitsma of Carmen Group reported on the release of the President's Fiscal Year 2021 Budget and the State of the Union address. South Coast AQMD's recent legislative meetings in Washington, D.C. with Congressional offices, business representatives and other stakeholders were productive. Mr. Hoitsma followed up with Senate Environment and Public Works staff regarding South Coast AQMD's request to hold a hearing on the U.S. EPA's Cleaner Trucks Initiative and received a positive response. Senate Environment and Public Works (EPW) Committee staff are actively considering holding a hearing before summer. He further noted, that while the President did not focus on transportation and infrastructure in his State of the Union address, the Administration has signaled support for the Senate Transportation and Infrastructure bill which reauthorizes programs for 5-years. The bill passed out of Senate EPW. He also reported that while the President's budget cut numerous EPA and clean energy programs, it is likely that Congress will restore funding.

Ms. Amelia Jenkins of Cassidy & Associates informed the Committee that they had been working with South Coast AQMD staff on transportation, infrastructure and climate related legislation. Ms. Jenkins noted meetings with House Energy and Commerce Committee staff and Senate Minority EPW staff where South Coast AQMD presented key air quality related policy and authorization priorities and were met with a good response. Ms. Jenkins added that the House Transportation and Infrastructure bill will be more forward leaning on air quality related issues than the Senate bill.

Mr. Dave Ramey of Kadesh & Associates stated that the Fiscal Year 2021 Appropriations process is currently underway. While in D.C., Kadesh and Associates organized several meetings with California Members of Congress on South Coast AQMD appropriations priorities including Targeted Airshed Grants, the Diesel Emissions Reduction Act program and Section 103/105 funding. Kadesh & Associates will continue to work with South Coast AQMD staff to submit appropriations requests and then support the funding levels through the legislative process.

2. Update on State Legislative Issues

South Coast AQMD's state legislative consultants (Quintana, Watts and Hartmann, California Advisors, LLC, and Joe A. Gonsalves & Son) provided written reports on various key issues in Sacramento.

Mr. Jarrell Cook of Quintana, Watts and Hartmann commented that various productive meetings occurred between South Coast AQMD staff and legislators, including Assembly Majority Leader Ian Calderon and Assembly Member Cristina Garcia, regarding AB 617 budget funding and legislative priorities.

Dr. Burke requested more thorough reports in the future.

Mr. Ross Buckley of California Advisors, LLC informed the Committee that the end of January marked the deadline for 2-year bills to be passed out of their first house. The Legislature is now focusing on new legislation. The bill introduction deadline for new bills in 2020 is Friday, February 21. It is expected that several hundred bills in both the Senate and the Assembly will be introduced by that deadline. Also, the Governor will give his State of the State Address on Wednesday, February 19.

Mr. Paul Gonsalves of Joe A. Gonsalves & Son informed the Committee that the Legislative Analyst Office (LAO) just released a report analyzing climate change proposals within the Governor's Proposed 2020-21 State Budget.

Mr. Gonsalves indicated that the LAO report focuses on analyzing four areas: (1) the \$965 million cap-and-trade revenue expenditure plan; (2) \$25 million for climate adaption research and technical assistance; (3) the \$250 million "new Climate Catalyst" loan program; and (4) the \$4.8 billion climate bond. The report determines that because there are less discretionary cap and trade funds available overall, the state should focus on its key and most effective priorities for that funding. Regarding the Climate Catalyst loan fund, the report concluded that too much funding is being allocated for this and that some of this funding should be redirected for other more beneficial climate related uses. The report also indicated that the climate bond is a good idea, but it may come with risk in the out years because of the likelihood of an economic recession in the future.

Supervisor Rutherford asked if the LAO report would be sent to the Legislative Committee members. Mr. Alatorre responded in the affirmative.

3. Update on Legislation Regarding Voting District Authorization for Clean Air

Mr. Alatorre provided an update regarding South Coast AQMD-sponsored legislation relating to the authorization of a voting district within the South Coast region to allow for potential future ballot funding measures within the District.

Mr. Alatorre indicated that SB 732 (Allen), the previous bill was not passed out of the Senate by the end of January 2020 deadline. Thanks to help from state legislative consultant David Quintana, a new bill author has been secured to introduce a spot bill for the 2020 legislative session that can serve as a new legislative vehicle for the

bill. AB 2241 (Calderon), was introduced by Assembly Majority Leader Ian Calderon, and it will allow for more time to secure additional support from stakeholders.

Mr. Alatorre indicated that since the January Legislative Committee meeting, staff has participated in at least 24 meetings with stakeholders, elected officials and legislative staff regarding the bill, including Senate President Pro Temp Toni Atkins staff and Speaker Anthony Rendon's staff. Substantive amendments to the spot bill must be submitted to Legislative Counsel by March 4. Staff continues to work with key stakeholders regarding the bill, including the Building Trades. Supervisor Rutherford asked when the spot bill was introduced. Mr. Alatorre replied that it was introduced on February 13. Supervisor Rutherford inquired as to which bill language would be included in the spot bill. Mr. Alatorre indicated that the spot bill will likely include the same legislative language from the latest version of SB 732 (Allen) and if there are any changes to the language, the Legislative Committee will be informed. There are some stakeholders seeking possible changes to the bill language.

Chairman Burke asked if the independent oversight committee language previously requested by Supervisor Rutherford had been incorporated into the bill. Mr. Alatorre responded in the affirmative.

Senator Vanessa Delgado inquired as to whether previously planned outreach to various state Senators regarding the bill had been completed. Mr. Alatorre responded in the affirmative and mentioned that meetings were had with Senators Maria Elena Durazo, Lena Gonzalez, Connie Leyva's staff and others. In response to Senator Delgado's inquiry, Mr. Alatorre stated that these Senators and/or their staff were non-committal with regards to potentially co-authoring the bill. Senator Delgado also asked whether Senate President Pro Temp Toni Atkins' senior environmental staffer, Kip Lipper is assisting with the effort to pursue the bill. Mr. Alatorre responded in the affirmative.

Supervisor Rutherford requested that the spot bill, AB 2241 (Calderon), be forwarded to the Legislative Committee. Mr. Alatorre responded that this will be done.

ACTION ITEM:

4. Recommend Position on Federal Bill:

H.R. 2616 (DeSaulnier, Porter, and Rouda) Clean Corridors Act of 2019

This bill was withdrawn from the agenda.

OTHER MATTERS:

5. Other Business

There was no other business.

6. Public Comment Period

Mr. Harvey Eder, Public Solar Power Coalition, made comments regarding the need for legislation creating refundable solar power tax credits for low income individuals. He also spoke regarding environmental justice, the negative impacts of air pollution on the homeless, low income housing and housing tax credits.

7. Next Meeting Date

The next regular Legislative Committee meeting is scheduled for Friday, March 13, 2020 at 9:00 a.m.

Adjournment

The meeting adjourned at 9:25 a.m.

Attachments

1. Attendance Record
2. Update on Federal Legislative Issues – Written Reports
3. Update on State Legislative Issues – Written Reports

ATTACHMENT 1

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT LEGISLATIVE COMMITTEE MEETING ATTENDANCE RECORD – February 14, 2020

Dr. William A. Burke (Videoconference).....	South Coast AQMD Board Member
Senator, Vanessa Delgado (Ret.) (Videoconference)	South Coast AQMD Board Member
Supervisor, Janice Rutherford (Videoconference).....	South Coast AQMD Board Member
Thomas Gross	Board Consultant (Benoit)
Fred Minassian.....	Board Consultant (Mitchell)
Andrew Silva	Board Consultant (Rutherford)
Ross Buckley (teleconference).....	California Advisors, LLC
Jarrell Cook (teleconference)	Quintana, Watts and Hartmann
Paul Gonsalves (teleconference).....	Joe A. Gonsalves & Son
Gary Hoitsma (teleconference)	Carmen Group, Inc.
Amelia Jenkins (teleconference).....	Cassidy & Associates
Dave Ramey (teleconference).....	Kadesh & Associates
Harvey Eder	Public Solar Power Coalition
Bill LaMarr	California Small Business Alliance
Rita Loof	RadTech
David Rothbart.....	Los Angeles County Sanitation District
Tammy Yamasaki	Southern California Edison
Denny Zane.....	Move LA
Derrick Alatorre	South Coast AQMD Staff
Leeor Alpern	South Coast AQMD Staff
Barbara Baird.....	South Coast AQMD Staff
Philip Crabbe	South Coast AQMD Staff
Amir Dejbakhsh.....	South Coast AQMD Staff
Philip Fine.....	South Coast AQMD Staff
Stacy Garcia	South Coast AQMD Staff
Megan Lorenz	South Coast AQMD Staff
Matt Miyasato.....	South Coast AQMD Staff
Robert Paud.....	South Coast AQMD Staff
Sarah Rees.....	South Coast AQMD Staff
Lisa Tanaka O'Malley	South Coast AQMD Staff
Mary Reichert	South Coast AQMD Staff
Todd Warden	South Coast AQMD Staff
Fabian Wesson	South Coast AQMD Staff
Kim White.....	South Coast AQMD Staff
Jill Whynot.....	South Coast AQMD Staff
William Wong.....	South Coast AQMD Staff
Paul Wright.....	South Coast AQMD Staff



ATTACHMENT 2

MEMORANDUM

To: South Coast AQMD Legislative Committee

From: Carmen Group

Date: January 30, 2020

Re: Federal Update -- Executive Branch

Transportation and Infrastructure: For South Coast AQMD, two of the most-watched federal legislative efforts this year will be focused on 1) a surface transportation reauthorization bill for highways and transit; and 2) a possible larger and broader infrastructure bill that would include highways and transit but also reach to such things as aviation, water, ports, pipelines, and broadband among others. Both hold the promise to be major legislative vehicles that could carry significant positive clean-air-related priorities and provisions, and both have the potential to win significant bipartisan support. Yet both efforts are fraught with high degrees of difficulty and uncertainty, and both depend on generating billions of dollars in new revenue, which is currently nowhere in sight, especially amid January forecasts of trillion-dollar annual budget deficits as far as the eye can see. In the Senate, a bipartisan surface transportation bill was cleared through committee approval last year, while the in the House, committee action on a separate less bipartisan bill is expected early this year, but details have not yet been released. Meantime on infrastructure, House Democrats and Republicans in January released competing sets of “infrastructure principles” to help begin serious discussions on the issue, while the Ways & Means Committee head a hearing on infrastructure funding options, though seemed far from any consensus in the funding debate. The next critical markers to watch will be to see how the Trump Administration weighs in on these topics in the President’s State of the Union Address on Feb. 4 and in the President’s Annual Budget proposal set to be released on Feb. 10.

Cleaner Trucks Initiative: The EPA’s Advanced Notice of Propose Rulemaking (ANPR) was published in the Federal Register on January 21. It constitutes a solicitation for stakeholder comments (due Feb. 20) on the process to establish a new ultra-low NOx emissions standard for heavy duty trucks. The comments are supposed to inform and guide EPA in its effort to put out a formal Notice of Proposed Rulemaking (NPR) likely in the May-June timeframe, with a final rule not expected before early next year. Meantime, majority staff at the Senate Environment & Public Work Committee have informed us that Committee members are considering holding a public hearing on the CTI issue, and -- with South Coast AQMD staff -- we are actively exploring the possibility of South Coast AQMD providing testimony. In 2016, South Coast AQMD was the original lead petitioner urging the EPA to act on this important matter.

FTA Announces Funding Available for “Low-No” Bus Grants: The Federal Transit Administration in January announced the availability of \$130 million for the FY 20 Low or No Emission (Low-No) Bus Program. The program provides competitive grants for the purchase or lease of low or no emission vehicles that use advanced technology for transit operations, including related equipment or facilities. Applications are due by March 17, 2020.

US DOT Announces Funding Available for INFRA Grants: The Department of Transportation in January announced the availability of more than \$900 million for the FY 20 INFRA discretionary grant program, which is focused on national or regional highway and multimodal freight projects. Large projects that are selected will receive at least \$25 million and small projects at least \$5 million. Eligible project costs may include reconstruction and rehabilitation, acquisition of property, environmental mitigation, equipment acquisition and operational improvements related to system performance. At least 25 percent of the funds will go to rural projects. Applications are due by February 25, 2020.

DOE Announces Funding Available for Sustainable Transportation Research: The Department of Energy in January announced the availability of nearly \$300 million in funding for research and development of sustainable transportation resources and technologies. This includes three funding availability announcements: \$133 million from the Vehicle Technologies Office (VTO) to address priorities in advanced batteries and electrification, advanced engine and fuel technologies, lightweight materials, new mobility technologies and alternative fuels technology demonstrations (Concept papers due Feb. 21); \$64 million from the Fuel Cells Technology Office (FCTO) to address larger scale hydrogen production, storage, transport and use, including for heavy-duty trucks, data centers and steel production (Concept papers due Feb. 25); and \$100 million from the Bioenergy Technologies Office (BETO) to address reducing the prices of drop-in biofuels, lowering the cost of biopower, and enabling high-value products from biomass or waste resources. (Concept papers due April 30).

DOE Launches Energy Storage Grand Challenge: The Department of Energy in January announced the launch of the Energy Storage Grand Challenge, a comprehensive program to accelerate the development, commercialization, and utilization of next-generation energy storage technologies. The program will be managed by DOE’s Research and Technology Investment Committee (RTIC) and will use a coordinated group of R&D funding opportunities, prizes, partnerships, and other programs to pursue a vision of creating and sustaining U.S. global leadership in energy storage utilization with a secure domestic manufacturing supply chain that is independent of foreign sources of critical materials.

Outreach: In January, relevant contacts included majority staff at the Senate Environment & Public Works (EPW) Committee; majority staff at Senate EPW Clean Air Subcommittee and Senate Climate Solutions caucus; minority staff with the House Transportation & Infrastructure Subcommittee on Highways and Transit – all regarding transportation and infrastructure legislation and clean air priorities. Also, multiple contacts with representatives of our Business Coalition group, including staff of the US Chamber of Commerce, the Truck & Engine and Manufacturers Association, the Diesel Technology Forum and others focused primarily on the Cleaner Trucks Initiative.

CASSIDY&ASSOCIATES

733 Tenth Street, N.W., Suite 400
Washington, DC 20001-4886

(202) 347-0773
www.cassidy.com

To: South Coast Air Quality Management District
From: Cassidy & Associates
Date: January 30, 2020
Re: Federal Update

Look Ahead

The Senate trial continues this week. The President's defense counsel completed its counter arguments to the House Democrats' case for impeaching the president and today is the second day of the 16-hour question and answer period. Once the impeachment trial is over, Senate Energy and Natural Resources Committee Chairwoman Murkowski (R-AK) hopes to move another energy package which will include a number of the more than 70 bills advanced out of ENR last year related to clean energy, battery storage, grid security, and energy efficiency.

The House is looking to consider legislation in February related to three major issues. House Democrats have proposed a \$3.4 billion funding bill to help Puerto Rico recover from a series of earthquakes and other recent disasters. Legislation (S-3104) has been introduced in the Senate to address technical problems that would make some categories of federal employees ineligible for the paid parental leave authority that was enacted in late December. They are also likely to consider legislation related to tobacco and vaping.

Congressional Activities in January

Climate and Infrastructure

This week the House Energy and Commerce Committee released [legislative text](#) of the draft Climate Leadership and Environmental Action for our Nation's (CLEAN) Future Act to achieve net-zero greenhouse gas pollution by 2050. The bill reauthorizes the Diesel Emissions Reduction Program at \$200 million per year from FY 2021-2030; directs EPA to promulgate GHG emission standards for new passenger cars, light-duty trucks, medium-duty passenger vehicles, and heavy-duty vehicles; and directs the EPA to address emissions from methane slip in engine exhaust.

Yesterday, the Democrats in the House released a [framework](#) for a \$760 billion, five-year infrastructure package that emphasizes clean energy and climate resilience while reauthorizing the surface transportation reauthorization bill that expires September 30. The **House Transportation and Infrastructure Committee** will lead the efforts on reauthorization, however both the House Ways and Means and the House Energy and Commerce (E&C) Committees will be involved in the drafting. Ways

and Means has been tasked with finding a way to pay for the bill and held a hearing yesterday to discuss funding and financing options, and E&C will draft a broadband title for inclusion in the bill.

Government Funding

House Appropriations Chairwoman Nita Lowey (D-NY) and House Democratic Leader Hoyer (D-MD) have indicated that Democrats are discussing the revival of earmarks. Lowey met this week with freshmen and swing-seat Democrats to gauge their interest and seek input on lifting the ban on congressionally directed spending. The Trump Administration is planning to release its FY 2021 Budget on February 10.

House and Senate Committee Action

This week the **House Energy and Commerce Committee** is held a joint subcommittee hearing to examine the impact of wildfires on the power sector and public health. Pacific Gas & Electric CEO, Bill Johnson, is testifying with four additional witnesses. Background memo [here](#).

The **House Natural Resources Committee** held several legislative hearings and markups to consider bills related to fisheries and wildlife, and a hearing in the Subcommittee on Energy and Mineral Resources to consider Rep. Lowenthal's bill, H.R. 5636, the Transparency in Energy Production Act of 2020, which provides for the accurate reporting of fossil fuel extraction and emissions by entities with leases on public land.

The **House Science Committee** held a hearing entitled, "An Update on the Climate Crisis: From Science to Solutions" as well as hearings to examine research related to energy and emerging technologies, such as artificial intelligence and biotechnology.

The **Select Committee on the Climate Crisis** is expected to release its report and recommendations in March 2020 which will likely serve as a springboard for future legislating by House and Senate Democrats on climate change issues. House Republicans will offer a Republican alternative plan that includes 12 bills related to carbon capture, nuclear energy, natural gas, and grid-scale storage R&D.

Introduced Legislation

The following bills related to climate/climate change/environment:

H.R.5641 Incentivizing Value Capture for Greener Transportation Act

Sponsor: Rep. DeSaulnier, Mark [D-CA-11]

Introduced 01/16/2020

Cosponsors: (0)

Committees: House - Transportation and Infrastructure

H.R.5625 Targeting Environmental and Climate Recklessness Act of 2019

Sponsor: Rep. Escobar, Veronica [D-TX-16]

Introduced 01/16/2020

Cosponsors: (1)

Committees: House - Foreign Affairs; Judiciary; Financial Services; Oversight and Reform; Ways and Means

S.3204 FEMA Climate Change Preparedness Act

Sponsor: Sen. Markey, Edward J. [D-MA]

Introduced 01/16/2020

Cosponsors: (0)

Committees: Senate - Homeland Security and Governmental Affairs

H.R.5615 TREES Act To establish a grant program to assist retail power providers with the establishment and operation of energy conservation programs using targeted residential tree-planting programs, and for other purposes.

Sponsor: Rep. Matsui, Doris O. [D-CA-6]

Introduced 01/15/2020

Cosponsors: (6)

Committees: House - Energy and Commerce

H.Res.797 Encouraging the Environmental Protection Agency to maintain and strengthen requirements under the Clean Water Act and reverse ongoing administrative actions to weaken this landmark law and protections for United States waters.

Sponsor: Rep. Dingell, Debbie [D-MI-12]

Introduced 01/14/2020

Cosponsors: (85)

Committees: House - Transportation and Infrastructure

H.R.5558 USA Electrify Forward Act To promote American leadership in vehicle manufacturing, job creation, improved air quality, and climate protection through domestic manufacturing of low- and zero-emission vehicles and development of electric vehicle charging networks, and for other purposes.

Sponsor: Rep. Dingell, Debbie [D-MI-12]

Introduced 01/08/2020

Cosponsors: (0)

Committees: House - Energy and Commerce

Summary of Congressional Outreach

- ❖ Weekly calls with SCAQMD staff.
- ❖ Monitoring Clean Trucks Initiative and ongoing Heavy-Duty NOx rulemaking.
- ❖ Meeting with Energy and Commerce Committee staff.

South Coast AQMD Report for the January 2020 Legislative Meeting covering December 2019
Kadesh & Associates

January:

January featured three weeks in session for the House, but the Senate was dominated by the Impeachment Trial. Unless an agreement on witnesses is found, the trial will likely end on January 31st or February 1st with a largely, if not exclusively, party line vote for acquittal. We assisted the South Coast AQMD executive and government affairs team in shaping and arranging their DC visit for the first week of February to discuss: the Clean Truck Initiative/EPA rule making; the Safer Affordable Fuel Efficient (SAFE) rule; the Surface Transportation Reauthorization/Infrastructure bill and related legislation; and the newly released House Majority infrastructure plan.

House Democrat's released their Infrastructure, Transportation and Environment framework on January 29. According to the House Majority Transportation and Infrastructure Committee, ***MOVING AMERICA AND THE ENVIRONMENT FORWARD: Funding Our Roads, Transit, Rail, Aviation, Broadband, Wastewater and Drinking Water Infrastructure, also known as the Moving Forward Framework*** comprises a 5-year, \$760 billion investment to "get existing infrastructure working again and fund new, transformative projects that will create more than 10 million jobs, while reducing carbon pollution, dramatically improving safety, and spurring economic activity. It's infrastructure investment that is smarter, safer, and made to last."

Modern Highways & Highway Safety Investments — \$329 Billion, including "Dramatically increasing the availability of charging stations and other alternative fueling options for electric and zero-emissions vehicles."
Transit Investment — \$105 Billion, including "Increases investment in zero-emission buses to reduce carbon pollution."

Rail Investments — \$55 Billion, Including "Expands our passenger rail network, giving travelers a reliable, low-carbon option to travel both short and long distances, including to regions that lack frequent or affordable airport service."

Airport Investments — \$30 Billion, including "Incentivizes the development and use of sustainable aviation fuels and new aircraft technologies to reduce the carbon pollution from air travel."

Clean Water & Wastewater Infrastructure — \$50.5 Billion

Water Infrastructure (Flood protection, navigation, etc.) — \$10 Billion

Harbor Infrastructure — \$19.7 Billion

Brownfield Restoration — \$2.7 Billion

Drinking Water — \$25.4 Billion

Clean Energy— \$34.3 Billion, Including, "Invests in electric grid modernization to accommodate more renewable energy and to make the grid more secure, resilient and efficient" and "Supports the development of an electric vehicle charging network to facilitate the transition to zero emissions vehicles from coast to coast."

Public Safety Communications — \$12 Billion

Contacts:

Contacts included staff with House Members who were targeted for meetings the first week of February, committee staff regarding reauthorization of the Surface Transportation bill and Rep. DeSaulnier's staff regarding the Clean Corridors bill.

###

ATTACHMENT 3

RESOLUTE

January 31, 2020

TO: South Coast Air Quality Management District
FROM: David Quintana, Partner - RESOLUTE
RE: Report For January 2020

GENERAL UPDATE:

- January 31st was the deadline to pass any 2-year bills, out of their house of origin.

LEGISLATIVE UPDATE:

- Met with Majority Leader Ian Calderon, with AQMD staff.
- Met with Chairman Eduardo Garcia, with AQMD staff.
- Met with Assemblymember Patrick O'Donnell.
- Met with Legislative Director for Assemblymember Ramos, Katherine Van Horn.



SCAQMD Report
California Advisors, LLC
February 14, 2020 Legislative Committee Hearing

General Update

January brought a flurry of action back to the Capitol. The Governor unveiled his 2020-21 budget on January 10th, where he laid out his priorities for the upcoming year. One of the more troubling items in his budget were the proposed cuts to the AB 617 program related to local air monitoring programs. The Governor’s budget cut both the implementation and incentive dollars from the previous years. However, at the first budget hearings of the year, which were held in the Senate and the Assembly, several legislators in both houses raised these cuts as an issue after having heard from South Coast AQMD on why these cuts hurt communities across the state. In response, the Department of Finance explained the cuts by saying they expected less Greenhouse Gas Reduction Fund revenues than in previous years.

January 31st marked the end of the month “two-year” bill deadline. While there were relatively few bills that moved in January, two notable pieces of legislation dominated most conversations in Sacramento. There was a major housing bill related to increasing production and another proposal related to expanding the state’s recycling program. However, both of those bills failed to secure the votes on the Senate floor to pass. This is just the beginning for both of those issues and the conversations surrounding both issues will continue throughout the year.

As the Legislature moves into February, the focus switches to the February 21st bill introduction deadline. Lawmakers will be introducing hundreds of bills in the coming weeks that will shape this year’s session. Also, February marks the beginning of the budget sub-committee process where both houses begin to break down the budget by issue area.

Elected Officials Contacted on Behalf of SCAQMD:

California Advisors met with the following legislators or their offices on behalf of South Coast Air Quality Management District:

Senate:

Ben Allen (SB 732), Toni Atkins (SB 732), Maria Elena Durazo (SB 732), Lena Gonzalez (SB 732, AB 617 Funding), Anthony Portantino (SB 732)

Assembly:

Wendy Carrillo (SB 732, AB 617 Funding), Cristina Garcia (AB 617 Funding) Anthony Rendon (SB 732, AB 617 Funding), Eloise Reyes (SB 732, AB 617 Funding), Miguel Santiago (SB 732, AB 617 Funding)

2020 Legislative Update

Voting District Authorization for Clean Air Legislation

SB 732 (Allen) was pulled from Senate Appropriations Committee at the request of the author before the bill could be heard in January. We have continued to facilitate stakeholder meetings, build coalition members, and work with South Coast staff on the language.



Joe A. Gonsalves & Son

Anthony D. Gonsalves

Jason A. Gonsalves

Paul A. Gonsalves

PROFESSIONAL LEGISLATIVE REPRESENTATION

925 L ST. · SUITE 250 · SACRAMENTO, CA 95814-3766

916 441-0597 · FAX 916 441-5081

Email: gonsalves@gonsalvi.com

TO: South Coast Air Quality Management District

FROM: Anthony, Jason & Paul Gonsalves

SUBJECT: Legislative Update – January 2019

DATE: Thursday, January 30, 2020

The Legislature returned from its fall recess on January 6, 2020 to begin the second year of the 2019-2020 session. Legislators have spent much of January working to hear and pass bills introduced in 2019 that must move out of their house of origin by January 31st to stay alive. While legislators have already started introducing new bills, this process will ramp up significantly as we approach the February 21, 2020 bill introduction deadline.

On January 10, Governor Newsom released his proposed 2020-2021 budget. At \$222 billion, the proposed budget will be the highest on record and includes billions of dollars in new spending commitments for the state.

COSCO SETTLEMENT

On December 18, 2019, the California Air Resources Board (CARB) announced that COSCO Container Lines Co. paid \$965,000 in penalties for violating the Ocean-Going At-Berth Regulation. The violations were discovered during routine audits of the Shanghai-based company's 2014-2017 fleet visits to the Port of Los Angeles/Long Beach and the Port of Oakland.

CARB's investigation revealed that from 2014-2016, COSCO's visits to these ports did not meet operational time limits for at least half of the visits. The fleet also failed to reduce the auxiliary engine power generation by the required 50%. Combined, these failures resulted in 2,401 violations of the Ocean-Going At-Berth Regulation. For the 2017 compliance year, COSCO's Oakland fleet did not meet operational time limits for at least 70% of the fleet's visits, and did not reduce the auxiliary engine power generation by 70% as required, resulting in 211 violations.

To settle the case, COSCO agreed to pay \$965,300 to the Air Pollution Control Fund to support air pollution research, and to comply with all applicable CARB regulations. COSCO also committed to have 100% of its vessels shore-power capable, and early compliance with the 80% reduction requirements before the 2020 deadline stipulated in the Regulation. COSCO cooperated with the investigation and met its commitment for exceeding 80% power reductions in 2018.

Adopted in 2007, the At-Berth Regulation was aimed to reduce emissions from diesel auxiliary engines on container ships, passenger ships and refrigerated-cargo ships while berthing at a California port. Vessel operators can either turn off auxiliary engines and connect to grid-based shore power, or use alternative technologies to comply with the emission reduction requirements of the regulation. The regulation requires a fleet operator to reduce at-berth oxides of nitrogen (NOx) and particulate matter (PM) emissions from its vessels' auxiliary engines in port by at least 80% by 2020.

GOVERNOR NEWSOM'S JANUARY BUDGET PROPOSAL

On January 10, 2020, Governor Newsom released his \$222.2 billion state budget proposal for 2020-21. The proposed Budget continues to grow the reserves in the Rainy-Day Fund and assumes an additional transfer of nearly \$2 billion in 2020-21 and an additional \$1.4 billion over the remainder of the three-year forecast period. The Rainy-Day Fund balance is projected to be \$18 billion in 2020-21 and \$19.4 billion by 2023-24. The proposed Budget also maintains \$900 million in the Safety Net Reserve, sets aside \$110 million more in the Public-School System Stabilization Account, and reserves \$1.6 billion in the Special Fund for Economic Uncertainties to address emergencies and other unforeseen events. Overall, the Budget has \$21 billion set aside in reserves.

The budget proposal keeps Affordable Housing and Homelessness at the top of the Governor's priority list by proposing \$500 million for the state's housing tax credit program, \$1 billion for the California Access to Housing and Services Fund, and a host of proposals that would streamline processes to accelerate housing production. In addition to housing and homelessness, the Governor proposed Budget includes a comprehensive approach to California's investments to protect the state's environment, address the effects of climate change, and promote resiliency. The climate budget includes \$12 billion over the next five years. Three key areas of the climate budget are a proposed climate resilience bond, cap-and-trade expenditures to continue the transition to a carbon-neutral economy, and a new Climate Catalyst Fund to promote the deployment of new technologies, especially by small businesses and emerging industries.

The Climate Catalyst Fund, which will be administered by the Infrastructure and Economic Development Bank, will finance investments in low-carbon transportation, sustainable agriculture and waste diversion through low-interest loans. The Budget proposes to capitalize the Fund with \$1 billion from the General Fund over the next four years. The Fund will have a revolving loan structure that will leverage private capital and will support projects well into the future. It will be designed to support good jobs and a just transition to achieving California's climate goals.

The Governor's proposed budget does include funding for AB 617, however, the funding was reduced from the amount that was dedicated last year. In last year's budget, the Legislature and Governor allocated \$50 million for implementation activities statewide and \$245 million for incentive programs. However, this year, the Governor's budget only includes \$25 million for implementation and \$200 million for incentive programs statewide. These cuts come at a terrible time as CARB identified 2 new communities within the SCAQMD, bringing the total number of communities within SCAQMD to 5.

The cuts to air quality programs did not stop there. The Governor also cut the Clean Vehicle Rebate Program (CVRP) from \$238 million to \$125 million. The CVRP promotes the purchase of clean vehicles by offering rebates of up to \$7,000 for the purchase or lease of new, eligible zero-emission vehicles, including electric, plug-in hybrid electric and fuel cell vehicles. Additionally, the Governor's Budget proposal also included a cut to the Clean Trucks, Buses & Off-Road Freight Equipment Program from \$182 million to \$150 million. The Clean Trucks Program funds zero- and near-zero emission truck, bus, and off-road vehicle and equipment technologies.

Our firm has been working very closely with your staff and Legislators on restoring the funds to these programs. We are confident that the Legislature will continue to make funding these programs a priority in the State Budget and we will continue to work closely with them and keep you apprised.

LOW CARBON FUEL STANDARD

The Low Carbon Fuel Standard (LCFS) began in 2011 and is designed to lower the carbon intensity in fuels by assessing each step in their production, from extraction to combustion. Fuels are compared to an annually declining baseline. If a fuel has a carbon intensity above that baseline it generates a deficit for the producer. If the intensity is below the baseline it can generate credits which may then be sold to a producer who has a deficit.

California's Low Carbon Fuel Standard has supported an innovative revolution in alternative fuels. Those fuels have replaced more than 2.5 billion gallons of petroleum fuel in the past 12 months, providing Californians with cleaner alternatives. Today CARB released a list of certified, third party verifiers who will provide the next level of program quality control.

The LCFS regulation steadily drives down the carbon intensity of transportation fuels sold in California, resulting in cleaner fuels. Third-party verification provides an additional check that program data is complete and accurate, and that credits generated under the program represent additional and enforceable emission reductions. CARB-certified training is consistent with the stringent verification program under California's Cap-and-Trade Program and with international best practices.

2020 LEGISLATIVE CALENDAR:

February Deadlines

Feb. 17 Presidents' Day.

Feb. 21 Last day for bills to be **introduced** (J.R. 61(b)(4), J.R. 54(a)).

March Deadlines

Mar. 27 Cesar Chavez Day observed.

April Deadlines

Apr. 2 Spring Recess begins upon adjournment (J.R. 51(b)(1)).

Apr. 13 Legislature reconvenes from Spring Recess (J.R. 51(b)(1)).

Apr. 24 Last day for **policy committees** to hear and report to fiscal committees **fiscal bills** introduced in their house (J.R. 61(b)(5)).

May Deadlines

May 1 Last day for **policy committees** to meet and report to the floor **nonfiscal** bills introduced in their house (J.R. 61(b)(6)).

May 8 Last day for **policy committees** to meet prior to June 1 (J.R. 61(b)(7)).

May 15 Last day for **fiscal committees** to hear and report to the **floor** bills introduced in their house (J.R. 61 (b)(8)). Last day for **fiscal committees** to meet prior to June 1 (J.R. 61 (b)(9)).

May 25 Memorial Day.

May 26-May 29 Floor session only. No committee may meet for any purpose except for Rules Committee, bills referred pursuant to Assembly Rule 77.2, and Conference Committees (J.R. 61(b)(10)).

May 29 Last day for each house to pass bills introduced in that house (J.R. 61(b)(11)).

June Deadlines

June 1 Committee meetings may resume (J.R. 61(b)(12)).

June 15 Budget Bill must be passed by midnight (Art. IV, Sec. 12(c)).

June 25 Last day for a legislative measure to qualify for the Nov. 3 General Election ballot (Elections Code Sec. 9040).

June 26 Last day for **policy committees** to hear and report fiscal bills to fiscal committees (J.R. 61(b)(13)).

July Deadlines

July 2 Last day for **policy committees** to meet and report bills (J.R. 61(b)(14)).

Summer Recess begins upon adjournment, provided Budget Bill has been passed (J.R. 51(b)(2)).

July 3 Independence Day observed.

August Deadlines

Aug. 3 Legislature reconvenes from **Summer Recess** (J.R. 51(b)(2)).

Aug. 14 Last day for **fiscal committees** to meet and report bills (J.R. 61(b)(15)).

Aug. 17-31 Floor session only. No committee may meet for any purpose except Rules Committee, bills referred pursuant to Assembly Rule 77.2, and Conference Committees (J.R. 61(b)(16)).

Aug. 21 Last day to **amend** bills on the floor (J.R. 61(b)(17)).

Aug. 31 Last day for each house to pass bills (Art. IV, Sec 10(c), J.R. 61(b)(18)). Final Recess begins upon adjournment (J.R. 51(b)(3)).

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BOARD MEETING DATE: March 6, 2020

AGENDA NO. 24

REPORT: Mobile Source Committee

SYNOPSIS: The Mobile Source Committee held a meeting on Friday, February 21, 2020. The following is a summary of the meeting.

RECOMMENDED ACTION:
Receive and file.

Dr. William A. Burke, Chair
Mobile Source Committee

PF:SLR:AK

Committee Members

Present: Dr. William Burke/Chair (videoconference)
Mayor Larry McCallon
Council Member Judith Mitchell
Council Member Carlos Rodriguez

Absent: Supervisor Lisa Bartlett
Supervisor V. Manuel Perez

Call to Order

Chair Burke called the meeting to order at 9:00 a.m.

INFORMATIONAL ITEMS:

1. 2019 Ozone Summary

Dr. Scott Epstein, Program Supervisor/ Planning, Rule Development, and Area Sources presented a summary of 2019 ozone measurements and trends in the South Coast Air Basin and the Coachella Valley.

Dr. Burke asked about the cause of the higher ozone levels near San Bernardino. Staff responded that it was combination of factors including the ozone having had time to react, more sunlight, fewer NOx sources, but primarily due to where the air

mass stagnates. Dr. Burke asked what has been done to reduce concentrations in this region. Staff responded that everything we do is to reduce NOx emissions basin-wide. Council Member Rodriguez asked if there was any way to specifically reduce the ozone in that location. Wayne Natri, Executive Officer responded that the pollutants that are transported to that area would need to be reduced. Staff noted that there are computer models that also validate this control strategy. Council Member Rodriguez asked if there is any evidence of improvements in the Inland Empire. Staff referenced a slide that showed improvement and added that the AQMP shows how to attain the ozone standards in San Bernardino. There is a need of another 45-55 percent reduction in emissions. Mr. Natri expressed the need for incentive funding to reduce NOx by the attainment date. Mayor McCallon asked how weather effects the model. Staff responded that a five-year window is used to smooth out shorter term weather variations.

Dr. Burke inquired when standards would be attained. Mr. Natri responded that with resources attainment could be met by 2037. Mr. Natri clarified that attainment was based on 2023, 2031 and 2037 for the 70 ppb ozone standard. Dr. Burke asked how progress could be maintained and why additional funding is needed to attain the standards. Mr. Natri explained that as progress is made, emission reductions become more expensive.

Angela Guzman commented on the poor air quality and expressed the need to do everything possible to clean the air, including switching to zero carbon vehicles and more regulations.

Darby Osnaya talked about living in Colton between railroads, cement factories, waste and recycling facilities, and commented that his family members cannot go outside due to the poor air quality. Mr Osnaya expressed the need for rules and regulations.

Angie Balderas talked about the poor air quality living near Highland and San Bernardino, which is surrounded by airports, warehouses, railroads and how residents with inhalers have been normalized in this area. Ms. Balderas expressed the need to invest in zero emission vehicles.

Carlo De Le Cruz with the Sierra Club shared over 658 digital clean air Valentine cards thanking the South Coast AQMD for working to clean the air. Mr. De Le Cruz expressed the need for rules and regulations, on the ports and warehouses, and having the opportunity for emission reductions.

Alyciad Enciso talked about poor air. She does not think that the air quality has improved much and requested a special subcommittee to study air quality in the San Bernardino area. Dr. Burke responded that he was open to a subcommittee if representatives on the Board from that area request the subcommittee.

2. Update on MOU for the Marine Ports

Dr. Sarah Rees, Assistant Deputy Executive Officer/Planning, Rule Development, and Area Sources provided an update on the Ports MOU development including an update on recent activities and options to proceed for consideration.

Council Member Rodriguez inquired if staff had discussed the proposed options with the Ports. Mr. Nastri responded that he was meeting with the Ports' executive directors later in the day to discuss the MOU and the proposed options. Council Member Mitchell inquired about the total twenty-foot equivalent unit (TEU) throughput at the Ports in relation to the cargo diversion rates in the Ports economic study. Staff responded that the total TEU throughput is approximately 17 million TEUs and the potential amount of cargo diverted represents a small fraction of the total throughput. Staff also provided some of the competitive advantages for our Ports that may explain the low diversion rates. Council Member Mitchell asked about competition with other West Coast ports. Staff responded that the drayage cost is higher at Oakland and it takes longer to ship cargo to Oakland from China compared to our Ports. As for Prince Rupert, there is a real risk of diversion since it is competitive both in terms of cost and time, but the risk is mainly for containers moved by rail, not for truck containers.

Dr. Burke inquired if there is an option to adopt a mitigation fee rule on containers, if the Ports are opposed to adopting higher truck rates. Staff responded that an Indirect Source Rule with optional compliance mechanism for facilities to pay a mitigation fee in lieu of complying with rule limits could be proposed. Mayor McCallon asked whether it is realistic to expect significant NOx reductions by 2023 even at \$70 truck rate. Staff responded that there are approximately 8,000 pre-2010 trucks that need to be replaced by 2023 to comply with CARB's Truck and Bus Regulation. With sufficient funding generated from the truck rate, significant NOx reductions could be achieved by replacing pre-2010 trucks with near-zero emission and zero-emission trucks. Otherwise pre-2010 trucks will be replaced with dirtier, used diesel trucks. Council Member Mitchell inquired about how to prevent such turnovers to used diesel trucks. Staff reiterated the importance of providing sufficient incentive funding for near-zero emission and zero-emission trucks, since South Coast AQMD does not have the authority to set emission standards. Staff also added that a container fee is an option that can be considered. Staff reminded the Committee that the State legislature adopted a container fee in the past, but it was vetoed by Governor Schwarzenegger.

Council Member Rodriguez asked why staff is considering an option to pivot to Indirect Source Rule (ISR) now. Staff responded that the MOU negotiation has taken much longer than anticipated, with not much progress. Staff is willing to continue the MOU negotiations within a specified timeline, but also wants to explore other options for the Board to consider. Mayor McCallon recommended that Mr. Nastri should be involved in these negotiations given that we are at an impasse with

the Ports. He also commented on the need to involve political representatives in these negotiations as well. Mr. Nastri responded that he has been meeting with the Ports executive directors while relying on the staff to negotiate details of the MOU.

Council Member Rodriguez commented that the Ports economic study seems to reinforce staff-recommended options and asked if the Ports agreed with the study findings. He also asked that other economic implications including jobs impacts be considered, in addition to NOx reductions for the truck rate. Staff responded that the Ports have not finalized their economic study, but other studies and literature support the findings in the study.

Alyciad Enciso commented on possible legislative efforts to address the port emissions especially affecting the Inland Empire air quality and supported a subcommittee to evaluate the high ozone concentrations in the San Bernardino area.

Heather Tomley, Managing Director of Planning and Environmental from Port of Long Beach commented that the ports have been working collaboratively with South Coast AQMD staff on the MOU development, since mid-2018. The ports do not believe that the progress on the MOU has stalled and that the MOU is the best approach going forward. The Ports support Option 1 in staff's presentation which is based on the MOU approach and a \$10/TEU truck rate for the Ports Clean Trucks Program. The Ports staff will propose the \$10/TEU to the Ports' Harbor Boards of Commissions because of uncertainties related to cargo diversion. The Port Boards are expected to evaluate the progress on the Clean Trucks Program annually to consider possible adjustments to the truck rate. Mayor McCallon inquired how the revenues from the truck rate will be spent. Ms. Tomley responded that the Ports will adopt their incentive funding program for clean trucks through a stakeholder process following CARB's adoption of low-NOx engine emission standards later this year. Council Member Rodriguez asked whether \$10/TEU will be adequate to meet the 100% zero-emission goal in 2035. Ms. Tomley responded that the Clean Air Action Plan (CAAP) goal is to achieve conjunction and partnership with other agencies and the industry. Dr. Burke asked whether the ports decreased their budget because of recent drop in cargo volume. Ms. Tomley indicated that she did not know the actual budget impact.

Chris Cannon, Chief Sustainability Officer and Director of Environmental Management of the Port of Los Angeles commented that the Port has decreased their budget by five percent in response to reduced cargo volume. Mr. Cannon expressed concern about the Ports losing market share over the last 18 years and the potential negative impact of the clean truck rate.

Wayne Nastri mentioned that he has had several meetings and discussions with the Executive Directors of both ports and will be meeting with them again to reach agreement.

Greg Roche from Clean Energy commented about the significant potential reductions from replacing 8,000 pre-2010 diesel drayage trucks with cleaner trucks. He suggested that the Ports adopt a requirement for newly registered trucks to be near-zero-emission trucks in order to achieve immediate emission reductions from these trucks.

Chris Chavez from Coalition for Clean Air expressed concern over the adverse air quality impacts of diesel trucks on communities and recommended a higher truck rate of \$35-\$50 to provide sufficient funding to turn-over diesel trucks. He also expressed support for an indirect source rule (ISR) rather than an MOU.

Carlo De La Cruz from Sierra Club mentioned that a higher truck rate of \$50 is supported by Sierra Club, and a number of other environmental organizations, to transition the existing trucks to cleaner trucks.

Francis Yang from the Sierra Club supported higher truck rates and a transition to zero-emission trucks.

Rag Dhillon from Breathe LA commented that a truck rate of \$10/TEU is too low and will not achieve the CAAP goals. The Ports economic study did not consider the health impacts of port truck emissions. He advocated for \$50/TEU and supported continuation of the MOU if ports agree to a higher rate; otherwise he supported an ISR.

Todd Campbell from Clean Energy re-iterated that the 8,000 pre-2010 diesel drayage trucks represented a great opportunity to be replaced with near-zero or zero-emission trucks by 2023. Replacing these trucks with near-zero trucks will result in 80% NOx reductions. He recommended that Ports should adopt a near-zero emission standard for new trucks registered at the ports.

Dr. Burke mentioned that he is hopeful that a meaningful agreement can be reached with the Ports.

WRITTEN REPORTS:

3. Rule 2202 Activity Report: Rule 2202 Summary Status Report

This item was received and filed.

4. Monthly Report on Environmental Justice Initiatives: CEQA Document Commenting Update

This item was received and filed.

OTHER MATTERS:

5. Other Business

There was no other business.

6. Public Comment Period

There were no public comments.

7. Next Meeting Date:

The next regular Mobile Source Committee meeting is scheduled for Friday, March 20, 2020.

Adjournment

The meeting adjourned at 11:20 a.m.

Attachments

1. Attendance Record
2. Rule 2202 Activity Report – Written Report
3. Monthly Report on Environmental Justice Initiatives: CEQA Document Commenting Update – Written Report

ATTACHMENT 1

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT MOBILE SOURCE COMMITTEE MEETING Attendance – February 21, 2020

Dr. William Burke (Videoconference).....	South Coast AQMD Board Member
Mayor Larry McCallon.....	South Coast AQMD Board Member
Council Member Judith Mitchell.....	South Coast AQMD Board Member
Council Member Carlos Rodriguez.....	South Coast AQMD Board Member
Ron Ketcham.....	Board Consultant (McCallon)
Fred Minassian.....	Board Consultant (Mitchell)
Andy Silva.....	Board Consultant (Rutherford)
Angie Balderos.....	Sierra Club
Todd Campbell (Videoconference).....	Clean Energy
Chris Cannon.....	Port of Los Angeles
Christopher Chavez.....	Coalition for Clean Air
Rag Dhillon (Videoconference).....	Breathe LA
Carlo De La Cruz.....	Sierra Club
Robert Lively.....	Cal Cartage
Alyciad Enciso.....	Community Representative
Angela Guzman.....	Sierra Club
Bill La Marr.....	California Small Business Alliance
Michael Munoz.....	LA Alliance for a New Economy
Darby Osnaya.....	Sierra Club
Greg Roche.....	Clean Energy
David Rothbart.....	LACSC
Leslie Schenker.....	Sierra Club
Susan Stark.....	Marathon Petroleum
Heather Tomley.....	Port of Long Beach
Peter Whittingham.....	Whittingham Public Affairs
Larry Wilske.....	Maritime
Greg Wolffe.....	Yorke Engineering
Tammy Yamasaki.....	Southern California Edison
Francis Yang (Videoconference).....	Sierra Club
Barbara Baird.....	South Coast AQMD Staff
Naveen Berry.....	South Coast AQMD Staff
Brian Choe.....	South Coast AQMD Staff
Philip Fine.....	South Coast AQMD Staff
Carol Gomez.....	South Coast AQMD Staff
Scott Epstein.....	South Coast AQMD Staff
Kathryn Higgins.....	South Coast AQMD Staff
Angela Kim.....	South Coast AQMD Staff
Sang-Mi Lee.....	South Coast AQMD Staff

Wayne Nastri	South Coast AQMD Staff
Matt Miyasato.....	South Coast AQMD Staff
Robert Paud	South Coast AQMD Staff
Zorik Pirveysian	South Coast AQMD Staff
Sarah Rees	South Coast AQMD Staff
Zafiro Sanchez.....	South Coast AQMD Staff
Lijin Sun	South Coast AQMD Staff
Lisa Tanaka O Malley	South Coast AQMD Staff
Veera Tyagi	South Coast AQMD Staff
Kim White	South Coast AQMD Staff
Jill Whynot	South Coast AQMD Staff



South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 • www.aqmd.gov

Rule 2202 Summary Status Report

Activity for January 1, 2020 to February 1, 2020

Employee Commute Reduction Program (ECRP)	
# of Submittals:	14

Emission Reduction Strategies (ERS)	
# of Submittals:	17

Air Quality Investment Program (AQIP) Exclusively		
County	# of Facilities	\$ Amount
Los Angeles	0	\$ 0
Orange	0	\$ 0
Riverside	0	\$ 0
San Bernardino	1	\$ 7,337
TOTAL:	1	\$ 7,337

ECRP w/AQIP Combination		
County	# of Facilities	\$ Amount
Los Angeles	0	\$ 0
Orange	0	\$ 0
Riverside	0	\$ 0
San Bernardino	1	\$ 7,447
TOTAL:	1	\$ 7,447

Total Active Sites as of February 1, 2020

ECRP (AVR Surveys)			TOTAL Submittals w/Surveys	AQIP	ERS	TOTAL
ECRP ¹	AQIP ²	ERS ³				
526	14	52	592	99	651	1,342
39.19%	1.04%	3.87%	44.11%	7.38%	48.51%	100% ⁴

Total Peak Window Employees as of February 1, 2020

ECRP (AVR Surveys)			TOTAL Submittals w/Surveys	AQIP	ERS	TOTAL
ECRP ¹	AQIP ²	ERS ³				
388,648	5,311	29,123	423,082	15,901	283,950	722,933
53.76%	0.73%	4.03%	58.52%	2.20%	39.285%	100% ⁴

- Notes:**
1. ECRP Compliance Option.
 2. ECRP Offset (combines ECRP w/AQIP). AQIP funds are used to supplement the ECRP AVR survey shortfall.
 3. ERS with Employee Survey to get Trip Reduction credits. Emission/Trip Reduction Strategies are used to supplement the ECRP AVR survey shortfall.
 4. Totals may vary slightly due to rounding.

DRAFT

BOARD MEETING DATE: March 6, 2020

AGENDA NO.

REPORT: Lead Agency Projects and Environmental Documents Received

SYNOPSIS: This report provides a listing of CEQA documents received by the South Coast AQMD between January 1, 2020 and January 31, 2020, and those projects for which the South Coast AQMD is acting as lead agency pursuant to CEQA.

COMMITTEE: Mobile Source, February 21, 2020, Reviewed

RECOMMENDED ACTION:
Receive and file.

Wayne Nastri
Executive Officer

PF:SN:JW:LS:AM

CEQA Document Receipt and Review Logs (Attachments A and B) – Each month, the South Coast AQMD receives numerous CEQA documents from other public agencies on projects that could adversely affect air quality. A listing of all documents received during the reporting period January 1, 2019 through January 31, 2019 is included in Attachment A. A list of active projects from previous reporting periods for which South Coast AQMD staff is continuing to evaluate or has prepared comments is included in Attachment B. A total of 43 CEQA documents were received during this reporting period and 22 comment letters were sent.

The Intergovernmental Review function, which consists of reviewing and commenting on the adequacy of the air quality analysis in CEQA documents prepared by other lead agencies, is consistent with the Board's 1997 Environmental Justice Guiding Principles and Environmental Justice Initiative #4. As required by the Environmental Justice Program Enhancements for FY 2002-03, approved by the Board in October 2002, each attachment notes proposed projects where the South Coast AQMD has been contacted regarding potential air quality-related environmental justice concerns. The South Coast AQMD has established an internal central contact to receive information on projects with potential air quality-related environmental justice concerns. The public may contact the

South Coast AQMD about projects of concern by the following means: in writing via fax, email, or standard letters; through telephone communication; and as part of oral comments at South Coast AQMD meetings or other meetings where South Coast AQMD staff is present. The attachments also identify, for each project, the dates of the public comment period and the public hearing date, if applicable. Interested parties should rely on the lead agencies themselves for definitive information regarding public comment periods and hearings as these dates are occasionally modified by the lead agency.

At the January 6, 2006 Board meeting, the Board approved the Workplan for the Chairman's Clean Port Initiatives. One action item of the Chairman's Initiatives was to prepare a monthly report describing CEQA documents for projects related to goods movement and to make full use of the process to ensure the air quality impacts of such projects are thoroughly mitigated. In response to describing goods movement, CEQA documents (Attachments A and B) are organized to group projects of interest into the following categories: goods movement projects; schools; landfills and wastewater projects; airports; general land use projects, etc. In response to the mitigation component, guidance information on mitigation measures was compiled into a series of tables relative to: off-road engines; on-road engines; harbor craft; ocean-going vessels; locomotives; fugitive dust; and greenhouse gases. These mitigation measure tables are on the CEQA webpages portion of the South Coast AQMD's website at:

<http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies>. Staff will continue compiling tables of mitigation measures for other emission sources.

Staff focuses on reviewing and preparing comments for projects: where the South Coast AQMD is a responsible agency; that may have significant adverse regional air quality impacts (e.g. special event centers, landfills, goods movement); that may have localized or toxic air quality impacts (e.g. warehouse and distribution centers); where environmental justice concerns have been raised; and which a lead or responsible agency has specifically requested South Coast AQMD review. If staff provided written comments to the lead agency as noted in the column "Comment Status," there is a link to the "South Coast AQMD Letter" under the Project Description. In addition, if staff testified at a hearing for the proposed project, a notation is provided under the "Comment Status." If there is no notation, then staff did not provide testimony at a hearing for the proposed project.

During the period January 1, 2019 through January 31, 2019, the South Coast AQMD received 43 CEQA documents. Attachment B lists documents that are ongoing active projects. Of the 60 documents listed in Attachments A and B:

- 22 comment letters were sent;
- 21 documents were reviewed, but no comments were made;
- 15 documents are currently under review;
- 0 document did not require comments (e.g., public notices);
- 0 document were not reviewed; and
- 2 documents were screened without additional review.

(The above statistics are from January 1, 2019 to January 31, 2019, and may not include the most recent “Comment Status” updates in Attachments A and B.)

Copies of all comment letters sent to lead agencies can be found on the South Coast AQMD’s CEQA webpage at the following internet address:

<http://www.aqmd.gov/home/regulations/ceqa/commenting-agency>.

South Coast AQMD Lead Agency Projects (Attachment C) – Pursuant to CEQA, the South Coast AQMD periodically acts as lead agency for stationary source permit projects. Under CEQA, the lead agency is responsible for determining the type of CEQA document to be prepared if the proposal for action is considered to be a “project” as defined by CEQA. For example, an Environmental Impact Report (EIR) is prepared when the South Coast AQMD, as lead agency, finds substantial evidence that the project may have significant adverse effects on the environment. Similarly, a Negative Declaration (ND) or Mitigated Negative Declaration (MND) may be prepared if the South Coast AQMD determines that the project will not generate significant adverse environmental impacts, or the impacts can be mitigated to less than significance. The ND and MND are written statements describing the reasons why projects will not have a significant adverse effect on the environment and, therefore, do not require the preparation of an EIR.

Attachments C to this report summarizes the active projects for which the South Coast AQMD is lead agency and is currently preparing or has prepared environmental documentation. As noted in Attachment C, the South Coast AQMD continued working on the CEQA documents for two active projects during January.

Attachments

- A. Incoming CEQA Documents Log
- B. Ongoing Active Projects for Which South Coast AQMD Has or Will Conduct a CEQA Review
- C. Active South Coast AQMD Lead Agency Projects

DRAFT
ATTACHMENT A*
INCOMING CEQA DOCUMENTS LOG
January 1, 2020 to January 31, 2020

SOUTH COAST AQMD LOG-IN NUMBER	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
PROJECT TITLE				
Goods Movement LAC200109-02 Pacific Crane Maintenance Company Chassis Repair and Storage Facility	The proposed project consists of demolition of 69,982 square feet of existing structures, and construction of a 68,000-square-foot chassis repair service canopy on 31 acres. The project is located at 895 Reeves Avenue on the southeast corner of State Route 47 and Navy Way within the Port of Los Angeles. Comment Period: 1/9/2020 - 2/10/2020 Public Hearing: N/A	Negative Declaration	City of Los Angeles Harbor Department	** Under review, may submit written comments
Warehouse & Distribution Centers LAC200103-01 Greenleaf Business Center	The proposed project consists of construction of a 216,500-square-foot warehouse on 25.33 acres. The project is located on the northwest corner of Greenleaf Avenue and Los Nietos Road. Reference LAC191119-03 Comment Period: N/A Public Hearing: N/A	Response to Comments	City of Santa Fe Springs	Document reviewed - No comments sent
Warehouse & Distribution Centers RVC200121-01 Latitude Business Park	The proposed project consists of construction of 1,074,771 square feet of industrial and warehouse uses on 75 acres. The project is located on the northwest corner of Tom Barns Street and Temescal Canyon Road. Comment Period: 1/8/2020 - 2/8/2020 Public Hearing: N/A	Notice of Intent to Adopt a Mitigated Negative Declaration	City of Corona	** Under review, may submit written comments
Warehouse & Distribution Centers SBC200115-01 Industrial Project - Phelan DRC2018-00912	The proposed project consists of demolition of existing buildings and construction of three warehouses totaling 510,847 square feet on 11.73 acres. The project is located on the northwest corner of Ninth Street and Vineyard Avenue. Reference SBC191205-03 Comment Period: N/A Public Hearing: N/A	Response to Comments	City of Rancho Cucamonga	Document reviewed - No comments sent
Airports LAC200116-02 Los Angeles International Airport (LAX) Terminal 6 Renovation Project	The proposed project consists of modernization of existing airport facilities totaling 386,000 square feet and reconfiguration of existing aircraft parking positions. The project is located on the southwest corner of World Way and East Way in the City of Los Angeles. Comment Period: 1/16/2020 - 2/5/2020 Public Hearing: N/A	Negative Declaration	Los Angeles World Airports	Document reviewed - No comments sent

*Sorted by Land Use Type (in order of land uses most commonly associated with air quality impacts), followed by County, then date received.

- Project has potential environmental justice concerns due to the nature and/or location of the project.

** Disposition may change prior to Governing Board Meeting

Documents received by the CEQA Intergovernmental Review program but not requiring review are not included in this report.

**ATTACHMENT A
INCOMING CEQA DOCUMENTS LOG
January 1, 2020 to January 31, 2020**

SOUTH COAST AQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
<i>Airports</i> SBC200108-02 Eastgate Air Cargo Facility	The proposed project consists of construction of a 658,500-square-foot warehouse, taxi lanes and aircraft parking to support 14 aircraft, 12 acres of ground support equipment operational areas, and two maintenance and service buildings totaling 50,000 square feet on 101.52 acres. The project is located on the southwest corner of Perimeter Road and Hangar Way within the City of San Bernardino. Reference SBC190703-08, SBC181018-01, SBC181017-02, SBC180904-03, and SBC180719-04 Comment Period: N/A Public Hearing: 12/23/2019	Final Environmental Assessment	United States Federal Aviation Administration	Document reviewed - No comments sent
<i>Industrial and Commercial</i> LAC200117-02 19500 Main Street Digital Billboards Project	The proposed project consists of demolition of an existing sign structure and construction of a digital sign structure 55 feet in height on 0.02 acres. The project is located on the southeast corner of South Main Street and Interstate 405. Comment Period: 1/17/2020 - 2/17/2020 Public Hearing: N/A	Notice of Intent to Adopt a Mitigated Negative Declaration	City of Carson	Document reviewed - No comments sent
<i>Industrial and Commercial</i> ORC200107-01 Ganahl Lumber Project	The proposed project consists of construction of 167,385 square feet of retail and restaurant uses on 17 acres. The project is located at 25865 Stonehill Drive near the northeast corner of Stonehill Drive and San Juan Creek. Reference ORC190522-03 Comment Period: 1/6/2020 - 2/19/2020 Public Hearing: N/A	Draft Environmental Impact Report	City of San Juan Capistrano	** Under review, may submit written comments
<i>Industrial and Commercial</i> RVC200115-04 MA19240 (CUP19009)	The proposed project consists of reuse of an existing 2,078-square-foot industrial building for tire repair, sales, and automobile service operations on 2.37 acres. The project is located at 6102 Etiwanda Avenue near the northeast corner of Etiwanda and Limonite Avenue. Comment Period: 11/26/2019 - 12/13/2019 Public Hearing: N/A	Site Plan (received after close of comments)	City of Jurupa Valley	Document reviewed - No comments sent

- Project has potential environmental justice concerns due to the nature and/or location of the project.

** Disposition may change prior to Governing Board Meeting

Documents received by the CEQA Intergovernmental Review program but not requiring review are not included in this report.

**ATTACHMENT A
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SOUTH COAST AQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
Industrial and Commercial RVC200124-01 The Homestead Industrial Project	The proposed project consists of construction of seven warehouses totaling 1,080,060 square feet on 56 acres. The project is located on the southwest corner of Archibald Avenue and Remington Avenue. Reference RVC190917-07 Comment Period: 1/24/2020 - 3/10/2020 Public Hearing: N/A	Notice of Availability of a Draft Environmental Impact Report	City of Eastvale	** Under review, may submit written comments
Waste and Water-related LAC200102-03 Alcoa Composites, Inc.	The proposed project consists of development of cleanup actions to excavate, dispose, and remediate contaminated soil and groundwater with volatile organic compounds on 13.3 acres. The project will also include installation of a soil vapor extraction system. The project is located at 13344 South Main Street on the northeast corner of South Main Street and East 135th Street in the community of Willowbrook within Los Angeles County. Comment Period: 1/13/2020 - 2/11/2020 Public Hearing: N/A	Draft Response Plan	Los Angeles Regional Water Quality Control Board	Document reviewed - No comments sent
Waste and Water-related LAC200123-01 Western Trunk Line Project	The proposed project consists of construction of a 27,795-foot water pipeline ranging in diameter from six inches to eight inches. The project is located along Western Avenue between 59th Place and 121st Street in the communities of South Los Angeles and West Athens-Westmont. Comment Period: 1/23/2020 - 2/24/2020 Public Hearing: N/A	Notice of Intent to Adopt a Mitigated Negative Declaration	City of Los Angeles Department of Water and Power	Document reviewed - No comments sent
Waste and Water-related ORC200110-02 Capistrano Greenery Composting Operation at the Prima Deshecha Landfill	The proposed project consists of construction of a green waste composting facility with a receiving capacity of 204 tons per day of green wastes diverted from landfills on an 18.6-acre portion of 1,530 acres. The project is located at 32250 Avenida La Plata on the southeast corner of Avenida La Plata and Prima Deshecha in the City of San Juan Capistrano. Comment Period: 1/10/2020 - 2/10/2020 Public Hearing: 5/5/2020	Mitigated Negative Declaration	Orange County Department of Waste and Recycling	** Under review, may submit written comments

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**ATTACHMENT A
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SOUTH COAST AQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
<i>Transportation</i> SBC200102-01 Highland Redlands Regional Connector Project	The proposed project consists of construction of 4.7 miles of bikeways and walkways. The project is located along Streater Avenue and Orange Street between Baseline Street to the north and West Pioneer Avenue to the south in the cities of Highland and Redlands. Comment Period: 1/3/2020 - 2/3/2020 Public Hearing: N/A	Mitigated Negative Declaration	City of Highland	Document reviewed - No comments sent
<i>Institutional (schools, government, etc.)</i> LAC200114-01 California Highway Patrol Baldwin Park Area Office Replacement Project	The proposed project consists of demolition of an existing office building, and construction of a 36,740-square-foot office building, a 6,925-square-foot automobile service facility, a 148-foot steel communications tower, a fueling service station with two pumps, and a 3,300-square-foot fueling canopy on a six-acre portion of 237 acres. The project is located on the northwest corner of East Campus Drive and South Campus Drive within the California Polytechnic State University, Pomona in Los Angeles County. Comment Period: 1/10/2020 - 2/10/2020 Public Hearing: N/A	Notice of Intent to Adopt a Mitigated Negative Declaration	California Highway Patrol	** Under review, may submit written comments
<i>Institutional (schools, government, etc.)</i> LAC200117-01 Hilgard Faculty Housing Project	The proposed project consists of construction of 100 residential units totaling 120,000 square feet with subterranean parking on 0.6 acres. The project is located on the northeast corner of Hilgard Avenue and Lindbrook Drive in the community of Westwood Village within the City of Los Angeles. Comment Period: 1/16/2020 - 2/14/2020 Public Hearing: 2/4/2020	Mitigated Negative Declaration	Regents of the University of California	Document reviewed - No comments sent
<i>Institutional (schools, government, etc.)</i> LAC200124-04 Shenandoah Street Elementary School Comprehensive Modernization Project	The proposed project consists of demolition of 33,684 square feet of existing buildings, modernization of 33,216 square feet of existing buildings, and construction of a 32,290-square-foot building with 19 classrooms on 7.6 acres. The project is located at 2450 Shenandoah Street on the northeast corner of Shenandoah Street and Beverlywood Street in the community of South Robertson. Comment Period: 1/15/2020 - 2/17/2020 Public Hearing: 1/29/2020	Notice of Intent to Adopt a Mitigated Negative Declaration	Los Angeles Unified School District	** Under review, may submit written comments

- Project has potential environmental justice concerns due to the nature and/or location of the project.

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ATTACHMENT A
INCOMING CEQA DOCUMENTS LOG
January 1, 2020 to January 31, 2020

<u>SOUTH COAST AQMD LOG-IN NUMBER</u> PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
<i>Retail</i> ORC200108-01 Euclid-Hazard 7-Eleven Service Station	The proposed project consists of construction of a 3,045-square-foot convenience store, a gasoline service station with four pumps, and a 1,800-square-foot fueling canopy on 0.64 acres. The project is located at 813 North Euclid Street on the southeast corner of North Euclid Street and West Hazard Avenue. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/ORC200108-01.pdf Comment Period: 1/6/2020 - 1/26/2020 Public Hearing: 1/27/2020	Notice of Intent to Adopt a Mitigated Negative Declaration	City of Santa Ana	South Coast AQMD staff commented on 1/22/2020
<i>Retail</i> RVC200110-03 MA19041 - Van Buren/Rutile Commercial Project	The proposed project consists of construction of 86,440 square feet of retail and restaurant uses, a 5,034-square-foot car wash facility, a gasoline service station with six pumps, and a 3,456-square-foot fueling canopy on 15.9 acres. The project is located on the southeast corner of Van Buren Boulevard and Rutile Street. Reference RVC190301-11 http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/RVC200110-03.pdf Comment Period: 1/10/2020 - 1/29/2020 Public Hearing: N/A	Site Plan	City of Jurupa Valley	South Coast AQMD staff commented on 1/21/2020
<i>Retail</i> RVC200114-05 Conditional Use Permit No. 190003 and General Plan Amendment No. 190005	The proposed project consists of construction of a propane distribution facility with three 30,000-gallon propane tanks on 2.21 acres. The project is located on the northeast corner of Ninth Avenue and Washington Avenue in the community of Winchester. Comment Period: 1/7/2020 - 1/29/2020 Public Hearing: 1/29/2020	Notice of Intent to Adopt a Negative Declaration	Riverside County	Document reviewed - No comments sent
<i>Retail</i> RVC200115-02 Lake Street Storage Project	The proposed project consists of construction of an 80,000-square-foot recreational vehicle (RV) and boat storage facility with 192 RV parking spaces, a 3,528-square-foot convenience store, a fueling station with 12 pumps, and two underground storage tanks on 14.44 acres. The project is located on the southeast corner of Lake Street and Interstate 15. Comment Period: 1/14/2020 - 2/12/2020 Public Hearing: 2/18/2020	Notice of Intent to Adopt a Mitigated Negative Declaration	City of Lake Elsinore	** Under review, may submit written comments

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**ATTACHMENT A
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SOUTH COAST AQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
Retail RVC200117-03 DEV2020-003 - Encanto McCall Gas Station QSR	The proposed project consists of construction of a 3,200-square-foot restaurant, a 3,700-square-foot convenience store, a 960-square-foot car wash facility, a gasoline service station with 12 pumps, and a 3,200-square-foot fueling canopy on 1.88 acres. The project is located on the northeast corner of McCall Boulevard and Interstate 215. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/RVC200117-03.pdf Comment Period: 1/13/2020 - 2/6/2020 Public Hearing: N/A	Site Plan	City of Menifee	South Coast AQMD staff commented on 1/21/2020
Retail RVC200124-03 PP2018-0119 & CUP2018-0021	The proposed project consists of construction of a 4,000-square-foot restaurant, a 3,800-square-foot convenience store, a 1,500-square-foot car wash facility, a gasoline service station with 18 pumps, and a 6,700-square-foot fueling canopy on 3.96 acres. The project is located on the northeast corner of Desert Lawn Drive and Oak Valley Parkway. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/RVC200124-03.pdf Comment Period: 1/21/2020 - 1/29/2020 Public Hearing: N/A	Site Plan	City of Beaumont	South Coast AQMD staff commented on 1/28/2020
General Land Use (residential, etc.) LAC200114-06 Vesting Tentative Tract Map 82852	The proposed project consists of demolition of existing vehicle repair facilities and construction of 13 residential units totaling 34,388 square feet on 1.5 acres. The project is located at 788 Francesca Drive on the near the southeast corner of Francesca Drive and Amar Road. Comment Period: 1/8/2020 - 2/11/2020 Public Hearing: N/A	Site Plan	City of Walnut	Document reviewed - No comments sent
General Land Use (residential, etc.) LAC200123-02 1490 West Mission Boulevard Apartments	The proposed project consists of demolition of an existing 1,100-square-foot building and construction of an 83,025-square-foot building with 41 residential units and subterranean parking on 1.2 acres. The project is located near the southeast corner of West Mission Boulevard and South Dudley Street. Comment Period: 1/22/2020 - 2/11/2020 Public Hearing: N/A	Notice of Intent to Adopt a Mitigated Negative Declaration	City of Pomona	Document reviewed - No comments sent
General Land Use (residential, etc.) ORC200109-01 The Bowery Mixed-Use Project	The proposed project consists of demolition of 212,121 square feet of industrial uses, and construction of 1,150 residential units and 80,000 square feet of commercial, retail, and restaurant uses on 14.58 acres. The project is located on the northwest corner of Red Hill Avenue and East Warner Avenue. Reference ORC190808-03 and ORC190801-16 Comment Period: 1/3/2020 - 2/18/2020 Public Hearing: N/A	Notice of Availability of a Draft Environmental Impact Report	City of Santa Ana	** Under review, may submit written comments

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**ATTACHMENT A
INCOMING CEQA DOCUMENTS LOG
January 1, 2020 to January 31, 2020**

SOUTH COAST AQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
General Land Use (residential, etc.) ORC200116-01 Brea Mall Mixed Use Project	The proposed project consists of demolition of an existing 161,990-square-foot building and a 12-acre surface parking lot, and construction of 312 residential units totaling 380,947 square feet and 311,615 square feet of retail uses on 17.5 acres. The project is located near the southeast corner of South Randolph Avenue and East Birch Street. Reference ORC190816-04 Comment Period: 1/16/2020 - 3/2/2020 Public Hearing: N/A	Draft Environmental Impact Report	City of Brea	** Under review, may submit written comments
General Land Use (residential, etc.) RVC200109-03 Legado Specific Plan	The proposed project consists of construction of 1,061 residential uses, 225,000 square feet of commercial uses, and 14.8 acres of recreational uses on 331 acres. The project will also include 6.3 acres of open space. The project is located on the southeast corner of Rouse Road and Encanto Drive. Reference RVC101110-01 Comment Period: 1/9/2020 - 2/24/2020 Public Hearing: N/A	Draft Environmental Impact Report	City of Menifee	** Under review, may submit written comments
Plans and Regulations LAC200124-02 Descanso Gardens Master Plan	The proposed project consists of development of policies and programs to guide future park improvements and resource management with a planning horizon of 2035 on 149 acres. The project is located at 1418 Descanso Drive on the southwest corner of Descanso Drive and Encinas Drive in the City of La Cañada Flintridge. Comment Period: 1/27/2020 - 2/26/2020 Public Hearing: N/A	Notice of Intent to Adopt a Mitigated Negative Declaration	Los Angeles County Department of Parks and Recreation	Document reviewed - No comments sent
Plans and Regulations ORC200107-03 Vegetation Management Program	The proposed project consists of controlled burning of 25 acres to 310 acres of grassland and vegetation. The project is located near the southeast corner of Bell Canyon Road and Grey Rock within Casper's Park and Starr Ranch Audubon in the cities of Mission Viejo and Rancho San Margarita. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/ORC200107-03.pdf Comment Period: N/A Public Hearing: N/A	Initial Project Consultation	Orange County Fire Authority	South Coast AQMD staff commented on 1/16/2020

- Project has potential environmental justice concerns due to the nature and/or location of the project.

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ATTACHMENT B*
**ONGOING ACTIVE PROJECTS FOR WHICH SOUTH COAST AQMD HAS
 OR IS CONTINUING TO CONDUCT A CEQA REVIEW**

SOUTH COAST AQMD LOG-IN NUMBER	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
PROJECT TITLE				
Industrial and Commercial LAC191227-10 Inglewood Basketball and Entertainment Center	The proposed project consists of construction of a 915,000-square-foot entertainment center with 18,000 fixed seats and up to 500 temporary seats on 27 acres. The project will also include a hotel with 150 rooms. The project is located on the southeast corner of South Prairie Avenue and West Century Boulevard. Reference LAC180411-01 Comment Period: 12/27/2019 - 2/10/2020 Public Hearing: N/A	Notice of Availability of a Draft Environmental Impact Report	City of Inglewood	**Under review, may submit written comments
Waste and Water-related ORC191227-04 Westminster East Garden Grove, CA Flood Risk Management Study	The proposed project consists of modifications to drainage channels, widening of existing roadways, replacement of tide gates, and construction of a floodwall. The project is located on the northeast corner of Beach Boulevard and Pacific Coast Highway in Orange County. Reference ORC181107-05 Comment Period: 12/24/2019 - 2/7/2020 Public Hearing: N/A	Notice of Availability of an Integrated Feasibility Report/ Environmental Impact Statement/ Draft Environmental Impact Report	United States Army Corps of Engineers	**Under review, may submit written comments
Warehouse & Distribution Centers RVC191227-02 Horizon Business Park	The proposed project consists of construction of a 310,406-square-foot warehouse on 13.9 acres. The project is located on the northwest corner of Etiwanda Avenue and Cantu Galleano Ranch Road. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/RVC191227-02.pdf Comment Period: 12/26/2019 - 1/15/2020 Public Hearing: 1/22/2020	Notice of Intent to Adopt a Mitigated Negative Declaration	City of Jurupa Valley	South Coast AQMD staff commented on 1/15/2020
Warehouse & Distribution Centers SBC191121-05 Slover/Cactus Avenue Warehouse Facility Project	The proposed project consists of construction of a 257,855-square-foot warehouse on 13.27 acres. The project is located on the southwest corner of Slover Avenue and Cactus Avenue in the community of Bloomington. Reference SBC190313-05 http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/SBC191121-05.pdf Comment Period: 11/21/2019 - 1/6/2020 Public Hearing: N/A	Draft Environmental Impact Report	County of San Bernardino	South Coast AQMD staff commented on 1/2/2020

*Sorted by Comment Status, followed by Land Use, then County, then date received.

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ATTACHMENT B
ONGOING ACTIVE PROJECTS FOR WHICH SOUTH COAST AQMD HAS
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SOUTH COAST AQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
Warehouse & Distribution Centers SBC191205-03 Industrial Project - Phelan DRC2018-00912	<p>The proposed project consists of demolition of existing buildings and construction of three warehouses totaling 510,847 square feet on 11.73 acres. The project is located on the northwest corner of Ninth Street and Vineyard Avenue.</p> <p>http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/SBC191205-03.pdf</p> <p style="text-align: center;">Comment Period: 12/4/2019 - 1/8/2020 Public Hearing: 1/8/2020</p>	Mitigated Negative Declaration	City of Rancho Cucamonga	South Coast AQMD staff commented on 1/7/2020
Warehouse & Distribution Centers SBC191220-07 Bridge Point Upland	<p>The proposed project consists of construction of a 201,096-square-foot warehouse on 50.25 acres. The project is located on the northeast corner of Central Avenue and Foothill Boulevard.</p> <p>http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/SBC191220-07.pdf</p> <p style="text-align: center;">Comment Period: 12/16/2019 - 1/21/2020 Public Hearing: 2/12/2020</p>	Mitigated Negative Declaration	City of Upland	South Coast AQMD staff commented on 1/21/2020
Industrial and Commercial RVC191217-03 Agua Mansa Commerce Park Specific Plan	<p>The proposed project consists of construction of 4,216,000 square feet of industrial uses, 264,000 square feet of business and retail uses, and 70.9 acres of open space on 302.8 acres. The project is located on the southeast corner of Rubidoux Boulevard and El Rivino Road.</p> <p>Reference RVC181219-07, RVC181023-01, RVC180509-01, RVC180503-05, RVC171128-09, RVC170705-15, RVC161216-03, and RVC161006-06</p> <p>http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/RVC191217-03.pdf</p> <p style="text-align: center;">Comment Period: 12/17/2019 - 1/31/2020 Public Hearing: N/A</p>	Draft Environmental Impact Report	City of Jurupa Valley	South Coast AQMD staff commented on 1/31/2020
Industrial and Commercial RVC191227-06 Pennington Industrial Project	<p>The proposed project consists of construction of three industrial buildings totaling 91,140 square feet on 5.01 acres. The project is located on the southeast corner of Chaney Street and Minthorn Street.</p> <p>http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/RVC191227-06.pdf</p> <p style="text-align: center;">Comment Period: 12/23/2019 - 1/21/2020 Public Hearing: 2/4/2020</p>	Notice of Intent to Adopt a Mitigated Negative Declaration	City of Lake Elsinore	South Coast AQMD staff commented on 1/7/2020

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ATTACHMENT B
ONGOING ACTIVE PROJECTS FOR WHICH SOUTH COAST AQMD HAS
OR IS CONTINUING TO CONDUCT A CEQA REVIEW

SOUTH COAST AQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
Waste and Water-related LAC191127-02 East San Pedro Bay Ecosystem Restoration Feasibility Study	The proposed project consists of evaluation of aquatic ecosystem function and structure to restore and improve biodiversity for kelp, rocky reef, and eelgrass habitats. The project encompasses 18 square miles and is located offshore in the eastern portion of San Pedro Bay. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/LAC191127-02.pdf Comment Period: 11/29/2019 - 1/27/2020 Public Hearing: N/A	Draft Integrated Feasibility Report/ Environmental Impact Statement/ Environmental Impact Report	United States Department of the Army, Army Corps of Engineers	South Coast AQMD staff commented on 1/14/2020
Waste and Water-related ORC191120-02 Lower Newport Harbor Confined Aquatic Disposal Facility Construction Project	The proposed project consists of construction of a facility to receive up to 156,900 cubic yards of ocean dredging materials. The project encompasses 844 acres and is located offshore between Lido Isle Island and Bay Island in Lower Newport Harbor. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/ORC191120-02.pdf Comment Period: 11/18/2019 - 1/17/2020 Public Hearing: 12/4/2019	Notice of Preparation	City of Newport Beach	South Coast AQMD staff commented on 1/7/2020
Waste and Water-related RVC191219-07 San Jacinto River Stage 3 Master Drainage Plan	The proposed project consists of demolition of eight culverts, and construction of an embankment 10,000 feet in length and six feet in height and a 1.5-mile stormwater pipeline. The project is located along San Jacinto River between Ramona Express Highway in the City of Perris to Railroad Canyon near the community of Quail Valley in Riverside County. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/RVC191219-07.pdf Comment Period: 10/21/2019 - 11/20/2019 Public Hearing: N/A	Notice of Preparation (received after close of comments)	Riverside County Flood Control and Water Conservation District	South Coast AQMD staff commented on 1/2/2020
Institutional (schools, government, etc.) LAC191206-02 Wedgeworth K-8 School and Residential Development Project	The proposed project consists of demolition of existing school facilities and construction of an 82,998-square-foot elementary school to accommodate an increase in enrollment capacity from 600 to 1,200 students on 20 acres. The project will also include construction of 160 residential units. The project is located at 16494 Wedgeworth Drive on the northwest corner of Wedgeworth Drive and Ridge Park Drive in the community of Hacienda Heights within Los Angeles County. Reference LAC190801-12 http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/LAC191206-02.pdf Comment Period: 12/5/2019 - 1/21/2020 Public Hearing: 2/27/2020	Draft Environmental Impact Report	Hacienda La Puente Unified School District	South Coast AQMD staff commented on 1/21/2020

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ATTACHMENT B
ONGOING ACTIVE PROJECTS FOR WHICH SOUTH COAST AQMD HAS
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SOUTH COAST AQMD LOG-IN NUMBER PROJECT TITLE	PROJECT DESCRIPTION	TYPE OF DOC.	LEAD AGENCY	COMMENT STATUS
Institutional (schools, government, etc.) ORC191217-02 Chapman University Specific Plan Amendment No. 7	The proposed project consists of a project boundary expansion from 58.37 acres to 72.75 acres to accommodate an increase in enrollment capacity from 8,700 students to 10,185 students. The project is located near the southwest corner of Everett Place and Shaffer Street. Reference ORC150519-06 http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/ORC191217-02.pdf Comment Period: 12/12/2019 - 1/27/2020 Public Hearing: 1/16/2020	Notice of Preparation	City of Orange	South Coast AQMD staff commented on 1/7/2020
Institutional (schools, government, etc.) RVC191217-04 Hazelden Betty Ford Center Preliminary Development Plan	The proposed project consists of demolition of 51,694 square feet of residential buildings with 80 beds, and construction of 61,870 square feet of residential buildings with 92 beds and 29,148 square feet of medical and office uses on 26.22 acres. The project is located near the northwest corner of Vista Del Sol and Country Club Drive. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/RVC191217-04.pdf Comment Period: 12/16/2019 - 1/16/2020 Public Hearing: 1/8/2020	Notice of Preparation	City of Rancho Mirage	South Coast AQMD staff commented on 1/7/2020
Retail RVC191220-05 Beyond Food Mart, Gas Station with Drive Thru and Car Wash, Conditional Use Permit 18-05248	The proposed project consists of construction of a 7,250-square-foot convenience store, a 1,870-square-foot car wash facility, a gasoline service station with 10 fueling pumps, and a 5,320-square-foot fueling canopy on 1.75 acres. The project is located on the southeast corner of Nuevo Road and Murrieta Road. http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/RVC191220-05.pdf Comment Period: 12/18/2019 - 1/6/2020 Public Hearing: N/A	Mitigated Negative Declaration	City of Perris	South Coast AQMD staff commented on 1/2/2020
General Land Use (residential, etc.) RVC191203-02 Menifee North Specific Plan 260, Amendment No. 3 (SPA 2010-090) Palomar Crossings	The proposed project consists of construction of 721 residential units totaling 637,000 square feet and 246,312 square feet of commercial uses on 63.24 acres. The project is located on the northeast corner of Palomar Road and State Route 74. Reference RVC190301-05 http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/RVC191203-02.pdf Comment Period: 12/3/2019 - 1/21/2020 Public Hearing: N/A	Draft Environmental Impact Report	City of Menifee	South Coast AQMD staff commented on 1/21/2020
Plans and Regulations ALL191210-01 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy	The proposed project consists of development of a long-range transportation plan and land use policies, strategies, actions, and programs to identify and accommodate current and future mobility goals, policies, and needs for the next 25 years. The project encompasses 38,000 square miles and includes counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. Reference ALL190123-01 http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2020/January/ALL191210-01.pdf Comment Period: 12/9/2019 - 1/24/2020 Public Hearing: 1/9/2020	Draft Program Environmental Impact Report	Southern California Association of Governments	South Coast AQMD staff commented on 1/24/2020

- Project has potential environmental justice concerns due to the nature and/or location of the project.
 ** Disposition may change prior to Governing Board Meeting

ATTACHMENT C
ACTIVE SOUTH COAST AQMD LEAD AGENCY PROJECTS
THROUGH JANUARY 31, 2020

PROJECT DESCRIPTION	PROPONENT	TYPE OF DOCUMENT	STATUS	CONSULTANT
<p>The Phillips 66 (formerly ConocoPhillips) Los Angeles Refinery Ultra Low Sulfur Diesel project was originally proposed to comply with federal, state and South Coast AQMD requirements to limit the sulfur content of diesel fuels. Litigation regarding the CEQA document was filed. Ultimately, the California Supreme Court concluded that the South Coast AQMD had used an inappropriate baseline and directed the South Coast AQMD to prepare an EIR, even though the project has been built and has been in operation since 2006. The purpose of this CEQA document is to comply with the Supreme Court's direction to prepare an EIR.</p>	<p>Phillips 66 (formerly ConocoPhillips), Los Angeles Refinery</p>	<p>Environmental Impact Report (EIR)</p>	<p>The Notice of Preparation/Initial Study (NOP/IS) was circulated for a 30-day public comment period on March 26, 2012 to April 26, 2012. The consultant submitted the administrative Draft EIR to South Coast AQMD in late July 2013. The Draft EIR was circulated for a 45-day public review and comment period from September 30, 2014 to November 13, 2014 and two comment letters were received. South Coast AQMD staff edits on the draft responses to comments were incorporated into a draft Final EIR which is undergoing review.</p>	<p>Environmental Audit, Inc.</p>
<p>Quemetco is proposing to modify existing South Coast AQMD permits to allow the facility to recycle more batteries and to eliminate the existing daily idle time of the furnaces. The proposed project will increase the rotary feed drying furnace feed rate limit from 600 to 750 tons per day and increase the amount of total coke material allowed to be processed. In addition, the project will allow the use of petroleum coke in lieu of or in addition to calcined coke, and remove one existing emergency diesel-fueled internal combustion engine (ICE) and install two new emergency natural gas-fueled ICEs.</p>	<p>Quemetco</p>	<p>Environmental Impact Report (EIR)</p>	<p>A Notice of Preparation/Initial Study (NOP/IS) was released for a 56-day public review and comment period from August 31, 2018 to October 25, 2018, and 154 comment letters were received. Two CEQA scoping meetings were held on September 13, 2018 and October 11, 2018 in the community. South Coast AQMD staff received a preliminary Draft EIR on December 20, 2019 which is undergoing review.</p>	<p>Trinity Consultants</p>

[↑ Back to Agenda](#)

BOARD MEETING DATE: March 6, 2020

AGENDA NO. 25

REPORT: Technology Committee

SYNOPSIS: The Technology Committee held a meeting on Friday, February 21, 2020. The following is a summary of the meeting.

RECOMMENDED ACTION:
Receive and file.

Judith Mitchell, Acting Chair
Technology Committee

MMM:av

Committee Members

Present: Council Member Joe Buscaino/Chair (listening only from a non-noticed location)
Council Member Judith Mitchell
Council Member Carlos Rodriguez

Absent: Supervisor Lisa Bartlett

Call to Order

Acting Chair Mitchell called the meeting to order at 12:01 p.m. She introduced new Committee Member, Council Member Carlos Rodriguez.

ACTION ITEMS:

1. Execute Contracts to Replace Heavy-Duty Diesel Trucks with Near-Zero Emissions Natural Gas Trucks

In October 2018, the Board approved awards totaling \$14 million to replace 140 heavy-duty diesel trucks with near-zero emissions natural gas trucks. The clean trucks will be funded using \$8 million in grant funds provided by the CEC plus \$6 million in local match funds. Since approval of these awards, some fleets have declined their award or opted to switch to a fuel type not allowed under the CEC grant. These changes resulted in available funds that may be reallocated to other eligible trucks. These actions are to execute two contracts in the amount of \$3,900,000 from the Community Air Protection AB 134 Fund (77) and, in the

case of turnback funds, authorize the Executive Officer to execute additional contracts for eligible trucks meeting the CEC grant requirements from the applications received through the Proposition 1B-Goods Movement solicitation until all funds are exhausted.

Council Member Rodriguez asked about the process, timing, scrap requirement, general life expectancy of the trucks, and NOx benefits for this project. Staff provided a brief background of the Prop 1B – Goods Movement Program and described the solicitation, review, inspection (with emphasis on scrapping) and implementation processes for both the old and new truck involved in the transaction. Staff also emphasized that incentive programs, including the Prop 1B Program, are regularly oversubscribed, but some fleets turn back funds due to various reasons, such as financial limitations, and that near zero emission trucks typically take 4-6 months for delivery and have a useful life of 7-10 years. Council Members Rodriguez and Mitchell provided guidance on additional outreach and education to inform the public through press releases with board member participation, social media (e.g., Facebook and Twitter) and other means for greater participation.

Less than a quorum was present; a concurrence of the staff recommendation will be forwarded to the Board

2. Adopt Resolution Recognizing Funds for FY 2019-20 Carl Moyer Program Award, Issue Program Announcements for Carl Moyer Program and SOON Provision and Transfer Funds for Voucher Incentive Program

These actions are to adopt a Resolution recognizing up to \$37 million in Carl Moyer Program grant funds from CARB with its terms and conditions for FY 2019-20 and issue Program Announcements for “Year 22” of the Carl Moyer Program and SOON Provision to solicit applications for eligible zero and low emitting on- and off-road vehicles and equipment. This action is to also transfer \$3 million from the Carl Moyer Program AB 923 Special Revenue Fund (80) to the Voucher Incentive Program Fund (59) to continue funding truck replacement projects on a first-come, first-served basis.

Council Member Mitchell commented that she does not have a financial interest or conflict of interest but is required to identify for the record that she is a Board Member of CARB which is involved in this item.

Council Member Rodriguez again emphasized the need for additional public outreach and education on funding programs and requested regular reports on deployment projects, especially when located in Orange County.

Drew Delaney, Associates Environmental, appreciated staff inclusion of suggested language into the current Carl Moyer and SOON Provision Program Announcements to clarify how the funds will be disbursed.

Less than a quorum was present; a concurrence of the staff recommendation will be forwarded to the Board

3. Recognize Revenue and Transfer and Appropriate Funds for Volkswagen Environmental Mitigation Trust

In November 2018, the Board recognized \$150 million in revenue from CARB for the Volkswagen (VW) Environmental Mitigation Trust and authorized the transfer of up to 10 percent into the General Fund to reimburse administrative costs for this program. Subsequently, CARB and the South Coast AQMD executed a project agreement for this program totaling \$165 million, which included \$150 million for projects and \$15 million for administrative costs. These actions are to recognize up to \$15 million in additional revenue from CARB, transfer \$520,733 into the General Fund to reimburse FY 2018-19 Salaries & Employee Benefits and Service & Supplies, and transfer and appropriate up to \$898,000 into Science & Technology Advancement's and Information Management's FYs 2019-20 and 2020-21 Budgets, Professional and Special Services and Capital Outlays Major Objects, for administrative expenses to implement the VW Mitigation Program.

Council Member Mitchell commented that she does not have a financial interest or conflict of interest but is required to identify for the record that she is a Board Member of CARB which is involved in this item.

Council Member Mitchell inquired on the distribution between the funding categories and among the three air districts. Staff explained the South Coast AQMD is the administrator for two of the five funding categories totaling \$150 million, including \$60 million for the combustion category and \$90 million for the zero-emission freight and port drayage trucks category. San Joaquin Valley APCD will receive \$130 million for the zero-emission bus category, and Bay Area AQMD will receive \$80 million, including \$70 million for zero emission freight and marine projects, and \$10 million for light-duty zero emission vehicle infrastructure. Staff clarified that funding for each category is statewide and implemented in two installments. Council Member Mitchell also asked if a portion of the funds are unused, and will these unused funds be redirected to another air district for a different funding category. Staff explained that CARB has reserved the option to do this, if needed, to assure the required NOx emission reduction target will be met. However, the combustion category is anticipated to achieve most of the NOx reductions, and if any unused funds are available, they would likely be redirected to this category.

Council Member Rodriguez asked if the \$150 million can be spent outside of South Coast AQMD, and what the \$15 million in administrative funds will entail. Staff explained the funds will be made available statewide and applications submitted to date for the combustion category are from within and outside of the South Coast AQMD, and that \$15 million in total administrative funds will be used for staff time involved in processing the applications, ranking projects, conducting inspections of the vehicles, contracting, reviewing annual reports submitted by the fleets, monitoring the projects, reporting to CARB, outreach and hardware costs for the database management system, over the ten year period. Council Member Rodriguez also asked how the program will be advertised to notify fleets of this funding opportunity, with specific interest in school buses. Staff explained the school bus funding, which is administered by San Joaquin Valley APCD, is no longer available due to an oversubscription, however there will be a second installment of funds released in late 2021.

Less than a quorum was present; a concurrence of the staff recommendation will be forwarded to the Board

4. Approve and Adopt Technology Advancement Office Clean Fuels Program 2019 Annual Report and 2020 Plan Update, Resolution and Membership Changes for Clean Fuels Advisory Group and Receive and File Updated Membership of Technology Advancement Advisory Group

Each year by March 31, the South Coast AQMD must submit to the California Legislative Analyst an approved Annual Report for the past year and a Plan Update for the current calendar year for the Clean Fuels Program. This action is to approve and adopt the Technology Advancement Clean Fuels Program Annual Report for 2019 and 2020 Plan Update and the Resolution finding that proposed projects do not duplicate any past or present programs. These actions are to also approve and adopt membership changes to the SB 98 Clean Fuels Advisory Group and receive and file membership changes to the Technology Advancement Advisory Group.

Council Member Rodriguez inquired about the members of the advisory groups. Staff described the broader membership of both committees and clarified that the proposed members were replacements for some that are no longer available to participate, and that staff regularly consults with original equipment manufacturers, technical experts and others on specific project development.

Ranji George, a member of the public, requested more diversity in the advisory groups, specifically for Environmental Justice representation, and emphasized the need for battery recycling programs and increased funding for hydrogen projects.

Andy Abele, a member of the public, suggested that staff should consider releasing RFPs for the top 3 priorities instead of sole source awards, and that Clean Fuels

Funds should not be used for diesel engine projects. Lastly, Mr. Abele suggested a correction on the project description for the Microgrids category.

Less than a quorum was present; a concurrence of the staff recommendation will be forwarded to the Board

5. Recognize Revenue, Amend Contract for Heavy-Duty Truck Replacements and Reimburse General Fund for Administrative Costs

In November 2019, South Coast AQMD received approval of a revised project scope for a FY 18 U.S. EPA Diesel Emissions Reductions Act (DERA) grant previously awarded. The approved project scope will allow for replacement of older on-road heavy-duty diesel trucks with new near-zero emissions natural gas-powered trucks in non-drayage applications. Since Proposition 1B eligible projects qualify for these DERA funds, staff proposes to award the funds to a previously approved Proposition 1B project. These actions are to recognize \$1,601,523 in revenue from U.S. EPA DERA into the Advanced Technology Outreach and Education Fund (17), amend a contract for heavy-duty truck replacements adding DERA funds to reduce Proposition 1B-Goods Movement funding, and reimburse the General Fund for administrative costs up to \$99,444 to implement the project.

Less than a quorum was present; a concurrence of the staff recommendation will be forwarded to the Board

6. Execute Contract to Conduct Airborne Measurements of NO_x Emissions in the South Coast Air Basin

Emission inventories are a critical component of South Coast AQMD's air quality modeling and control strategy development. The University of California, Berkeley (UC Berkeley) has proposed to conduct airborne flux measurements by aircraft, offering a robust method to evaluate NO_x emission inventories. CARB has committed \$700,000 for the parallel measurement of VOC fluxes during this field effort. This action is to execute a contract with the UC Berkeley to conduct airborne measurements of NO_x emissions in the South Coast Air Basin at a cost not to exceed \$300,000 from the Clean Fuels Program Fund (31).

Council Member Mitchell inquired about contribution of vegetation to air pollution and potential impacts of tree planting on overall VOC emissions and if guidance is available for lower emitting species. Staff responded that trees are natural source of VOCs and they can emit different rates of VOC emissions depending on trees species. Staff responded that most of vegetation in the Basin are low-emitting species, but the project would provide an opportunity to evaluate emissions including VOCs from vegetation. Council member Mitchell further inquired if the project will improve the emissions inventory. Staff confirmed that the deliverables from the project will be used to evaluate the accuracy of the emissions inventory and

potentially to improve it by identifying sources and amounts of emissions that might have not been fully reflected in the regulatory inventory.

Council Member Rodriguez inquired if the deliverables from the project will improve high ozone pollution in the inland area, timing and if CARB funding has been secured. Staff explained that the information from the project will be utilized to validate emissions and modeling, evaluate and fine-tune current strategies, guide the development of the 2022 AQMP, and that the project will conclude by the end of 2021. Staff also mentioned that CARB is committed for funding for VOC measurements and CARB's Board will consider approval of the project in summer 2020. Council Member Rodriguez further emphasized the need of best management practices to promote low-VOC-emitting tree species to the members of public and local cities. Staff informed the committee that a list can be made available for local species and low-VOC emitting trees.

Less than a quorum was present; a concurrence of the staff recommendation will be forwarded to the Board

OTHER MATTERS:

7. Other Business

There was no other business.

8. Public Comment Period

There were no public comments.

9. Next Meeting Date

The next regular Technology Committee meeting is scheduled for Friday, March 20, 2020 at noon.

Adjournment

The meeting adjourned at 1:16 p.m.

Attachment

Attendance Record

ATTACHMENT

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
TECHNOLOGY COMMITTEE MEETING
Attendance Record – February 21, 2020**

Council Member Judith Mitchell	SCAQMD Board Member
Council Member Carlos Rodriguez.....	SCAQMD Board Member
Matt Holder	Board Consultant (Rodriguez)
Fred Minassian	Board Consultant (Mitchell)
Andy Abele.....	Member of the Public
Mark Abramowitz	Member of the Public
Drew Delaney.....	Associates Environmental
Ranji George.....	Member of the Public
Andy Silva.....	San Bernardino County
Phil Barroca.....	SCAQMD Staff
Naveen Berry.....	SCAQMD Staff
Ping Gui.....	SCAQMD Staff
Darren Ha	SCAQMD Staff
Drue Hargis	SCAQMD Staff
Joseph Impullitti.....	SCAQMD Staff
Sang-Mi Lee	SCAQMD Staff
Tom Lee	SCAQMD Staff
Wayne Nastri.....	SCAQMD Staff
Matt Miyasato.....	SCAQMD Staff
Ron Moskowitz	SCAQMD Staff
Zorik Pirveysian	SCAQMD Staff
Walter Shen	SCAQMD Staff
Veera Tyagi	SCAQMD Staff
Alejandra Vega.....	SCAQMD Staff
Adan Velasco	SCAQMD Staff
Donna Vernon	SCAQMD Staff
Vicki White	SCAQMD Staff
Paul Wright.....	SCAQMD Staff
Alyssa Yan	SCAQMD Staff
Fan Xu	SCAQMD Staff

[↑ Back to Agenda](#)

BOARD MEETING DATE: March 6, 2020

AGENDA NO. 26

REPORT: California Air Resources Board Monthly Meeting

SYNOPSIS: The California Air Resources Board held a meeting on February 13, 2020. The following is a summary of the meeting.

RECOMMENDED ACTION:
Receive and file.

Judith Mitchell, Member
South Coast AQMD Governing Board

ft

The California Air Resources Board (CARB or Board) held a meeting on February 13, 2020 at the Shafter Veteran's Hall, 309 California Avenue, Shafter, California. Key items presented are summarized below.

DISCUSSION ITEMS

20-3-1: Public Meeting to Consider Assembly Bill 617 Community Emissions Reduction Program – Shafter

The Board approved the Shafter Community Emissions Reduction Program (Shafter Program) developed to meet the requirements of Assembly Bill (AB) 617. The Shafter Program was developed through a partnership between the San Joaquin Valley Air Pollution Control District (SJVAPCD) and the Shafter Community Steering Committee comprised of residents of Shafter, non-profit organizations, members from local businesses, and local government officials. CARB staff reviewed the Shafter Program and determined that it meets the criteria set out in the AB 617 legislation and the Community Air Protection Blueprint, in addition to reflecting community priorities. In addition to approving the Shafter Program, the Board directed the SJVAPCD to take actions to strengthen implementation of the Shafter Program, and to report on progress in the Shafter community.

20-3-2: Public Meeting to Consider Assembly Bill 617 Community Emissions Reduction Program – South Central Fresno

The Board approved South Central Fresno community emissions reduction program (South Fresno Program) developed to meet the requirements of AB 617. The South Fresno Program was developed through a partnership between the SJVAPCD and the South Central Fresno Community Steering Committee, comprised of South Fresno residents, non-profit organizations, local businesses, and local government officials. CARB staff reviewed the South Fresno Program and determined it met the criteria set out in the AB 617 legislation and the Community Air Protection Blueprint, in addition to reflecting community priorities. The Board also directed the SJVAPCD to take additional actions to strengthen implementation of the South Fresno Program, and to provide bi-annual reports on progress.

Attachment

CARB February 13, 2020 Meeting Agenda



CALIFORNIA
AIR RESOURCES BOARD

LOCATION:

Shafter Veteran's Hall
309 California Avenue
Shafter, California, 93263

PUBLIC MEETING AGENDA

**Thursday,
February 13, 2020**

[Webcast](#)

For information on public transit, please visit this website: <https://shafter.com/148/Transit>

TO SUBMIT WRITTEN COMMENTS ON AN AGENDA ITEM IN ADVANCE OF THE MEETING GO TO:
<http://www.arb.ca.gov/lispub/comm/bclist.php>

**Thursday
February 13, 2020
4:00 p.m.**

DISCUSSION ITEMS:

Note: The following agenda items may be heard in a different order at the Board meeting.

Agenda Item #

20-3-1: Public Meeting to Consider Assembly Bill 617 Community Emissions Reduction Program – Shafter

Spanish translation will be provided at the Board Meeting for this item, Item 20-3-1.

The community emissions reduction program was developed through a partnership between the San Joaquin Valley Air Pollution Control District and the Shafter Community Steering Committee. The Board will consider the Shafter Community Emissions Reduction Program, as required by Assembly Bill 617, and will also consider adopting a California Environmental Quality Act exemption as part of its action.

[More Information](#)

[Staff Presentation](#)

[Staff Presentation \(Spanish\)](#)

20-3-2: Public Meeting to Consider Assembly Bill 617 Community Emissions Reduction Program – South Central Fresno

Spanish translation will be provided at the Board Meeting for this item, Item 20-3-2.

The community emissions reduction program was developed through a partnership between the San Joaquin Valley Air Pollution Control District and the South Central Fresno Community Steering Committee. The Board will consider the South Central Fresno Community Emissions Reduction Program, as required by Assembly Bill 617, and will also consider adopting a California Environmental Quality Act exemption as part of its action.

[More Information](#)

[Staff Presentation](#)

[Staff Presentation \(Spanish\)](#)

OPPORTUNITY FOR MEMBERS OF THE BOARD TO COMMENT ON MATTERS OF INTEREST

Board members may identify matters they would like to have noticed for consideration at future meetings and comment on topics of interest; no formal action on these topics will be taken without further notice.

OPEN SESSION TO PROVIDE AN OPPORTUNITY FOR MEMBERS OF THE PUBLIC TO ADDRESS THE BOARD ON SUBJECT MATTERS WITHIN THE JURISDICTION OF THE BOARD

Although no formal Board action may be taken, the Board is allowing an opportunity to interested members of the public to address the Board on items of interest that are within the Board's jurisdiction, but that do not specifically appear on the agenda. Each person will be allowed a maximum of three minutes to ensure that everyone has a chance to speak.

TO ELECTRONICALLY SUBMIT WRITTEN COMMENTS ON AN AGENDA ITEM IN ADVANCE OF THE MEETING GO TO:

<https://www.arb.ca.gov/lispub/comm/bclist.php>

(Note: not all agenda items are available for electronic submittals of written comments.)

PLEASE NOTE: No outside memory sticks or other external devices may be used at any time with the Board audio/visual system or any CARB computers. Therefore, PowerPoint presentations to be displayed at the Board meeting must be electronically submitted via email to the Clerks' Office at cotb@arb.ca.gov no later than noon on the business day prior to the scheduled Board meeting.

IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT THE CLERKS' OFFICE:

1001 I Street, 23rd Floor, Sacramento, California 95814

(916) 322-5594

CARB Homepage: www.arb.ca.gov

SPECIAL ACCOMMODATION REQUEST

Consistent with California Government Code Section 7296.2, special accommodation or language needs may be provided for any of the following:

- An interpreter to be available at the hearing;
- Documents made available in an alternate format or another language;
- A disability-related reasonable accommodation.

To request these special accommodations or language needs, please contact the Clerks' Office at (916) 322-5594 or by facsimile at (916) 322-3928 as soon as possible, but no later than 7 business days before the scheduled Board hearing. TTY/TDD/Speech to Speech users may dial 711 for the California Relay Service.

Consecuente con la sección 7296.2 del Código de Gobierno de California, una acomodación especial o necesidades lingüísticas pueden ser suministradas para cualquiera de los siguientes:

- Un intérprete que esté disponible en la audiencia
- Documentos disponibles en un formato alternativo u otro idioma
- Una acomodación razonable relacionados con una incapacidad

Para solicitar estas comodidades especiales o necesidades de otro idioma, por favor llame a la oficina del Consejo al (916) 322-5594 o envíe un fax a (916) 322-3928 lo más pronto posible, pero no menos de 7 días de trabajo antes del día programado para la audiencia del Consejo. TTY/TDD/Personas que

necesiten este servicio pueden marcar el 711 para el Servicio de Retransmisión de Mensajes de California.

SMOKING IS NOT PERMITTED AT MEETINGS OF THE CALIFORNIA AIR RESOURCES BOARD

Update on Development of MOU with Ports of Los Angeles and Long Beach

Governing Board Meeting

March 6, 2020



Summary of Board Direction on Facility-Based Mobile Source Measures (May 2018)

Sector	Direction
Airports	Pursue MOUs to implement airport clean air action plans (non-aircraft airport sources)
Ports	Pursue MOUs to implement specific CAAP measures; Pursue introduction of cleaner vessels
New/Redevelopment	Continue to work with stakeholders to develop rule concepts and preliminary costs/benefits
Warehouses	Develop rule concept; Conduct economic impacts study to inform rule concept
Rail yards	Pursue rulemaking; Explore potential for new agreements/MOUs beyond the 1998 and 2005 agreements



Key CAAP Measures

Drayage Trucks

- Implement Clean Trucks Program – differential truck rate to turn over fleet

Cargo Handling Equipment (CHE)

- Accelerate ZE and NZE CHE deployment working with terminal operators with a 100% ZE CHE goal by 2030

Ocean-Going Vessels (OGV)

- Reduce OGV emissions through new and enhanced incentive programs: Vessel Speed Reduction, Green Ship Incentives and Clean Ship Program

Harbor Crafts

- Develop incentive program to upgrade harbor crafts with cleanest engines

Locomotives

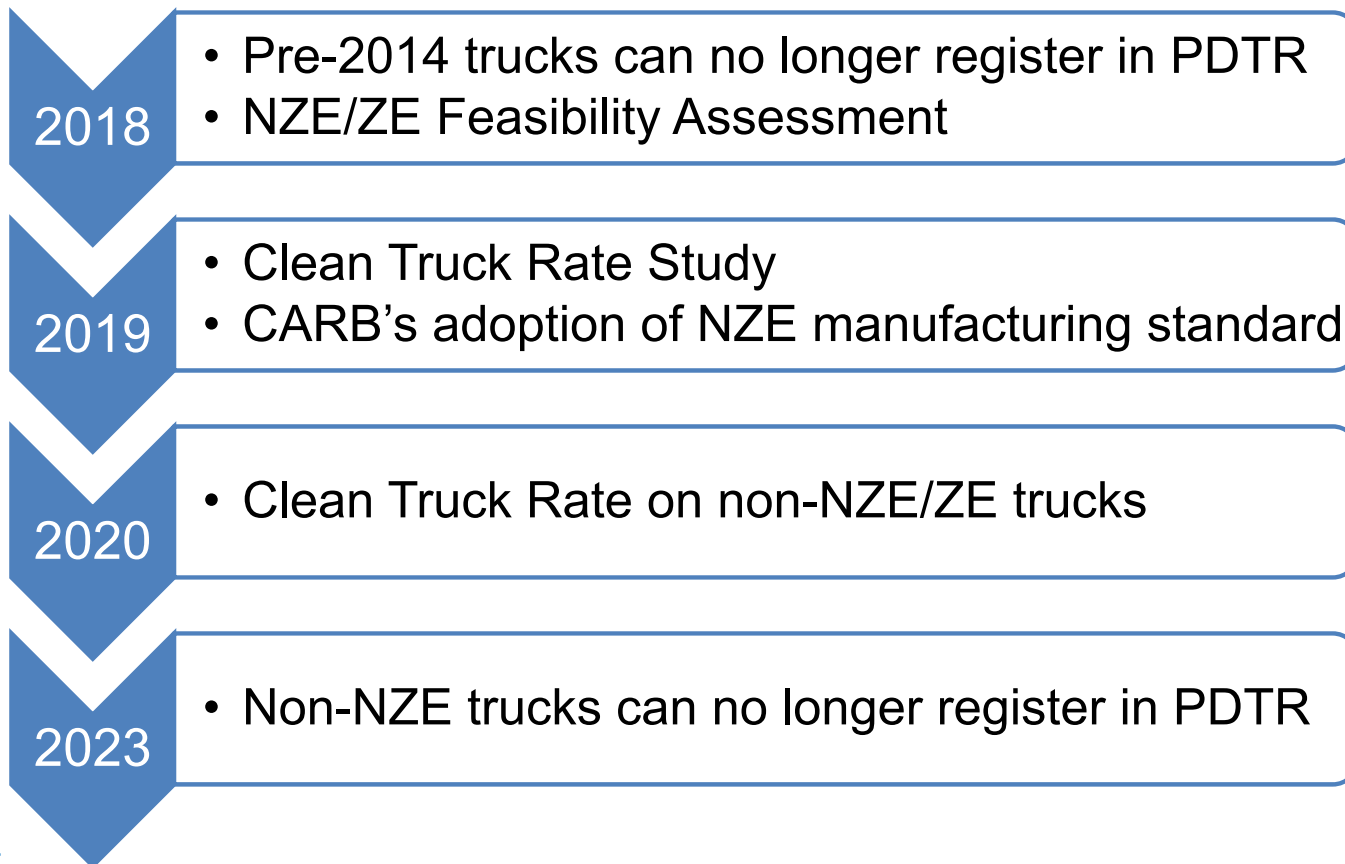
- Increase on-dock rail cargo moves to 35% and seek to utilize cleanest locomotives



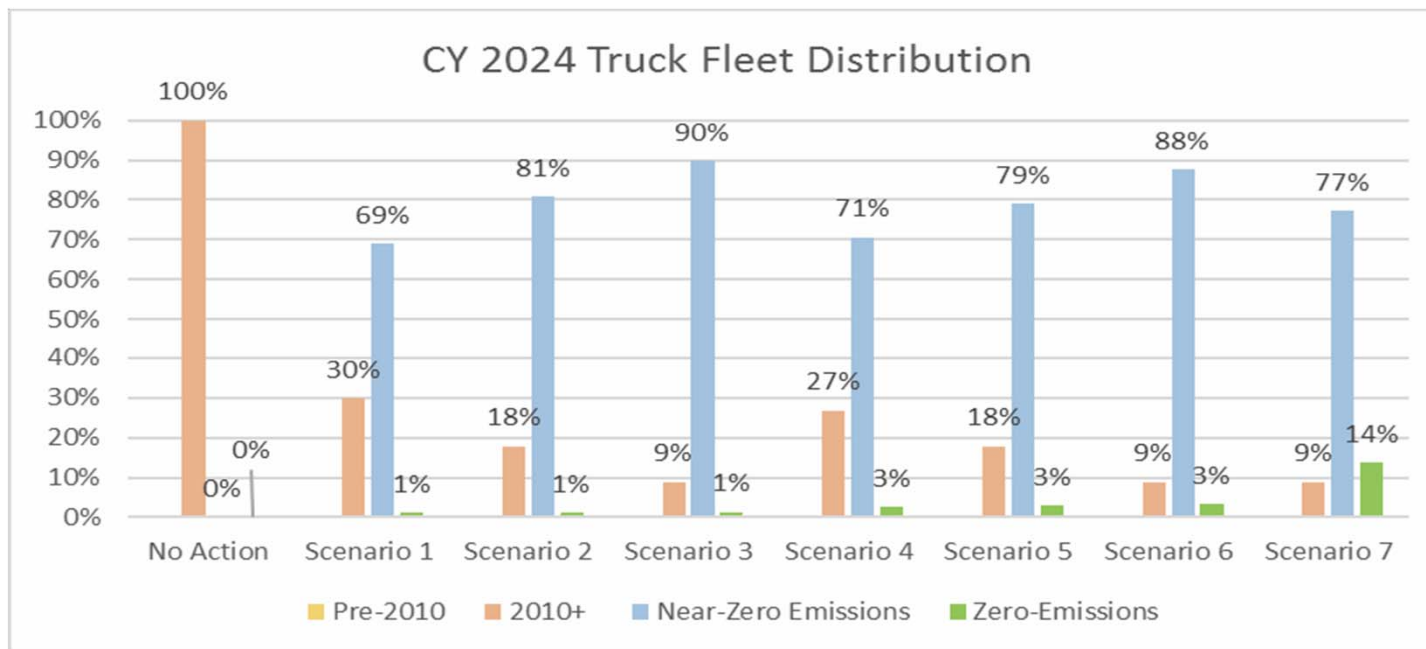
South Coast
Air Quality Management District



CAAP's Proposed Clean Trucks Program



CAAP's 2024 Projected Truck Fleet Distribution



Draft MOU Concept

Ports



- Implement and track CAAP measures specified in the MOU
- Submit annual reports to South Coast AQMD on implementation of CAAP measures in the MOU
- Seek grant funding and implement incentive programs

South Coast AQMD



- Quantify SIP creditable emission reductions for CAAP measures in the MOU
- Provide federally enforceable commitments and report emission reduction benefits to U.S. EPA
- Cover potential shortfall

The Ports would have a contractual relationship with South Coast AQMD
South Coast AQMD would commit to EPA for emission reductions



South Coast
Air Quality Management District

Ports MOU Development Process

- Slow start due to Ports initial reluctance
- 20+ meetings/calls with Ports staff
- Multiple draft MOU iterations
- Multiple Public Working Group and Technical meetings
 - Three working group meetings
 - Twenty three bi-weekly technical working group meetings
- Originally scheduled for GB - November 2019
 - Delayed due to Ports delay in developing Clean Trucks Program



Status of MOU Development

- Focus on CTP
 - Only CAAP measure with quantitative performance target (\$/TEU)
 - Only reporting requirements for other CAAP measures
- No agreement on MOU language regarding CTP after multiple rounds of edits and 18 months of process

Concerns Regarding Ports Latest MOU Revisions



No firm commitment to adopt a particular rate

Proposed rate not sufficient to achieve CAAP goals

Uncertainty regarding spending of revenues and incentive program structure

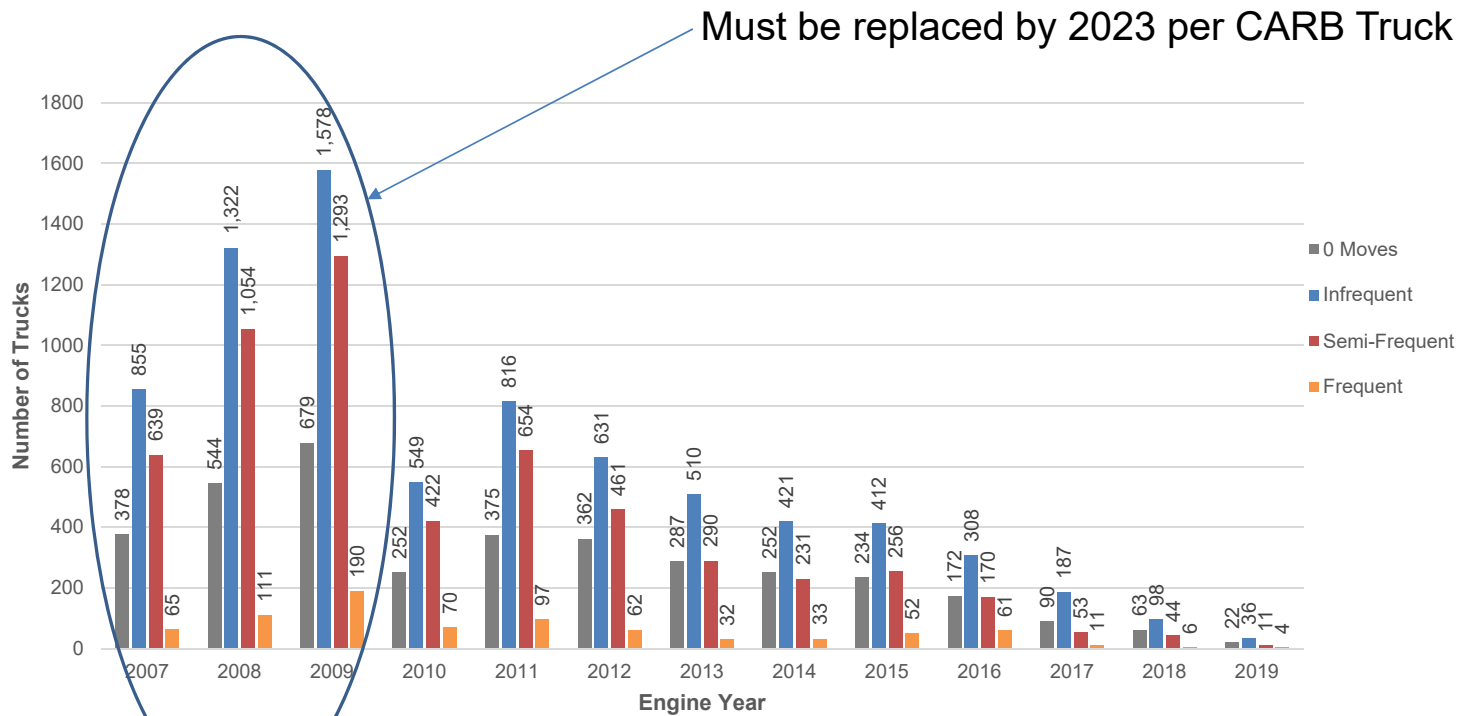


Proposed Clean Trucks Program (December 2019)

- Informed by economic study evaluating potential impact to cargo diversion from truck rate
- Revenues from the collection of the CTF Rate to be used for incentives to purchase low-NOx, NZE and ZE trucks
 - Changed focus from the CAAP goals which emphasized changes in behavior resulting from truck rate
 - New concern re: low-NOx v. NZE trucks
- Proposing rate of \$10/TEU – generate ~\$90 million/year
 - Low end of the range of truck rate discussed in CAAP
 - Economic study estimated little diversion over a range of \$5-70/TEU
 - \$10/TEU not sufficient to turnover fleet, even for the least aggressive CAAP scenario schedule



Unique window to convert 8,000 pre-2010 port trucks to NZE and ZE trucks by 2023



The \$10/TEU rate effectively guarantees that most of the pre-2010 MY trucks will be replaced by newer diesel models instead of NZE/ZE

Projected Cargo Diversion Rate Based on Ports Draft Economic Study*

CTF Rate (\$/TEU)	Annual Container Diversion (TEU)	% Decrease in Container Throughput
\$5	17,000	-0.1%
\$20	69,000	-0.4%
\$35	120,000	-0.7%
\$50	172,000	-1.0%
\$70	241,000	-1.4%

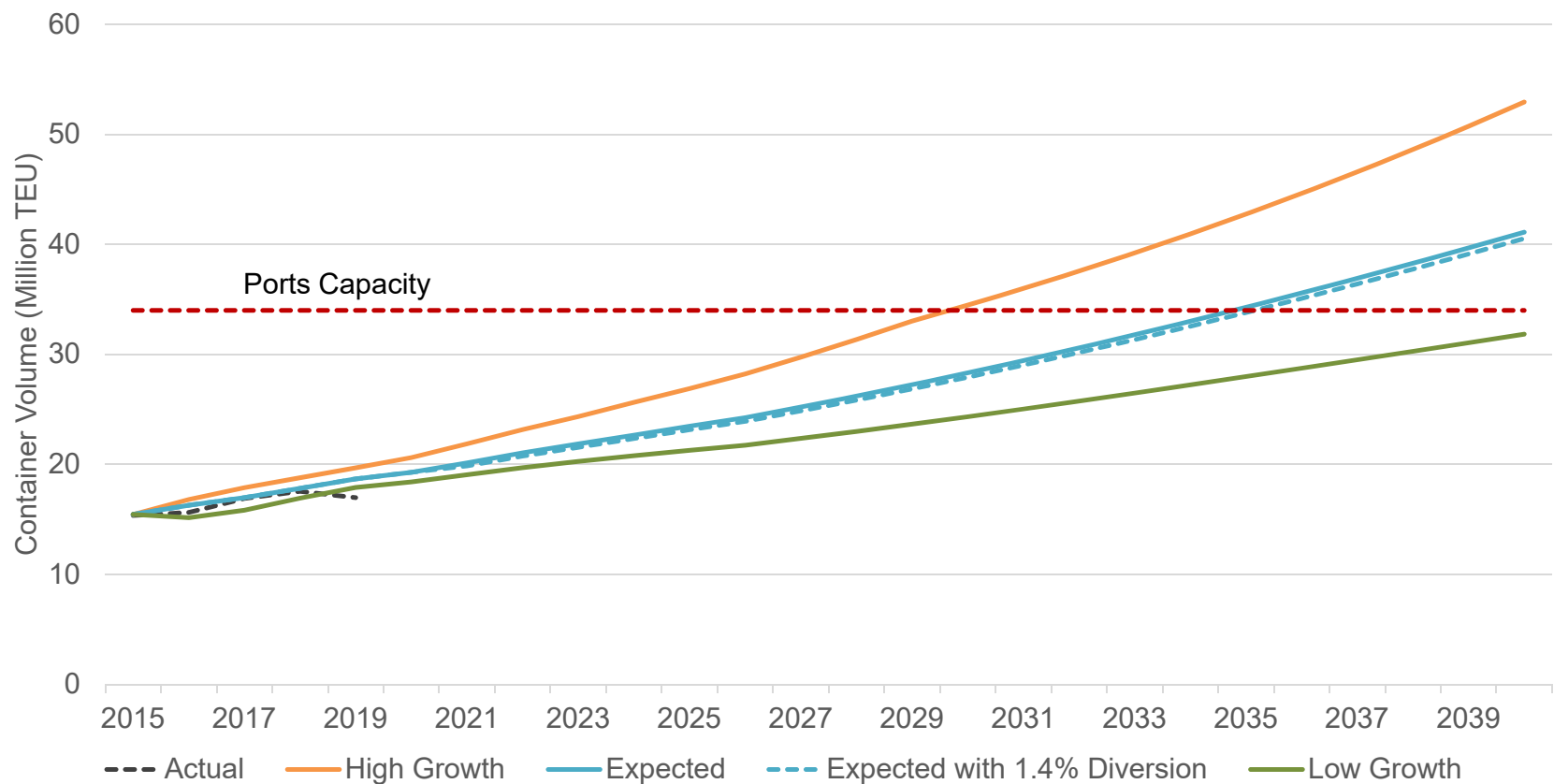
* Draft Economic Study for the Clean Truck Fund Rate, December 2019



Key Points from Draft Economic Study

- **Cargo that is delivered locally or transloaded to truck is not susceptible to diversion (35% of cargo in 2018)**
 - NY/NJ and the SE ports truck catchment areas do not overlap with POLA/POLB area
 - Houston has some overlap, but is twice as expensive and takes twice as long to ship cargo from China
 - Oakland not competitive with POLA/POLB due to more expensive drayage rates and longer shipping times
- **Cargo shipped by rail without transloading (IPI cargo) most vulnerable to diversion**
 - 31% of POLA/POLB cargo in 2018
 - Bulk of the market share loss experienced at Ports since 2007 is from IPI cargo
 - NY/NJ growing but even with Panama Canal expansion it is still over 10 days longer to ship cargo from China to Chicago than shipping through POLA/POLB

SPBP Container Volume Growth Forecast



Impact of CTP Truck Rate

Truck Rate (\$/TEU)	# of NZE Trucks Funded	# of ZE Trucks Funded	Total # of Trucks Funded	% of All Trucks	% of All Pre-2010 Trucks	2023 NOx Reductions (tpd)	2024 NOx Reductions (tpd)
\$10	1,868	23	1,891	11%	22%	1.14	-
\$25	4,306	46	4,352	24%	50%	2.63	-
\$50	7,051	55	7,106	40%	82%	4.29	-
\$68	12,142	141	12,283	69%	-	-	7.43

Assumptions:

- Incentive funding of \$100,000 for NZE and \$200,000 for ZE trucks
- Based on two years of replacements (2021 and 2022) except for the \$68 truck rate which is based on three years of replacement (2021 – 2023)
- 4 TEUs/truck/day (2.5 TEUs/truck/day for \$68); Annual operating days: 312; Daily VMT: 164 miles per day (from EMFAC 2014)
- Baseline Truck: 2016 Model Year
- Admin. Cost: 5%
- % Revenue for ZE: 0% in 2021, 5% in 2022, 5% in 2023



Options Presented to Mobile Source Committee

Option 1

- Continue with MOU at \$10/TEU truck rate

Option 2

- Continue with MOU with increased truck rate

Option 3

- Pivot to rulemaking



Option 1 – Continue with MOU at \$10/TEU Rate

- Rate represents bare minimum considered in Ports economic study
- Significant opposition from many stakeholders
- Uncertainty in potential emission reductions due to uncertainty on how revenues will be allocated

Option 2 – Continue with MOU with Increased Rate

- Work with ports on increasing truck rate to reasonable level (\$50-70/TEU) and reach agreement on revenue expenditure
- Higher truck rate supported by Ports economic study
- More emission reductions expected depending on revenue allocation

Option 3 – Pivot to Rulemaking

- Consider Indirect Source Rule (ISR) on terminal operators
 - Terminals control truck visits, equipment, and vessels
 - Number of terminals manageable for plan-based approach
- Covers more categories (trucks, equipment, vessels, harbor craft and potentially locomotives); more reductions
- Could help accelerate emission reductions from CARB's regulations and from ships
- Possible opposition from terminal operators, ports, labor unions
- Rule development expected within one year

Public Comments at Mobile Source Committee

- Ports
 - Support MOU approach and Option 1 (\$10/TEU)
 - Concern with cargo diversion and loss of market share
- Environmental organizations
 - Support higher truck rate (\$35-\$50)
 - Support ISR approach if MOU is not agreed upon
 - Health impacts not considered in Ports truck rate study
- Natural gas industry
 - Significant opportunity to replace pre-2010 diesel trucks
 - Suggest Ports adopt requirement for newly registered trucks to be near-zero or zero-emission trucks



Mobile Source Committee Recommendation

- Continue MOU negotiations with the Ports with the objective of reaching a meaningful agreement
 - Staff is continuing to meet with the Ports executive directors to explore possible options

BOARD MEETING DATE: March 6, 2020

AGENDA NO. 28

PROPOSAL: Approve and Adopt Technology Advancement Office Clean Fuels Program 2019 Annual Report and 2020 Plan Update, Resolution and Membership Changes for Clean Fuels Advisory Group and Receive and File Updated Membership of Technology Advancement Advisory Group

SYNOPSIS: Each year by March 31, the South Coast AQMD must submit to the California Legislative Analyst an approved Annual Report for the past year and a Plan Update for the current calendar year for the Clean Fuels Program. This action is to approve and adopt the Technology Advancement Clean Fuels Program Annual Report for 2019 and 2020 Plan Update and the Resolution finding that proposed projects do not duplicate any past or present programs. These actions are to also approve and adopt membership changes to the SB 98 Clean Fuels Advisory Group and receive and file membership changes to the Technology Advancement Advisory Group.

COMMITTEE: Technology, February 21, 2020; Less than a quorum was present; a concurrence of the staff recommendation will be forwarded to the Board

RECOMMENDED ACTIONS:

1. Approve and adopt the attached Technology Advancement Office Clean Fuels Program 2019 Clean Fuels Annual Report and 2020 Plan Update and include it in the South Coast AQMD's Clean Fuels Program¹;
2. Adopt the attached Resolution finding that the Technology Advancement Office Clean Fuels Program Plan Update for 2020 and its proposed projects do not duplicate any past or present programs of specified organizations;
3. Approve and adopt membership changes to the SB 98 Clean Fuels Advisory Group; and

¹Subsequent to the Technology Committee meeting, a few clarifying edits were made to Attachment C (reflected in strikethrough/underline) and the appendices were attached.

4. Receive and file membership changes to the Technology Advancement Advisory Group.

Wayne Natri
Executive Officer

MMM:NB:JI/LCM:DAH

Background

Achieving federal and state ambient air quality standards within the South Coast Air Basin (Basin) will require emission reductions from both mobile and stationary sources beyond those available from existing technologies. The 2016 AQMP includes measures relying on 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 these standards. The 2016 AQMP projects that a 45 percent reduction in NO_x by 2023 and an additional 55 percent reduction by 2031 is required, the majority of which must come from mobile sources (both on- and off-road). This goal requires widespread deployment of clean air technologies as well as further commercialization of advanced technologies.

California Code, 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, which can help the South Coast AQMD in achieving its clean air goals.

The Technology Advancement Office (TAO) Clean Fuels Program is an integral part of South Coast AQMD efforts to achieve the significant NO_x reductions called for in the 2016 AQMP. In its first 32 years, from 1988 to 2018, the Clean Fuels Program leveraged \$339 million into \$1.52 billion in projects, mainly through public-private partnerships in conjunction with private industry, technology developers, academic institutions, research institutions and government agencies. This public-private partnership approach has enabled the South Coast AQMD to historically leverage public funds with outside investment in a ratio of about \$4 of outside funding to every dollar of Clean Fuels funding. More than ever before, the Clean Fuels Program must both foster and accelerate advancement of transformative transportation, and off-road technologies

where possible, with an emphasis on zero and near-zero emissions vehicle and fuel technologies. This is especially true given the region's economic dependence on thriving goods movement, along with the corresponding impact of that industry on environmental justice communities. The Clean Fuels Program and the Carl Moyer Program provide a unique synergy, with the Carl Moyer Program providing the necessary incentives 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.

The South Coast AQMD is required by H&SC Section 40448.5.1 to adopt a plan that describes the expected cost and benefits of proposed projects prior to any Clean Fuels Program expenditures and find that the proposed projects do not duplicate programs of other organizations specified in the H&SC provision. In 1999, SB 98 amended this provision by requiring annual updates to this Plan as well as a 30-day public notice to specified interested parties and the public prior to the annual public hearing at which the Board considers action on the Clean Fuels Program. SB 98 also requires the preparation of an annual report with specified contents that include the prior year's accomplishments. This annual report requires review by an advisory group and approval by the Board, prior to submittal to specified offices of the California Legislature each year. This legislation also specifies the make-up of the 13-member SB 98 Clean Fuels Advisory Group and its primary responsibility which is to make recommendations regarding the most cost-effective projects that advance and implement clean fuels technology and improve public health. The membership of the SB 98 Clean Fuels Advisory Group was initially approved by the Board in September 1999. Changes to the composition are reviewed by the Technology Committee on an as-needed basis, subject to full Board approval as required by the charter. Prior to the formation of the SB 98 Clean Fuels Advisory Group, the South Coast AQMD had formed the Technology Advancement Advisory Group (TAAG) to review and assess the Clean Fuels Program. The charter and membership of the TAAG was revised in 1999 with formation of the SB 98 Clean Fuels Advisory Group so the functions of the two advisory groups would be complementary. The TAAG's charter specifies membership changes must be approved by the Technology Committee.

Proposal

These actions are for the Board to approve and adopt the TAO Clean Fuels Program 2019 Annual Report and 2020 Plan Update and, as part of the Board's consideration of the 2020 Plan Update, to make a finding that the update and its proposed projects do not duplicate any past or present programs of specified organizations. The review process by the two advisory groups helps ensure that South Coast AQMD efforts do not duplicate projects. The advisory groups provide feedback to staff on the documents during in-person biannual meetings and through subsequent correspondence. The advisors are all experts in different fields, with the majority being current or retired

members of national laboratories, state or federal agencies and/or academia. Staff diligently monitors specific technologies through efforts at state and federal collaboratives, partnerships and industrial coalitions. Staff also invites other technical experts to review the Annual Report and Plan Update. Through this effort, staff is confident there is no duplication of technology projects represented in the Plan Update, as required in the H&SC.

These actions are to also receive and file membership changes to the TAAG and approve and adopt membership changes to the SB 98 Clean Fuels Advisory Group, as required by their respective charters. This package includes a Resolution (Attachment A), proposed new advisory group members including their biographies (Attachment B), and one combined document comprising the TAO Clean Fuels Program 2019 Annual Report and 2020 Plan Update (Attachment C).

Clean Fuels Program Annual Report 2019

The Annual Report covers projects and progress of the Program for Calendar Year (CY) 2019. As discussed earlier, this report addresses all the requirements specified in H&SC 40448.5.1(d). Specifically, this report includes the following required elements:

- A description of the core technologies that the South Coast AQMD considers critical to ensure attainment and/or maintenance of ambient air quality standards and a description of the efforts made to overcome commercialization barriers;
- Staff analysis of the impact of TAO's Clean Fuels Program on the private sector and on research, development and commercialization efforts by major automobile and energy firms;
- A description of projects funded by the South Coast AQMD, including a list of recipients, key subcontractors (if known), cofunders, matching state or federal funds, and expected and actual results of each project advancing and implementing clean fuels technology and improving public health;
- The title and purpose of all projects undertaken pursuant to the Clean Fuels Program, the names of the contractors and key subcontractors involved in each project, and the amount of money expended or committed for each project;
- A summary of the progress made toward the goals of the Clean Fuels Program; and
- Funding priorities identified for the next year and relevant audit information for previous, current and future years covered by the report.

During CY 2019, the Clean Fuels Program executed 68 new projects or studies and modified four continuing contracts, adding additional dollars, to sponsor research, development, demonstration and deployment (RD³) projects and technology assessment and transfer contracts for alternative and clean fuel technologies. The South Coast AQMD contribution to these projects was approximately \$11.9 million, with total

project costs of nearly \$134 million, which includes coordinated funding from other governmental agencies, private sector, academia and research institutions. The \$11.9 million includes \$3.12 million recognized into the Clean Fuels Fund as pass-through funds from project partners to facilitate project administration by the Clean Fuels Program. This \$3.12 million came from an U.S. EPA Airshed Grant for near-zero battery-electric shuttle buses. These projects address a wide range of air quality issues with a diverse mix of advanced technologies. Figure 1 shows the distribution of funding committed from the Clean Fuels Program through executed agreements in 2019.

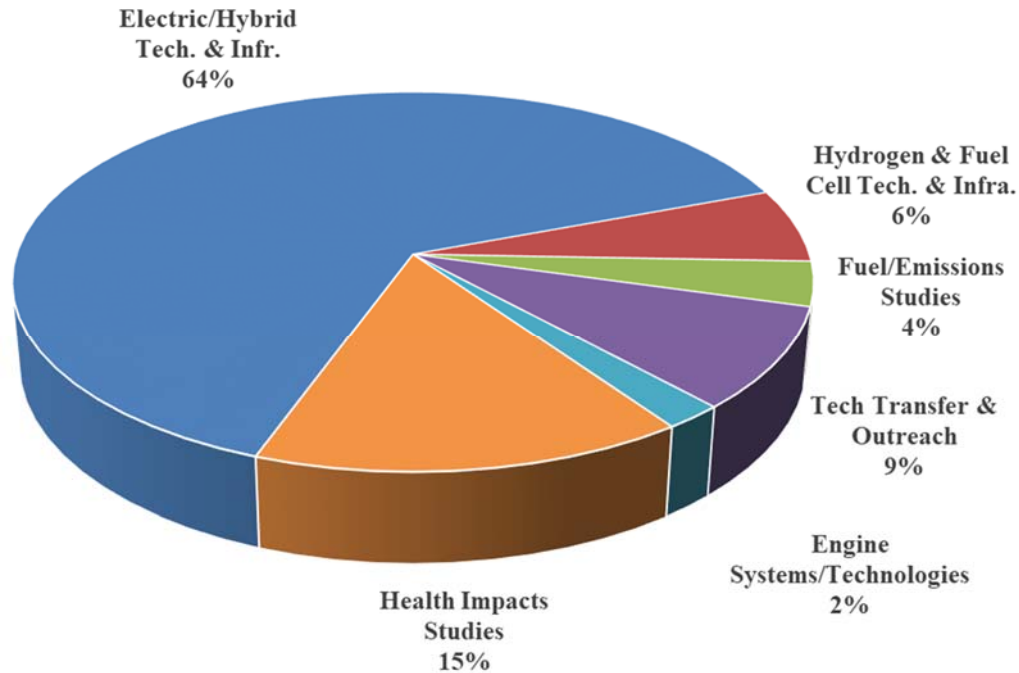


Figure 1: Distribution of Executed Clean Fuels Program Contracts in CY 2019 (\$11.9M)

Executed agreements typically follow the Board awards due to the time necessary to negotiate contracts. During this phase, project awards may be reduced in scope, encounter delays in execution, or may not be contracted at all due to unforeseen difficulties following Board approval. As such, the funding distribution represents a “snapshot-in-time” of the Clean Fuels Program for the CY being reported.

During CY 2019, the South Coast AQMD supported a variety of projects and technologies, ranging from near-term to long-term RD³ 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 executed in CY 2019 included demonstrations of zero emission trucks and EV infrastructure, zero emission cargo handling vehicle demonstrations, deployment of pre-commercial battery electric shuttle buses, natural gas engine emissions and efficiency improvements, solid oxide fuel cell and gas turbine hybrid technology development and hydrogen fueling station expansions. Like the last few years, the significant project scopes of a few key contracts executed in the CY resulted in higher

than average leveraging of Clean Fuels dollars. Typical leveraging has been \$4 for every \$1 in Clean Fuels funding. In 2019, leveraging was approximately \$1 to \$14.

In addition to the new projects, 15 RD³ and 18 technology assessment and transfer/outreach projects were completed in CY 2019. Summaries of each of the technical projects completed in 2019 are provided in Appendix C of the combined document.

The Clean Fuels Program in CY 2019 continued to leverage other outside opportunities with the South Coast AQMD securing new awards over \$36 million from federal, state and local funding. While this revenue may not be recognized into the Clean Fuels Fund, it is part of the overall RD³ effort implemented under the auspices of the Clean Fuels Program. Staff continues to aggressively pursue applicable funding opportunities that may focus on GHG reductions, energy efficiency and reductions in petroleum usage, while remaining committed to acting as a leader in developing advanced technologies that lower criteria and toxic pollutants. Leveraging dollars and applying for funds is critical given the magnitude of required funding identified in the 2016 AQMP that is needed to achieve federal ozone air quality standards.

Clean Fuels Program Plan Update 2020

Every year, staff re-evaluates the Clean Fuels Program to develop an update of the Plan which essentially serves to re-calibrate the technical direction of the Program. The attached 2020 Plan Update for the Clean Fuels Program identifies potential projects to be considered for funding during 2020 and beyond. The proposed projects reflect promising zero, near-zero and low emission technologies and applications that are emerging in the different source categories. This Plan Update includes several proposed projects, not all of which are expected to be funded in the current calendar year given the available budget. Some of the proposed projects for 2020 include, but are not limited to:

- 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_x emissions and assessing emissions impacts of hydrogen-natural gas fuel blends on near-zero emissions heavy-duty natural gas engines.

In addition to identifying proposed projects to be considered for funding, this Plan Update confirms nine key technical areas of highest priority to the South Coast AQMD.

These high priority areas are listed below based on the proposed funding distribution shown in Figure 2:

- Hydrogen and Mobile Fuel Cell Technologies and Infrastructure (especially large-scale refueling facilities);
- Engine Systems (emphasizing heavy-duty alternative and renewable fuel engines for truck and rail applications);
- Electric and 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 renewables and microgrids);
- Fuel and Emissions Studies;
- Emissions Control Technologies;
- Health Impacts Studies; and
- Technology Assessment and Transfer/Outreach.

It should be noted that these priorities represent the areas where South Coast AQMD funding is thought to have the greatest impact. In keeping with the diverse and flexible “technology portfolio” approach, however, these priorities may shift during the year to: (1) capture opportunities such as cost-sharing by the state government, the federal government or other entities; (2) address specific technology issues which affect residents within the South Coast AQMD jurisdiction; (3) incorporate findings from recent studies; or (4) further accelerate technology development, commercialization or market acceptance of promising technologies.

These technical priorities will necessarily be balanced by funding availability and the availability of qualified projects. Revenues from several sources support South Coast AQMD’s Technology Advancement program. The principal revenue source is the Clean Fuels Program which, under H&SC Sections 40448.5 and 40512, and Vehicle Code Section 9250.11, establishes mechanisms to collect revenues from mobile and stationary sources to support program objectives, albeit with constraints on the use of the funds. Grants and cost-sharing revenue contracts from various government agencies, such as CARB, CEC, NREL and other national laboratories, U.S. EPA and the U.S. Departments of Energy and Transportation, also support technology advancement efforts.

The Plan Update is the result of a comprehensive planning and review process. This process included consideration of 2016 AQMP control measures as well as CARB’s Mobile Source Strategies including the Truck and Bus Regulation and Advanced Clean Truck Regulation, U.S. EPA’s Cleaner Trucks Initiative, San Pedro Bay Ports’ Clean Air Action Plan, the Sustainable Freight Action Plan, and the California Fuel Cell

Partnership's *Medium & Heavy-Duty Fuel Cell Electric Vehicle Action Plan and Road Map for Zero Emission, Fuel Cell Electric Buses in California*. It also incorporates coordination activities involving outside organizations including consideration of federal, state and local activities and proposed integrated solutions that capture the co-benefits of reduced GHG emissions and criteria pollutants. As part of this process, staff hosted two meetings in September 2019 and February 2020 to solicit input from the SB 98 Clean Fuels Advisory Group, TAAG and other technical experts. During these meetings, the participants reviewed the current Technology Advancement projects and discussed near-term and long-term technologies as potential projects. Staff also attended a variety of conferences and symposiums, such as the ACT Expo in April 2019 and the DOE Annual Merit Reviews (May & June 2019). Additionally, staff attended meetings or workshops with CARB, CEC, the California Fuel Cell Partnership, the California Stationary Fuel Cell Collaborative, California Hydrogen Business Council, Veloz (a nonprofit supporting electric vehicles for all), and other entities to solicit and incorporate technical areas for potential leveraged funding and project coordination.

Based on discussions with the organizations specified in H&SC Section 40448.5.1 and review of their programs, the projects proposed in this Plan Update do not duplicate any past or present projects. As each individual project is recommended to the Board for funding, staff will continue to coordinate with these organizations to ensure that duplication is avoided and ensure optimal expenditure of Clean Fuels Program funds.

Staff presented the Draft 2019 Clean Fuels Program Plan Update to the Technology Committee on October 18, 2019. Figure 2 graphically depicts the potential distribution of Clean Fuels Program funds which represents priority focus for the nine project areas discussed above.

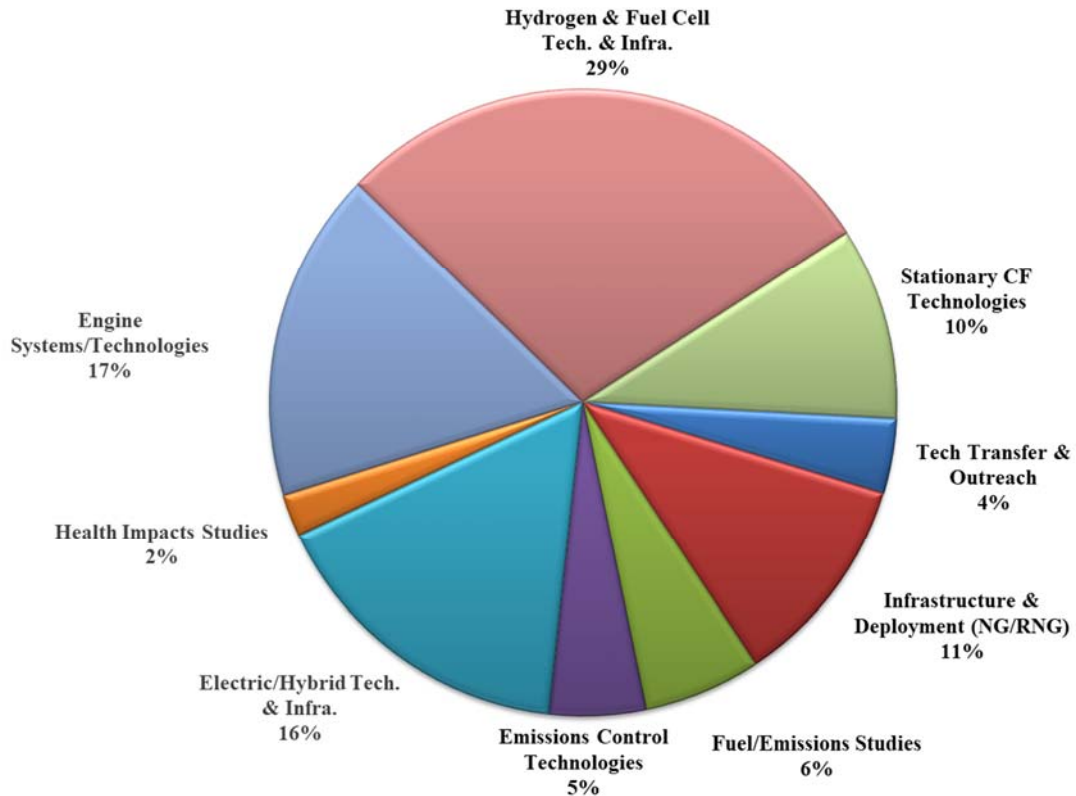


Figure 2: Projected Cost Distribution for Potential Projects in 2020 (\$16.1M)

The expected actual program expenditures for 2019 will be much less than the total 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 Clean Fuels funding. Specific contract awards throughout 2019 will be based on this proposed allocation, the quality of proposals received and evaluation of projects against standardized criteria and, ultimately, Board approval. At that time, additional details will be provided about the technology, its application, the specific scope of work, the project team capabilities and the project cost-sharing.

H&SC Section 40448.5.1 requires the Board approve the Clean Fuels Annual Report for 2019 and adopt the Clean Fuels Plan Update for 2020 as well as find that the proposed projects do not duplicate programs of other organizations specified in the H&SC provision. As required, the Annual Report and Plan Update have been reviewed by the SB 98 Clean Fuels Advisory Group.

Attachments

- A. Resolution
- B. Qualifications and Expertise of Proposed New Advisory Group Members
- C. TAO Clean Fuels Program 2019 Annual Report and 2020 Plan Update
- D. Board Meeting Presentation

ATTACHMENT A

RESOLUTION NO. 20-

A Resolution of the Governing Board (the Board) of the South Coast Air Quality Management District (SCAQMD) approving the Technology Advancement Office Clean Fuels Program Annual Report for 2019 and adopting the Clean Fuels Program Plan Update for 2020.

WHEREAS, the Board initiated a Clean Fuels Program in 1988 to expedite the demonstration and commercialization of advanced low emission and zero emission technologies and clean fuels; and,

WHEREAS, Health and Safety Code Sections 40404 and 40448.5 require the SCAQMD to coordinate and manage a Clean Fuels Program to accelerate the utilization of clean-burning fuels within the South Coast Air Basin; and,

WHEREAS, Health and Safety Code Section 40512 and Vehicle Code Section 9250.11 authorize funding for the SCAQMD Clean Fuels Program; and,

WHEREAS, SB 98 (Alarcon), chaptered into state law on June 8, 1999, extended the funding authority for the Clean Fuels Program and added administrative provisions under Health and Safety Code Section 40448.5.1 regarding program planning and reporting, including:

- Providing notice to interested parties and the public at least 30 days prior to the annual public hearing at which the Board or a committee of the Board takes action to approve the clean-burning fuels program.
- Consulting with the SB 98 Clean Fuels Advisory Group regarding approval of the required annual report. The results of that consultation shall be provided to the Board prior to its approval of the report.
- Submitting the Clean Fuels Program annual report to the office of the Legislative Analyst and to the committees of the Legislature responsible for improving air quality on or before March 31 of each year that the clean-burning fuels program is in operation; and

WHEREAS, SB 1646 (Padilla), chaptered into state law on September 30, 2008, reauthorized the funding authority for the Clean Fuels Program, removed the sunset of January 1, 2010, and reinstated the five percent administrative cap; and,

WHEREAS, the Technology Advancement Office Clean Fuels Program Plan Update has been reviewed and commented on by both the Technology Advancement Advisory Group and the SB 98 Clean Fuels Advisory Group; and,

WHEREAS, Health and Safety Code Section 40448.5.1 requires that the SCAQMD coordinate and ensure non-duplication of clean fuels-related projects with specified organizations, including the: CARB, CEC, California air quality management districts or air pollution control districts, a public transit district or authority within the geographic jurisdiction of the SCAQMD, San Diego Transit Corporation, North County Transit District, Sacramento Regional Transit District, Alameda-Contra Costa Transit District, San Francisco Bay Area Rapid Transit District, Santa Barbara Metropolitan Transit District, Los Angeles Department of Water and Power, Sacramento Municipal Utility District, Pacific Gas and Electric Company, Southern California Gas Company, Southern California Edison Company, San Diego Gas and Electric Company, or the Office of Mobile Sources within the U.S. Environmental Protection Agency; and

WHEREAS, based on communications with the organizations specified in Health and Safety Code Section 40448.5.1 and review of their programs, the proposed program and projects included in the Technology Advancement Office Clean Fuels Program Plan Update do not duplicate any other past or present program or project funded by those organizations; and,

WHEREAS, notice has been provided to interested parties and the public at least 30 days prior to the annual public hearing at which the Board is to consider approving the clean-burning fuels program; and,

WHEREAS, the SB 98 Clean Fuels Advisory Group has reviewed the Technology Advancement Office Annual Report.

NOW, THEREFORE, BE IT RESOLVED, that the Board finds the Technology Advancement Office Clean Fuels Program Plan Update does not duplicate any past or present programs or projects funded by the above-specified organizations.

BE IT FURTHER RESOLVED, that the Board approves the Technology Advancement Office Clean Fuels Program Annual Report for 2019.

BE IT FURTHER RESOLVED, that the Board adopts the Technology Advancement Office Clean Fuels Program Plan Update for 2020.

BE IT FURTHER RESOLVED, that the Board hereby directs staff to forward the Technology Advancement Office Clean Fuels Program Annual Report 2019 and Plan Update 2020 to the California Legislature and the Legislative Analyst.

Dated:

Faye Thomas, Clerk of the Boards

ATTACHMENT B
Qualifications and Expertise of Proposed New Advisory Group Members

SB 98 Clean Fuels Advisory Group*

<p>Stephen Ellis American Honda</p>	<p>Stephen Ellis is Manager of Fuel Cell Vehicle Marketing at American Honda Motor Co., Inc. Steve is responsible for the deployment of the Honda FCX Clarity, Hydrogen Fuel Cell Electric Vehicle to retail consumers. He previously deployed the original FCX to government fleets and the world’s first retail sale to a consumer. Steve currently works with State of California, the U.S. Department of Energy, auto OEMs, energy companies, and hydrogen providers to develop a H2 station network. Steve was previously Board Chairman of the Fuel Cell and Hydrogen Energy Association (FCHEA) and is now working to collaborate and introduce H2 USA.</p>
<p>Petros Ioannou, PhD University of Southern California</p>	<p>Dr. Ioannou is a Professor of the Ming Hsieh Department of Electrical Engineering with joint appointments in the Departments of Aerospace and Mechanical Engineering, and Industrial and Systems Engineering. He received his B.Sc. degree with First Class Honors from University College, London, England, and his M.S. and Ph.D. degrees from the University of Illinois at Urbana-Champaign. In 1982, he became a faculty member of USC Electrical Engineering-Systems and currently serves as the Director of the Center of Advanced Transportation Technologies as well as the Associate Director for Research of METRANS. Petros is a Fellow of the IEEE, Fellow of the International Federation of Automatic Control (IFAC), and Fellow of the Institution of Engineering and Technology (IET). He is the author/co-author of 8 books and over 400 research papers in the area of controls, vehicle dynamics and control, and intelligent transportation systems (ITS). He is the Editor in Chief of the IEEE Transactions on ITS. In 1985, he received the Presidential Young Investigator Award for his research in Adaptive Control. In 2009, he received the Intelligent Transportation System’s Outstanding Application Award by the IEEE Intelligent Transportation System Society (ITSS) and the 2009 IET Heaviside Medal for Achievement in Control. In 2012, he received the IEEE ITSS Outstanding ITS Research Award, and in 2015, he received the 2016 IEEE Transportation Technologies Field Award for his work on Adaptive Cruise Control Systems. .</p>
<p>Dr. John Wall</p>	<p>Dr. John Wall has more than 35 years of industry experience in internal combustion engine technology, fuels and emissions, and in global engineering organization development. He served as Vice President and Chief Technical Officer of Cummins Inc., the world's largest independent manufacturer of diesel engines and related technologies, retiring in 2015. He is an advisor to the U.S. Department of Energy Joint BioEnergy Institute and Co-Optima Program and the Cyclotron Road energy incubator at Lawrence Berkeley Laboratory. In 2010, he was elected to the U.S. National Academy of Engineering. He is a Fellow of the Society of Automotive Engineers and a recipient of the SAE Horning Memorial Award and Arch T. Colwell Merit Award for research in the area of diesel fuel effects on emissions, the ASME Soichiro Honda Medal</p>

	for significant engineering contributions in the field of personal transportation, the California Air Resources Board Haagen-Smit Clean Air Award, and the U.S. EPA's Thomas W. Zosel Individual Achievement Award for career accomplishments in diesel emissions control. Dr. Wall holds SB, SM, and ScD. degrees in mechanical engineering from the Massachusetts Institute of Technology.
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**The charter of the CFAG requires membership changes to be approved by the full SCAQMD Board.*

Technology Advancement Advisory Group**

Michael Kleinman, PhD UCI	Dr. Michael T. Kleinman is a Professor of Occupational and Environmental Medicine in the Department of Medicine at the University of California, Irvine (UCI), where he has been since 1982. He was previously employed by the U.S. Atomic Energy Commission (AEC) as an environmental scientist and he directed the Aerosol Exposure and Analytical Laboratory at Rancho Los Amigos Hospital in Downey, CA. He is a toxicologist and has been studying the health effects of exposures to environmental contaminants 40 years. He holds a M.S. in Chemistry (Biochemistry) from the Polytechnic Institute of Brooklyn and a Ph.D. in Environmental Health Sciences from New York University. He is also the Co-Director of the Air Pollution Health Effects Laboratory in the Department of Medicine at University of California, Irvine. He has published about 110 articles in peer-reviewed journals dealing with environmental contaminants and their effects on cardiopulmonary and immunological systems and on global and regional distribution of environmental contaminants including heavy metals and radioactive contaminants from nuclear weapons testing and manufacture.
George Payba LADWP	George Payba is the Director of Electrification of Transportation Systems and Electronic Vehicle Policy at the Los Angeles Department of Water and Power (LADWP). Prior to joining LADWP, Mr. Payba served as the Executive Director of Los Angeles Regional Agency (a.k.a. Los Angeles Integrated Waste Management Authority) which comprises 18 SoCal cities. At LA Sanitation and Environment (LASAN), Mr. Payba served as the Section Head for the Zero Waste Compliance and Sustainability Section from 2014 to 2019. During his tenure at LASAN, Mr. Payba oversaw citywide sustainability and recycling programs such as LARA; AB 939, AB 341 and AB 1826 compliance, and the Recycling Market Development Zone. He also managed the successful City of LA Green Business Certification Programs comprising of Green Business, Green Arts, and Green Lodging, as well as the implementation of the citywide sustainability programs such as LA Green Business Certification Programs, the Environmentally Preferable Purchasing Program/Ordinance, Single-Use Plastic Bag Ban, and the Department of Dept. of Water and Power's Waste Tire and Universal Waste Programs. Mr. Payba received his Bachelor of Arts degree in Chemistry from Long Beach State University.
Vic La Rosa Total Transportation Solutions Inc.	Vic La Rosa's comprehensive professional background spans the industries of transportation and clean tech. These include freight forwarding, warehousing, trucking, LTL, airfreight, logistics, distribution, roll-on / roll-off, 3PL, and international shipping. Mr. La Rosa is recognized as a transportation and trucking subject matter expert. He provides local newspapers and industry publications with expertise and advisory,

	including the Wall Street Journal, American Shipper and the Journal of Commerce. In 1986, Mr. La Rosa co-founded Total Transportation Solutions Inc. (TTSI) with Bill Allen to provide a wide range of cross-nation and international freighting services. Serving as President during the early growth years, he directed the upward trajectory of the company to reach a peak of \$100 million prior to the successful sale of the business in 2006.
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***The charter of the TAAG requires membership changes to be approved by the Board's Technology Committee.*

ATTACHMENT C

TECHNOLOGY ADVANCEMENT OFFICE CLEAN FUELS PROGRAM DRAFT 2019 ANNUAL REPORT & 2020 PLAN UPDATE

**South Coast Air Quality Management District
March 2020**

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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
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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 NO_x 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 NO_x and volatile organic compound (VOC) emissions in sunlight. This is noteworthy because the primary driver for ozone formation in the Basin is NO_x emissions, and mobile sources contribute approximately 88 percent of the NO_x emissions in this region, as shown in Figure 1. Furthermore, NO_x emissions, along with VOC emissions, also lead to the formation of PM_{2.5} [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 NO_x 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 NO_x reductions in the Basin. The majority of these NO_x reductions must come from mobile sources, both on-road and off-road. Notably, the South Coast

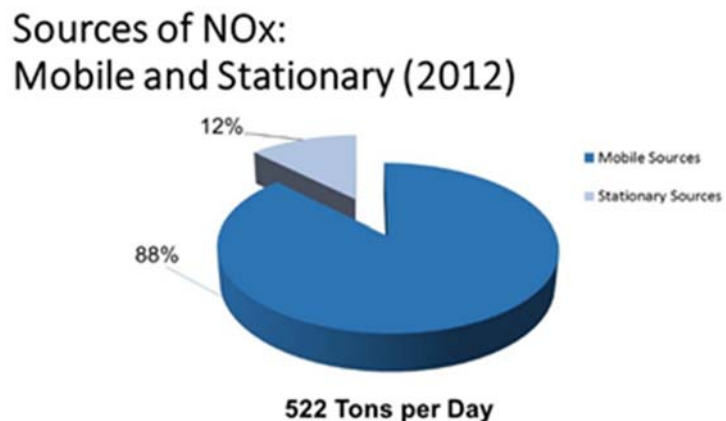
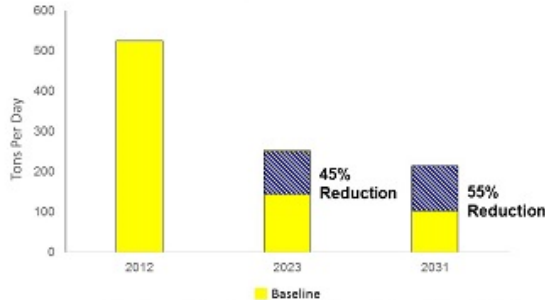


Figure 1: Sources of NO_x 2012 Base Year

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_x 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_x 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_x 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 NOx 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:

¹ <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.

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 NOx 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_x and volatile organic compound (VOC) emissions in sunlight. This is noteworthy because the primary driver for ozone formation in the Basin is NO_x emissions, and mobile sources contribute approximately 88 percent of the NO_x emissions in this region, as shown in Figure 1. Furthermore, NO_x emissions, along with VOC emissions, also lead to the formation of PM_{2.5} [particulate matter measuring 2.5 microns or less in size, expressed as micrograms per cubic meter (μg/m³)], 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_x 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_x emissions must be reduced to meet federal standards by

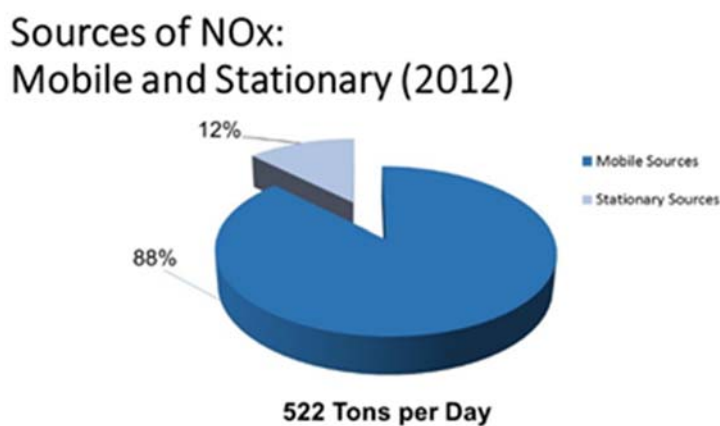


Figure 1: Sources of NO_x 2012 Base Year

Basin Total NO_x Emissions

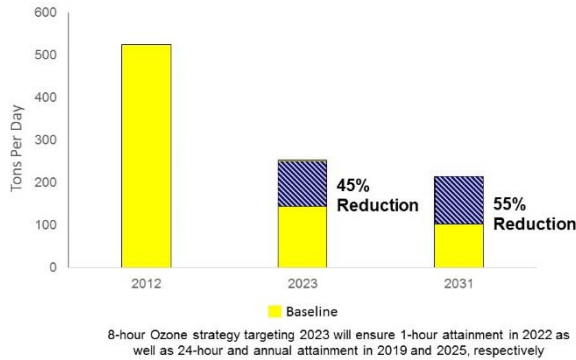


Figure 2: Total NO_x Reductions Needed

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_x 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_x 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_x 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 Program²) 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 (RD³) 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 RD³ efforts, even if for financial tracking purposes the revenue is recognized into another special revenue fund other than the Clean Fuels Fund (Fund 31).

² <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 RD³ 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_x 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 power-trains 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_x 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_x 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 RD³ projects to include marine and ocean-going vessels. Utilizing mitigation funds, funding from San Pedro Bay ports and industry partners, RD³ projects to demonstrate emissions reduction technology in the marine sector where NO_x 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*³ 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

³ <https://ww2.energy.ca.gov/2019publications/...2019.../CEC-600-2019-039.pdf>

of the on-road mobile source PM_{2.5}, 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_x and particulate emissions. The current NO_x 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_x 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_x national standard for heavy-duty engines. The U.S. EPA has since acknowledged a need for additional NO_x reductions through a harmonized and comprehensive national NO_x 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_x emissions from on-road heavy-duty trucks starting as early as model year 2026. CARB forged ahead, announcing its own Low NO_x Omnibus rule, which may be before the CARB Board as early as Spring 2020, proposing a lower NO_x 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_x 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_x, 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_x, 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_x 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_x emissions or lower. SCR requires the injection of ammonia or urea that is reacted over a catalyst bed to reduce the NO_x 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_x 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_x and PM_{2.5} 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) 617⁴, 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.

⁴ <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 (RD³) 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_x 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 RD³ 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 RD³ projects (which will likely result in executed project contracts in 2020).

Table 1: South Coast AQMD Major Funding Partners in CY 2019

Research Funding Organizations	Major Manufacturers/Technology Providers
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
Local Entities & Utilities	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_x, 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_x, 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 LIGHTS 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 LIGHTS 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 LIGHTS 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

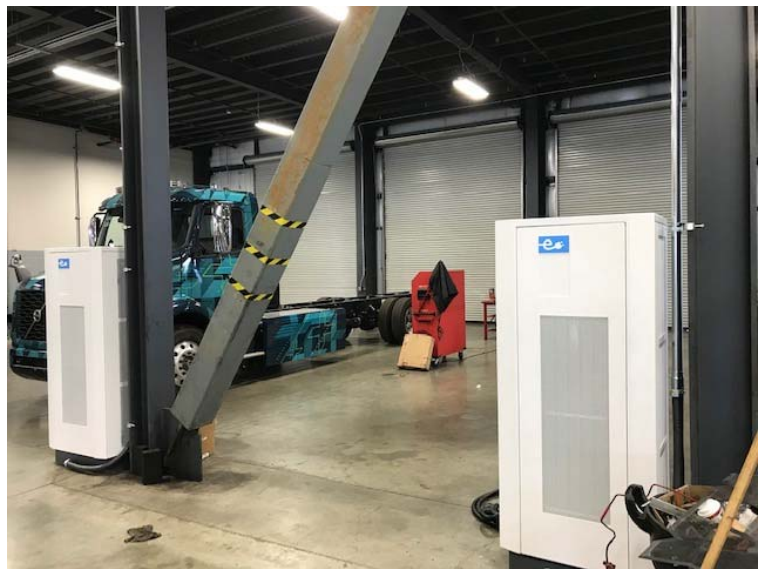


Figure 6: Two 50 kW DC Fast Chargers at TEC Fontana

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-



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.

Figure 7: CPORT Project at LBCT & SSA Marine at POLB

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 & Associates⁵, 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 NO_x and PM emissions from transportation sources.

⁵ 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.

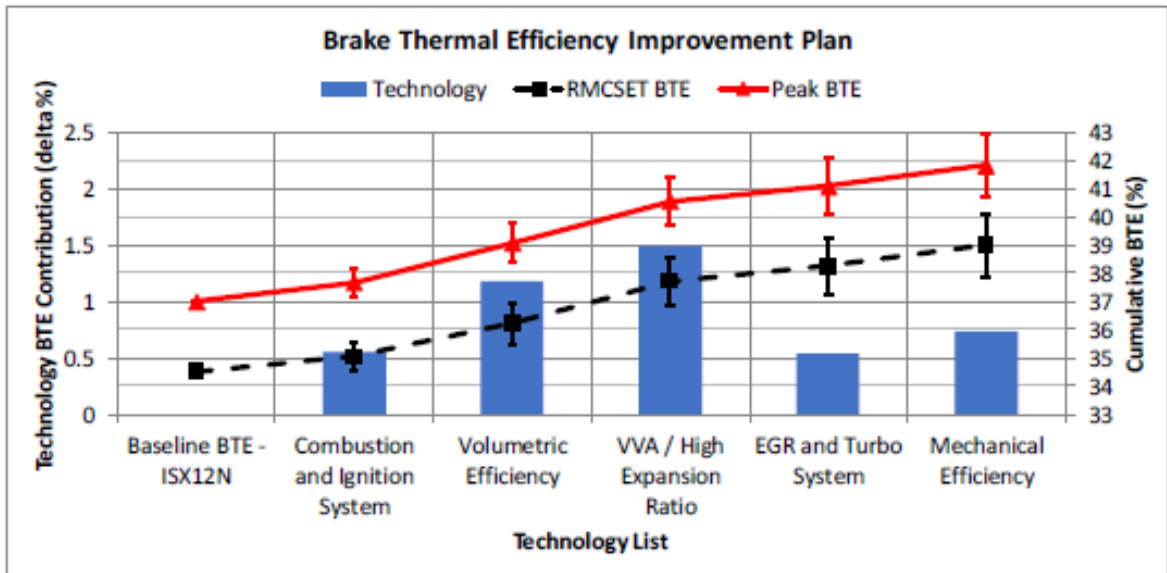


Figure 12: Projected Heavy-Duty Natural Gas Engine Efficiency Improvement Pathways

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.

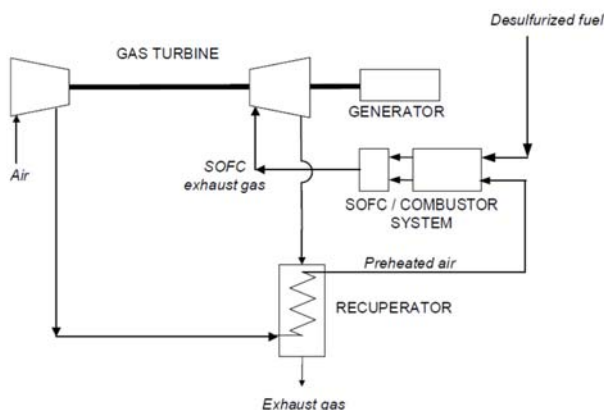


Figure 13: SOFC integrated system with a gas turbine

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, CO₂ 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.

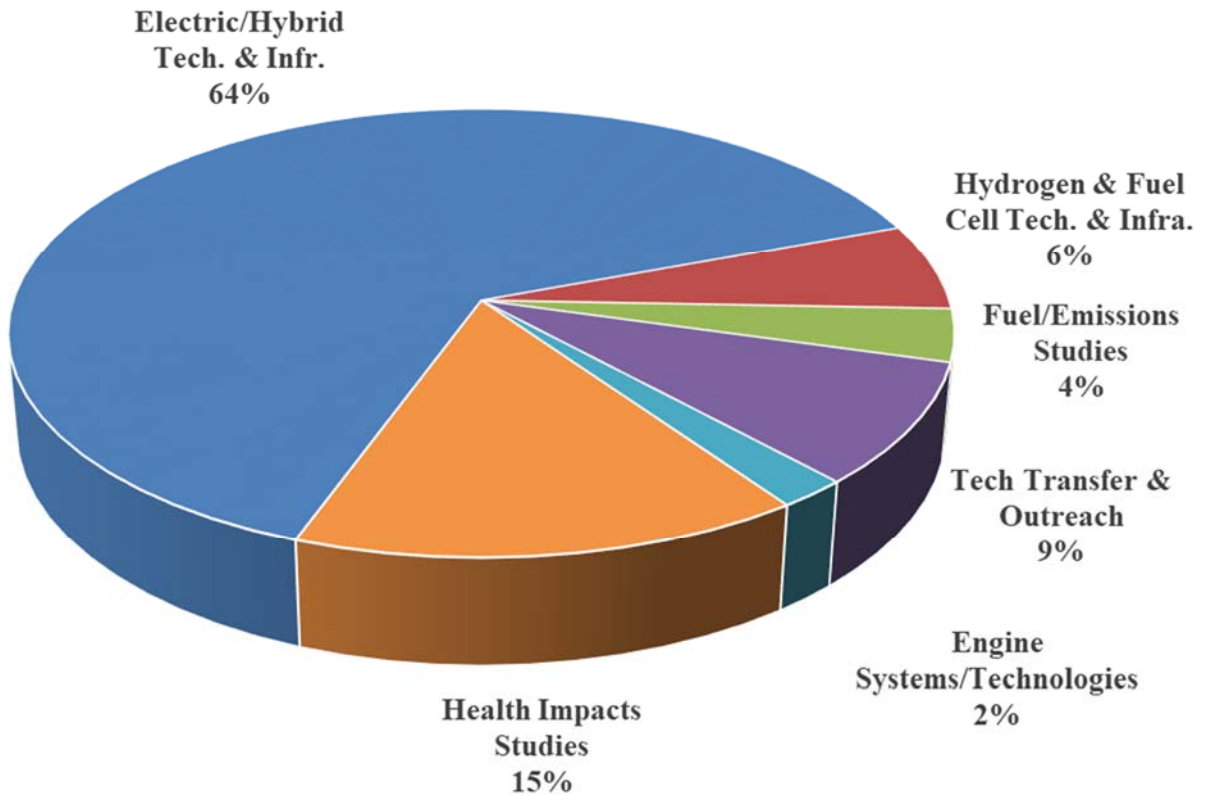


Figure 17: Distribution of Funds for Executed Clean Fuels Projects CY 2019 (\$11.9M)

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 RD³ 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

Contract	Contractor	Project Title	Start Term	End Term	SCAQMD \$	Project Total \$
Hydrogen/Mobile Fuel Cell Technologies and Infrastructure						
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
Engine Systems/Technologies						
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
Electric/Hybrid Technologies and Infrastructure						
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
Fuel/Emissions Studies						
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)

Contract	Contractor	Project Title	Start Term	End Term	SCAQMD \$	Project Total \$
Fuel/Emissions Studies (cont'd)						
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
Health Impacts Studies						
Fund Transfer	Various	Conduct Fifth Multiple Air Toxics Exposure Study (MATES V)	01/01/18	06/30/20	1,815,800	5,486,810
Technology Assessment and Transfer/Outreach						
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
						\$11,870,196

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).					\$3,184,875

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.					\$19,917,283

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 (received as pass-through funds)	\$ 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 PM2.5, 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., NO2, 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.

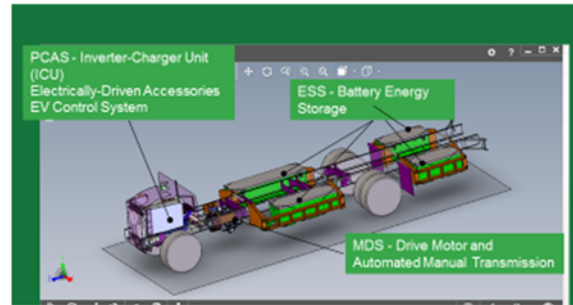


Figure 18: Chassis Layout of EV Components

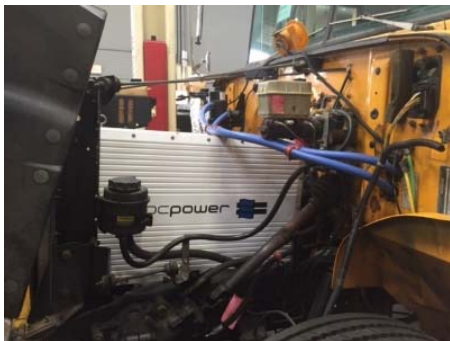


Figure 19: Power Control & Accessory Subsystem after Installation into Bus

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_x Diesel Engine Aftertreatment Technologies for Heavy-Duty Diesel Engines

A key measure in CARB's Mobile Source Strategy is the establishment of low NO_x engine emission standards that result in a 90 percent reduction in NO_x 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_{2.5} standards in the next decade.⁶

CARB, in conjunction with Southwest Research Institute (SwRI), developed a three-stage project exploring the feasibility of technologies to achieve target tailpipe NO_x 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_x aftertreatment system is shown below in Figure 20 below.

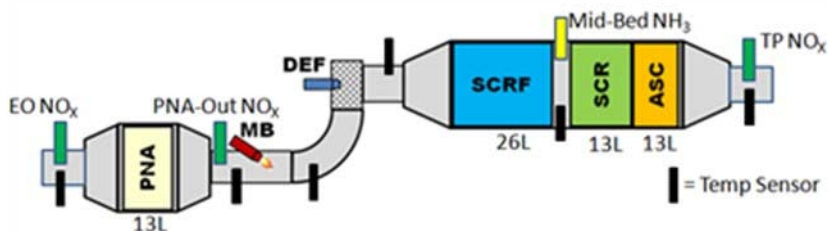


Figure 20: Final Stage 1 Low NO_x Aftertreatment System Configuration Results

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

⁶ <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_x 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_x 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.⁷ 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 CO₂ 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_x 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_x 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 (RH₂) 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 CO₂ contributions associated with fossil-based methane production and use. The following illustrates the process from RNG sources to methane conversion.

⁷ <https://cngvp.org/why-natural-gas/low-carbon-renewable-fuel/>



Figure 21: RNG Sources

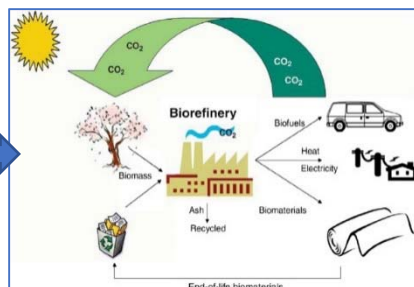


Figure 22: RNG

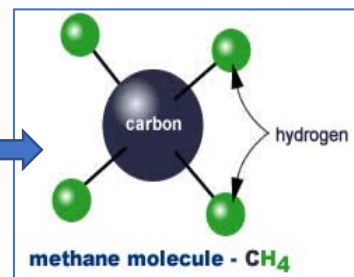


Figure 23: RH2

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 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.



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, 2018⁸). 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
Total	6,421	\$55.9

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

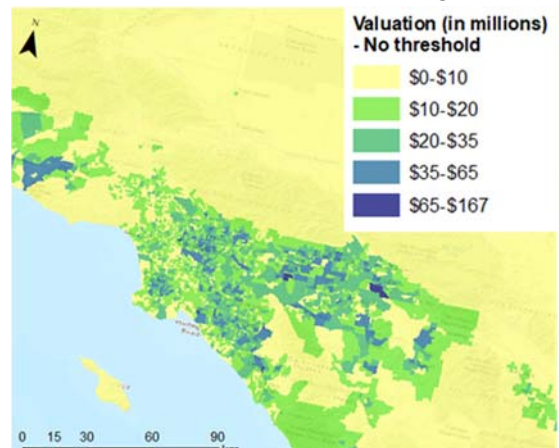


Figure 28: Monetized Health Benefits of Electrification within the Basin by Census Tract

⁸ 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.

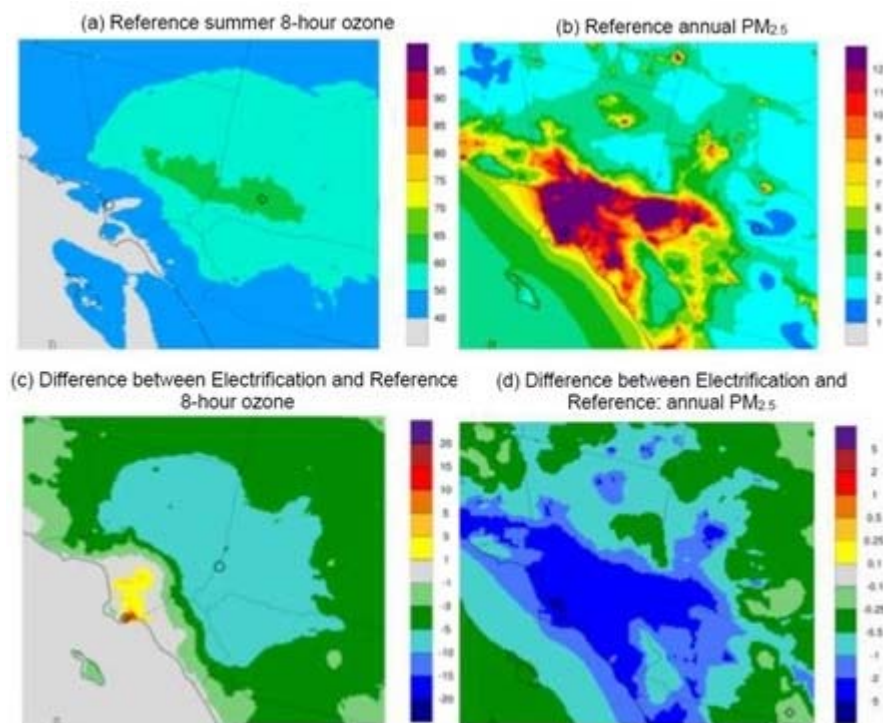


Figure 29: Electrification Effects for Summer Max Daily Average 8-Hour Ozone and Max Annual PM_{2.5}

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_x 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_x 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

Contract	Contractor	Project Title	Date
Hydrogen/Mobile Fuel Cell Technologies and Infrastructure			
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
Electric/Hybrid Technologies and Infrastructure			
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
Fueling Infrastructure and Deployment (NG/RNG)			
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
Fuel/Emissions Studies			
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
Emissions Control Technologies			
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)

Contract	Contractor	Project Title	Date
Technology Assessment and Transfer/Outreach			
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_x 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_x 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.

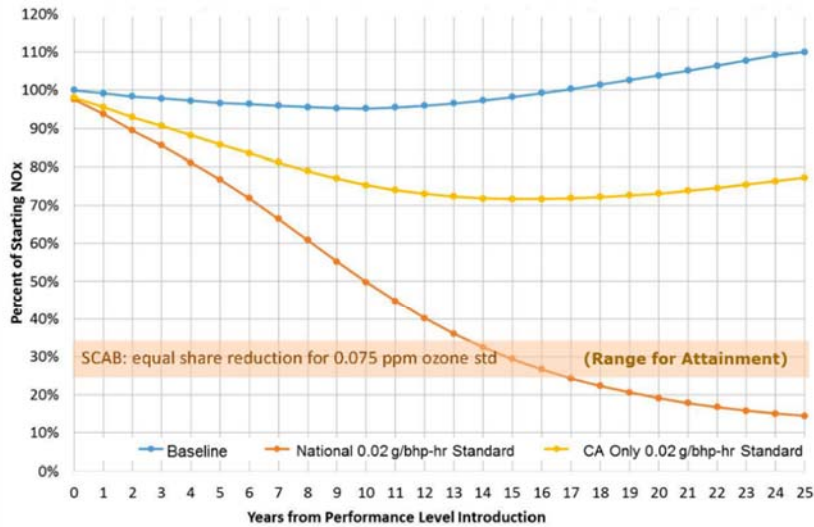
While current state efforts in developing regulations for on- and off-road vehicles and equipment are expected to reduce NO_x emissions significantly, they will not be sufficient to meet the South Coast AQMD needs, especially in terms of timing. Nonetheless, for the first time, the 2016 AQMP identified 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 IV⁹ 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

⁹ <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_x reductions. Fortunately, many of the technologies that address the Basin's needed NO_x 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_x and GHG co-benefits.

Program and Funding Scope

This 2020 Plan Update includes projects to research, develop, demonstrate and advance deployment (RD³) 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 Vision¹⁰ 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

¹⁰CaFCP'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 36,000¹¹ 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;

¹¹https://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_x 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_x, 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_x, 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_x reduction. SCR requires the injection of ammonia or urea that is reacted over a catalyst bed to reduce the NO_x 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_x ceramic burner on an oil heater without the use of reagents such as ammonia nor urea which is anticipated to achieve SCR NO_x 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_x 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_x 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_x 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_x 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_x 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.

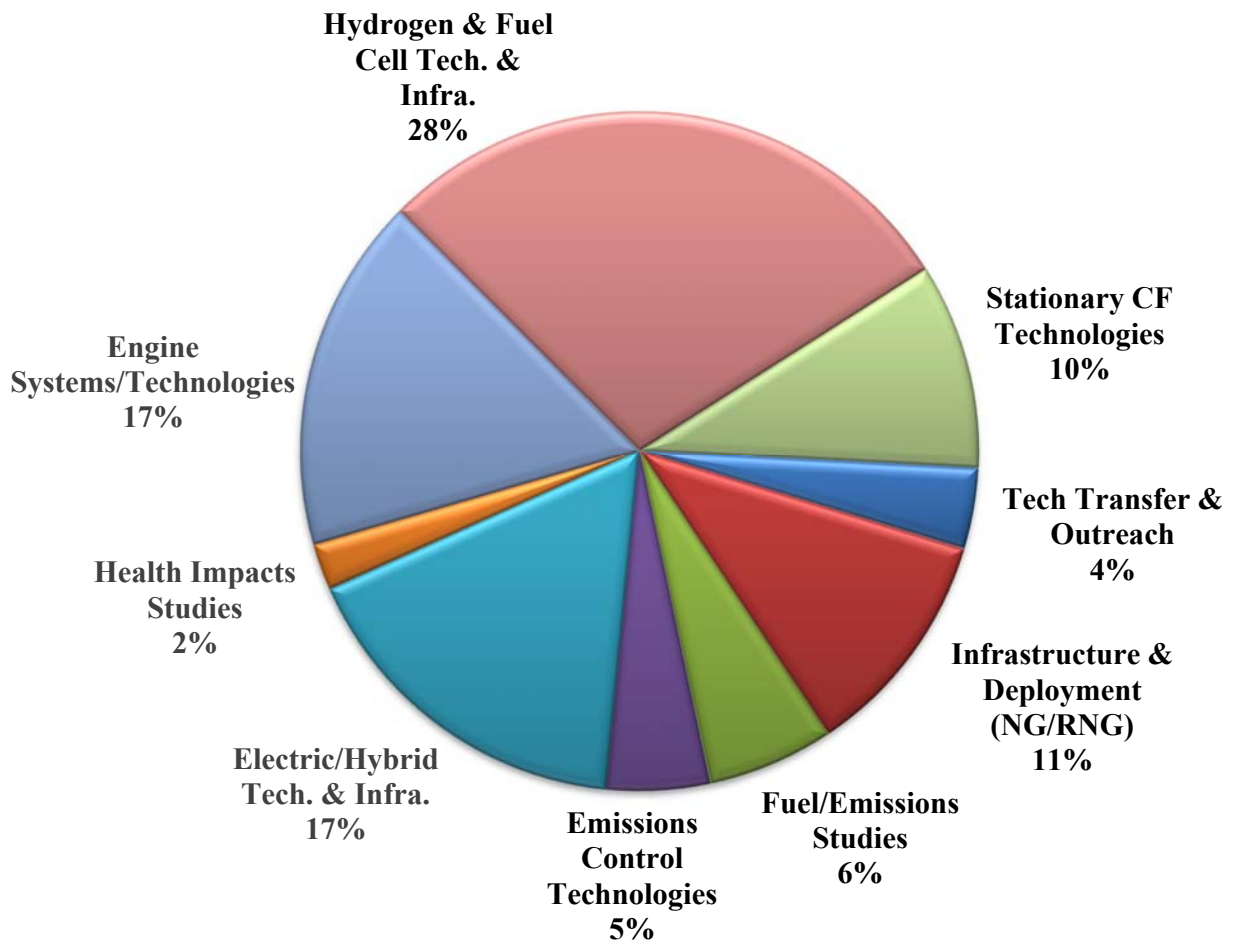


Figure 32: Projected Cost Distribution for Potential South Coast AQMD Projects in 2020 (\$16.1M)

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_x 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

Proposed Project	Expected SCAQMD Cost \$	Expected Total Cost \$
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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)

Proposed Project	Expected SCAQMD Cost \$	Expected Total Cost \$
Fuel/Emissions Studies		
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
Emissions Control Technologies		
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
Health Impacts Studies		
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
Technology Assessment/Transfer and Outreach		
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
TOTALS FOR POTENTIAL PROJECTS	\$16,099,225	\$81,960,000

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 NO_x 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_x, 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>On-Road:</p> <ul style="list-style-type: none"> • Transit Buses • Shuttle Buses • Medium- & Heavy-Duty Trucks 	<p>Off-Road:</p> <ul style="list-style-type: none"> • Vehicle Auxiliary Power Units • Construction Equipment • Lawn and Garden Equipment • Cargo Handling Equipment
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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 FCV's up to 400 miles and to. Also, projects that demonstrate improvements to the reliability and durability of the power-train 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.

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_x 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_x 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_x. A heavy-duty 8.9L and 11.9L engines using natural gas achieving NO_x 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.

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 bio-diesel 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_x 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_x 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_x heavy-duty diesel and natural gas hybrid powertrains. Hybrid technologies offers a potentially faster commercialization pathway for reducing both NO_x 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 most-eco-friendly 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.

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.

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_x, VOC, CO, PM and toxic compound emissions from mobile sources. Such increased penetration of NGVs will provide direct emissions reductions of NO_x, 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 heavy-duty 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, ~~wh~~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 ~~the~~spring of 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 ~~Hrs.~~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 ~~wouldis-be 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 BET's 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-~~% to~~ 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 BET²s with 300 kW Hrs.hours, batteries would require 30 MW Hrs.hours/day of energy and for a 100-vehicle fleet of FCT²s, ~~would need~~ 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 OEM²s and their major customers, such as ~~large~~ and ~~medium~~-sized fleets who are looking at microgrid solutions for their operations here in the South Coast Air Basin. Currently, the inability of air/fuel ratio control (AFRC) systems to keep rich burn engines in compliance contributes significantly to air pollution in the basin. Reliable, low-cost emission monitoring systems are needed for small to intermediate size combustion devices, including stationary engines, boilers, heaters, furnaces and ovens that are not large enough to justify a continuous emission monitoring system (CEMS). This class of combustion device is often permitted on the basis of a single demonstration or periodic demonstrations of NO_x and CO emissions meeting South Coast AQMD rule requirements or a RECLAIM concentration limit. However, South Coast AQMD unannounced tests on engines and boilers have found that in many cases NO_x and/or CO levels have increased significantly above levels that have been initially or periodically demonstrated due to equipment malfunction and/or inadequate operator attention. It is suspected that the same may be true of heaters, furnaces and ovens.

A demonstration project funded in part by the South Coast AQMD consisted of retrofitting a biogas engine with a digester gas clean up system and catalytic oxidizer at the exhaust followed by SCR which resulted in significant reductions of NO_x, VOC and CO. Based on the successful deployment of this project, further emission reductions may be achieved by other biogas combustion sources such as gas turbines and boilers by the continued development of specialized low cost biogas clean up systems that will allow for the use of catalytic after control systems.

SCR has been used as aftertreatment for combustion equipment for NO_x reduction. SCR requires the injection of ammonia or urea that is reacted over a catalyst bed to reduce the NO_x 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_x ceramic burner on an oil heater without the use of reagents such as ammonia nor urea which is anticipated to achieve SCR NO_x 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_x burners without the use of reagents. [AD1]~~

~~Demonstrations of newer technologies in recent years could result in a commercially viable alternative to CEMS that is both reliable and feasible in terms of lower costs. For example, manufacturers of flue gas analyzers have, in recent years, developed low cost multi gas analyzers suitable for portable or stack mounted use. Some preliminary testing of a new type of AFRC, which uses a different type of O₂ sensor known as a wide band O₂ sensor, is another alternative that can be analyzed. Another technical approach might be to deploy technology utilizing the O₂ signature of a post catalyst O₂ sensor and additional control concepts being developed by manufacturers. Since an underlying problem has been that engine, catalyst and AFRC manufacturers have developed systems independently, a system being co-developed to perform continuous diagnostics to assist operators in keeping rich burn engines in compliance is possibly another alternative for demonstration.~~

Potential Air Quality Benefits:

~~Stationary engines, boilers, heaters, furnaces and ovens account for approximately 11 percent of total NO_x emissions and about 6 percent of total CO emissions. 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_x required by 2023 and an additional 55 percent reduction by 2031. Both renewable and zero emitting power generation There has been a long-standing compliance problem with rich burn IC engines in the basin and evidence indicates that many of these devices are operating with NO_x and/or CO emissions above levels required in their permits. technologies that make up a microgrid can provide a well-to-wheel zero emission pathway for transporting goods movement. Projects could potentially reduce a significant class of NO_x 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.~~

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 PM_{2.5}.

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.

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-NOx 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 NOx. 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, NOx, 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 NOx 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 NOx emissions inventory in the Basin. In order to meet the 2023 and 2031 ozone standards, NOx 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 NOx 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 NOx regulation, multiple lower NOx 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 NOx 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 NOx 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_x in 2004 to 0.2 g/bhp-hr NO_x 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_x. 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.

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_x and PM emissions in the basin in addition to reducing toxic air contaminants.

Appendix A

South Coast AQMD Advisory Groups

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Technology Advancement Advisory Group¹

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

¹ Members as of February 14, 2020

SB 98 Clean Fuels Advisory Group²

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

² 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 Nexo	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 \$
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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 Nexo, 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 (CO₂).

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

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

the South Coast AQMD for 2019 membership. This contract was completed on schedule.

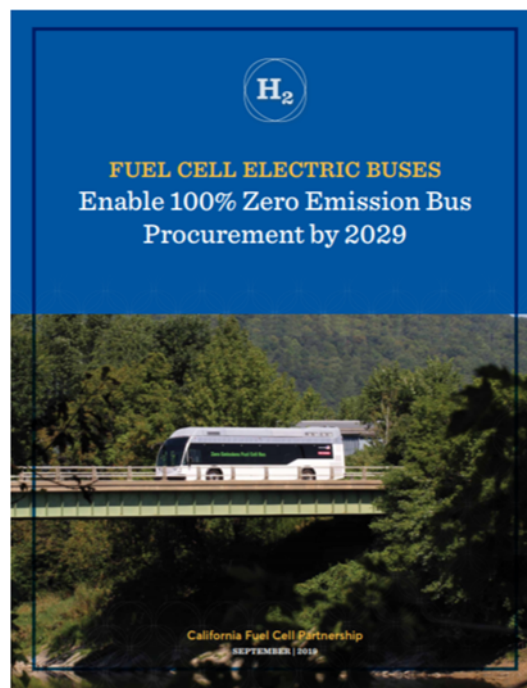


Figure 1: CaFCP released its second fuel cell electric bus road, calling for 11 essential actions and setting new industry targets.

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 (CO₂).

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_x 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 CO₂. 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.

CO₂ 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.

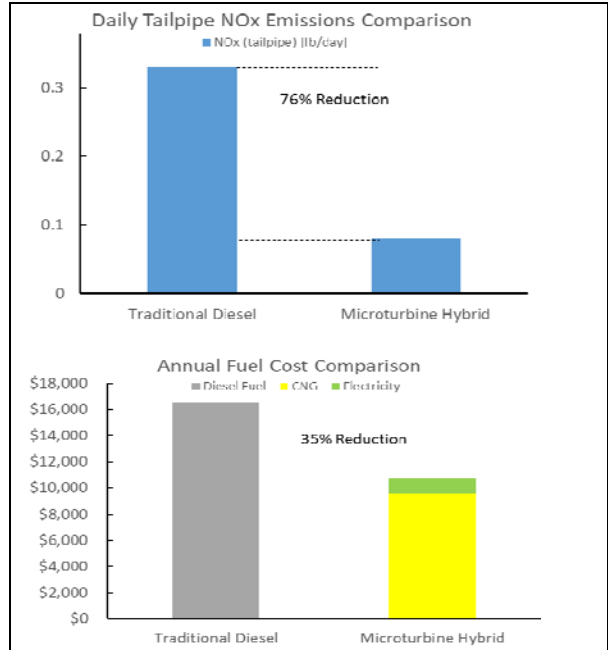


Figure 2: NOx Tailpipe and Fuel-Cost Comparisons

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.

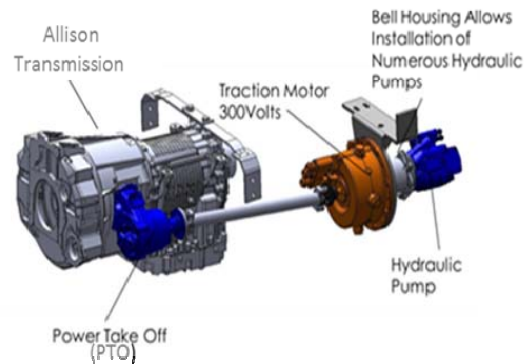


Figure 1: Odyne PHEV Powertrain

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

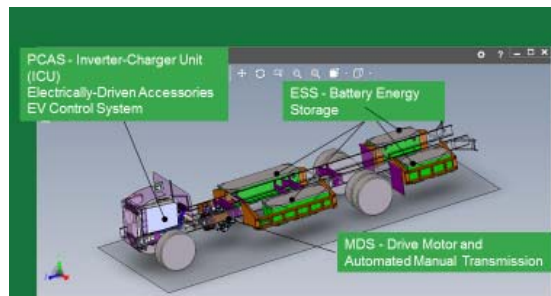


Figure 1: Electric School Bus Design Concept

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.

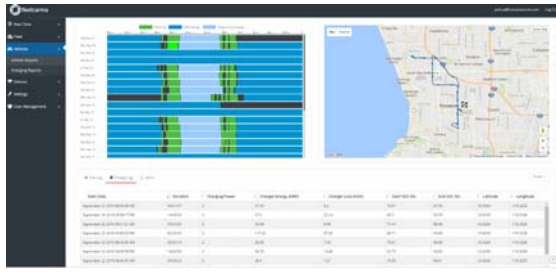


Figure 2: Fleet Carma Data from Recent Operation of V2G School Bus in Service at TUSD. Horizontal bar chart shows green for morning & afternoon driving in service, light blue is mid-day charge, dark blue is overnight charge.

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, 2018¹). 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 _{2.5}	6,242	\$54.3B
Ozone	179	\$1.6B
Total	6,421	\$55.9B

Table 1: Pathways Model. CEC Publication Number CEC-500-2018-012

¹ 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.

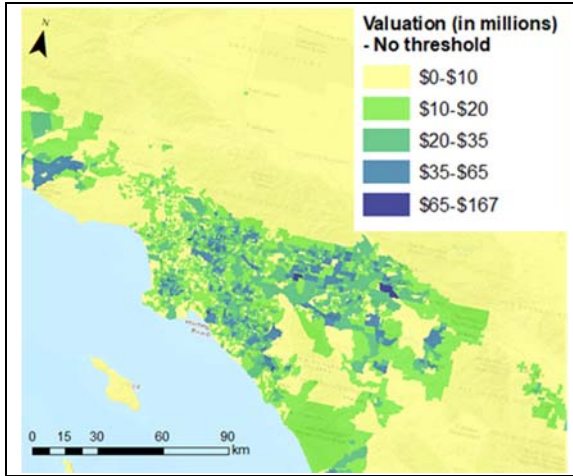


Figure 1: Monetized Health Benefits of Electrification within South Coast Basin by Census Tract

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_{2.5} would be reduced by 2 µg/m³ and up to 14 2 µg/m³ 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.

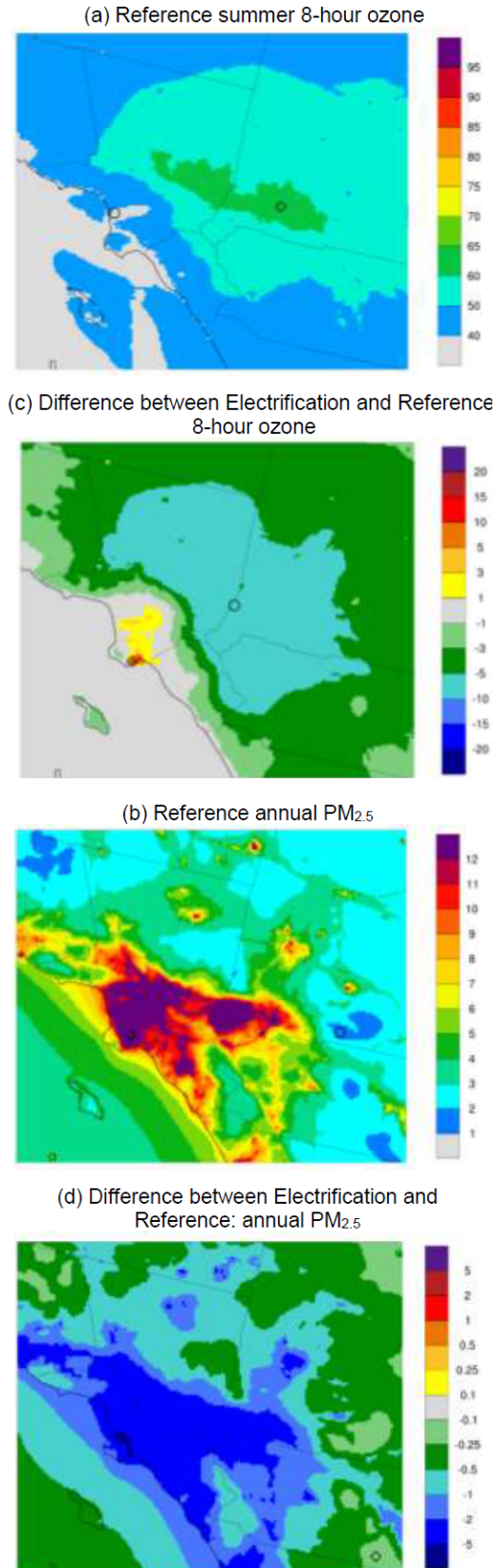


Figure 2: Electrification Effects for Summer Max Daily Average 8-Hour Ozone and Max Annual PM_{2.5}

SCAQMD Contract #16076

November 2019

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

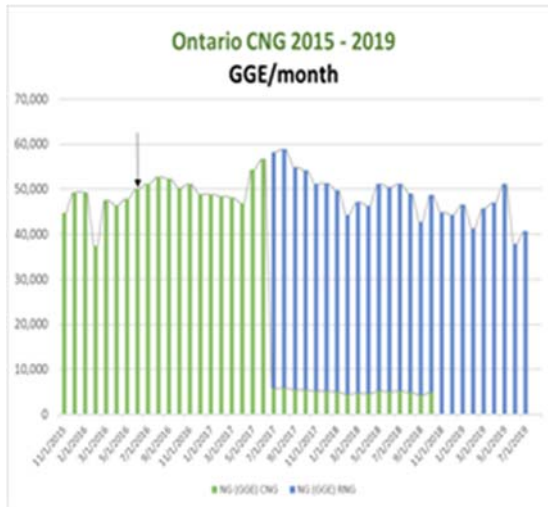
Results

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 CO₂eqv 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 ₂ eqv (g/GGE)	10,785	10,951	1,637	20,099
CO ₂ 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

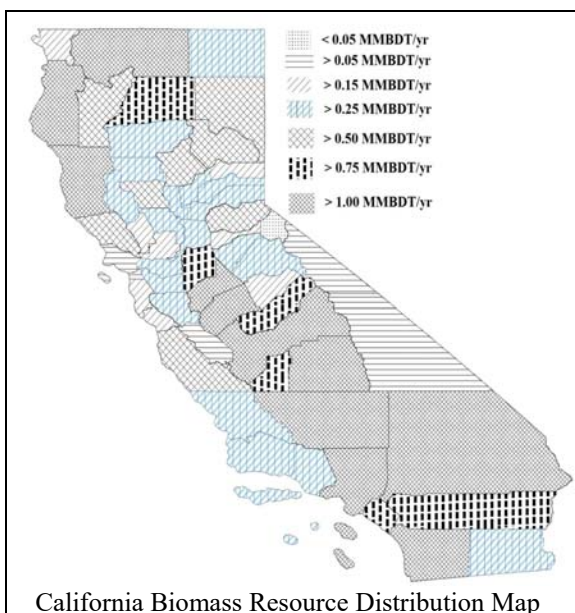
RNG production potential in California through thermochemical conversion was evaluated by assessing technical biomass availability in the state. Biomass feedstocks are defined broadly and include most carbonaceous matter including waste. The types of waste biomass available in the state are classified 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 CO₂, and the air pollutants, particulate matter (PM) and NO_x. The objective of this project is to develop an intelligent transportation system to reduce the impact of heavy-duty truck NO_x emissions on air quality and public health, and to quantify the potential NO_x 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_x 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_x-minimizing routing algorithms was evaluated and their potential for NO_x emission savings was estimated. The in-field testing shows NO_x savings of at least a 17% for the low NO_x routes. Although this result is difficult to extrapolate to a larger scope, it implies the potential for significant NO_x 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_x 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_x 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_x 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.

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.

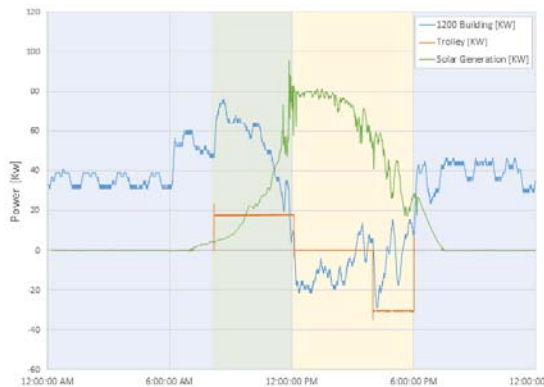
The system performance evaluation includes emissions, energy efficiency, operation and maintenance requirements, overall environmental impacts, and performance tradeoffs. The 10 year PEV project lifetime reduction utilizing the efficiency gains achieved through optimized PEV charging will reduce 36,790 kWh of electrical generation which is approximately 19.5 tons of CO₂ equivalent greenhouse gases.

	Grid Power (CAMX Mix)	Solar PV Generation
GHGs (gCO ₂ 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_x) 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_x 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_x 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.

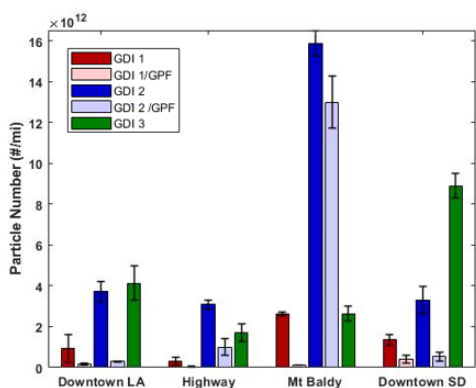


Figure 2: Particulate Number emissions measured on-road in 4 routes.

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 NO2 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.

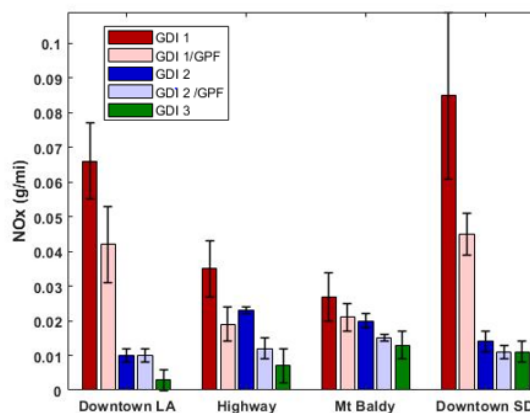


Figure 3: NoX measured on-road in 4 routes.

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_x Demonstration program involved an examination of the feasibility of technologies to achieve a target tailpipe NO_x 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_x 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.

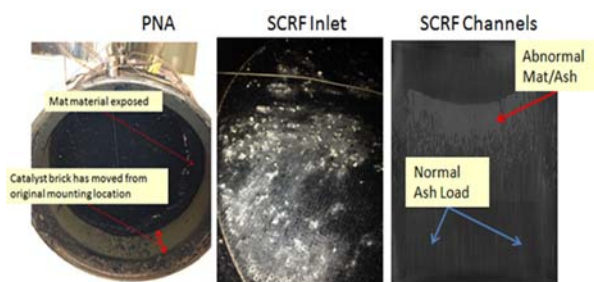


Figure 1. Illustration of Stage 1 Failure on PNA and Downstream SCRF

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_x emissions level.

Technology Description

The diesel demonstration platform was a 2014 Volvo MD13TC EU6 engine. The final configuration of the low NO_x aftertreatment system is shown in Figure 2.

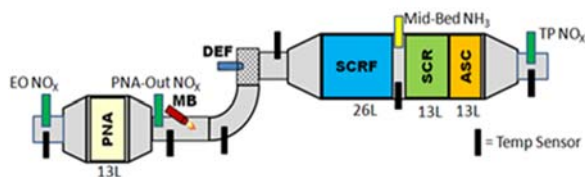


Figure 2. Final Stage 1 Low NO_x Aftertreatment System Configuration

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_x 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_x 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_x 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.

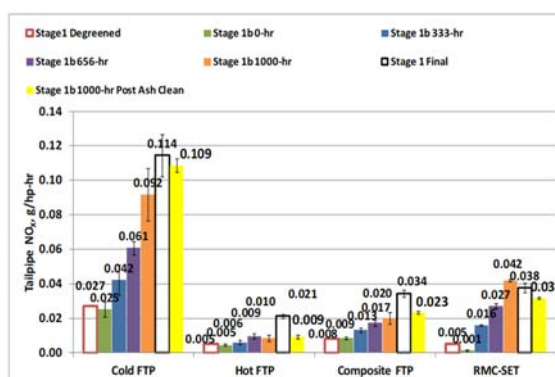


Figure 3. Final Results for Stage 1b Program (showing comparison to Stage 1 results)

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_x 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_x 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_x levels in a durable manner. The system proved to be capable of high NO_x 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_x 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_x 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_{2.5}, 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
Electric/Hybrid Technologies & Infrastructure									
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	-	-	-	●	●	●	●	●	●
Hydrogen & Fuel Cell Technologies & Infrastructure									
Heavy-Duty Trucks	●	●	●	○	●	●	●	●	●
Heavy-Duty Buses	●	●	●	○	●	●	●	●	●
Off-road – Locomotive/Marine	●	●	●	○	●	●	●	●	●
Light-Duty Vehicles	●	●	●	○	●	○	○	●	●
Infrastructure – Production, Dispensing, Certification	-	-	-	○	○	●	●	●	●
Engine Systems									
Ultra-Low emissions Heavy-Duty Engines	●	●	●	●	○	○	●	●	○
Alternative Fuel Medium- and Heavy-Duty Vehicles	●	●	●	●	●	●	●	●	○
Off-Road Applications	●	●	●	●	●	●	●	●	○
Fueling Infrastructure & Deployment									
Production of Renewable Natural Gas – Biowaste/Feedstock	●	●	●	●	●	●	●	●	●
Synthesis Gas to Renewable Natural Gas	●	●	●	●	●	●	●	○	○
Expansion of Infrastructure/Stations/Equipment/RNG Transition	●	●	●	●	●	●	●	●	○
Stationary Clean Fuel Technologies									
Low-Emission Stationary & Control Technologies	●	●	●	●	○	○	●	○	●
Renewable Fuels for Stationary Technologies	○	●	●	●	○	○	○	○	●
Vehicle-to-Grid or Vehicle-to-Building/Storage	●	●	●	○	○	●	○	●	●
Emission Control Technologies									
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 _x —brake specific NO _x	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 ₂ —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 ₃ —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 ₂ —nitrogen dioxide
Hz—Hertz	NO + NO ₂ —nitrous oxide
ICE—internal combustion engine	NOPA—Notice of Proposed Award
ICEV—internal combustion engine vehicle	NO _x —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 _{2.5} —particulate matter ≤ 2.5 microns
MPa—MegaPascal	PM ₁₀ —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
AQMD

South Coast
Air Quality
Management District

March 2020

Clean Fuels Program

2020 Draft Plan Update

Technology Advancement Office

Leading the way to zero and near-zero emission technologies



Background

2019 Annual Report and 2020 Plan Update

- Annual Report on Clean Fuels Program (HSC 40448.5.1)
- Technology Advancement Plan (Update) (HSC 40448.5)
- 2020 Plan Update (draft) submitted to Technology Committee October 18, 2019
- Annual public hearing to approve Annual Report and adopt (final) Plan Update
- Submit to Legislature by March 31 every year

Input and Feedback

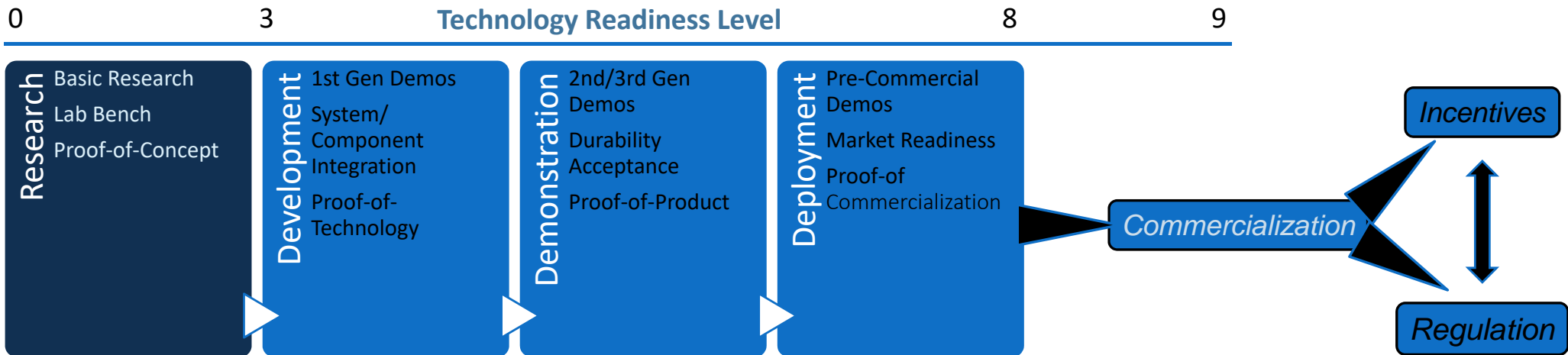
- Advisory group meetings
 - September 2019 and February 2020
 - Technology Advancement/Clean Fuels
 - Invited technical experts
- Meetings - agencies, industry groups, technology providers and other stakeholders
- Symposiums and conferences
 - ACT Expo (April 2019)
 - DOE Annual Merit Reviews (May & June 2019)
- Clean tech partnerships
 - VELOZ
 - California Fuel Cell Partnership
 - California Hydrogen Business Council



VELOZ



Clean Fuels Program - Overview



Clean Fuels Program-Core Technologies

- Hydrogen/Fuel Cell Technologies and Infrastructure
- Engine Systems/Technologies (ultra-low emission NG HDVs)
- Electric/Hybrid Technologies and Infrastructure
- Fueling Infrastructure and Deployment (NG/RNG)
- Stationary Clean Fuel Technologies
- Fuels/Emissions Studies
- Emission Control Technologies
- Health Impacts Studies
- Technology Assessment/Transfer and Outreach



2019 – Key Funding Partners

Total = \$19.9M

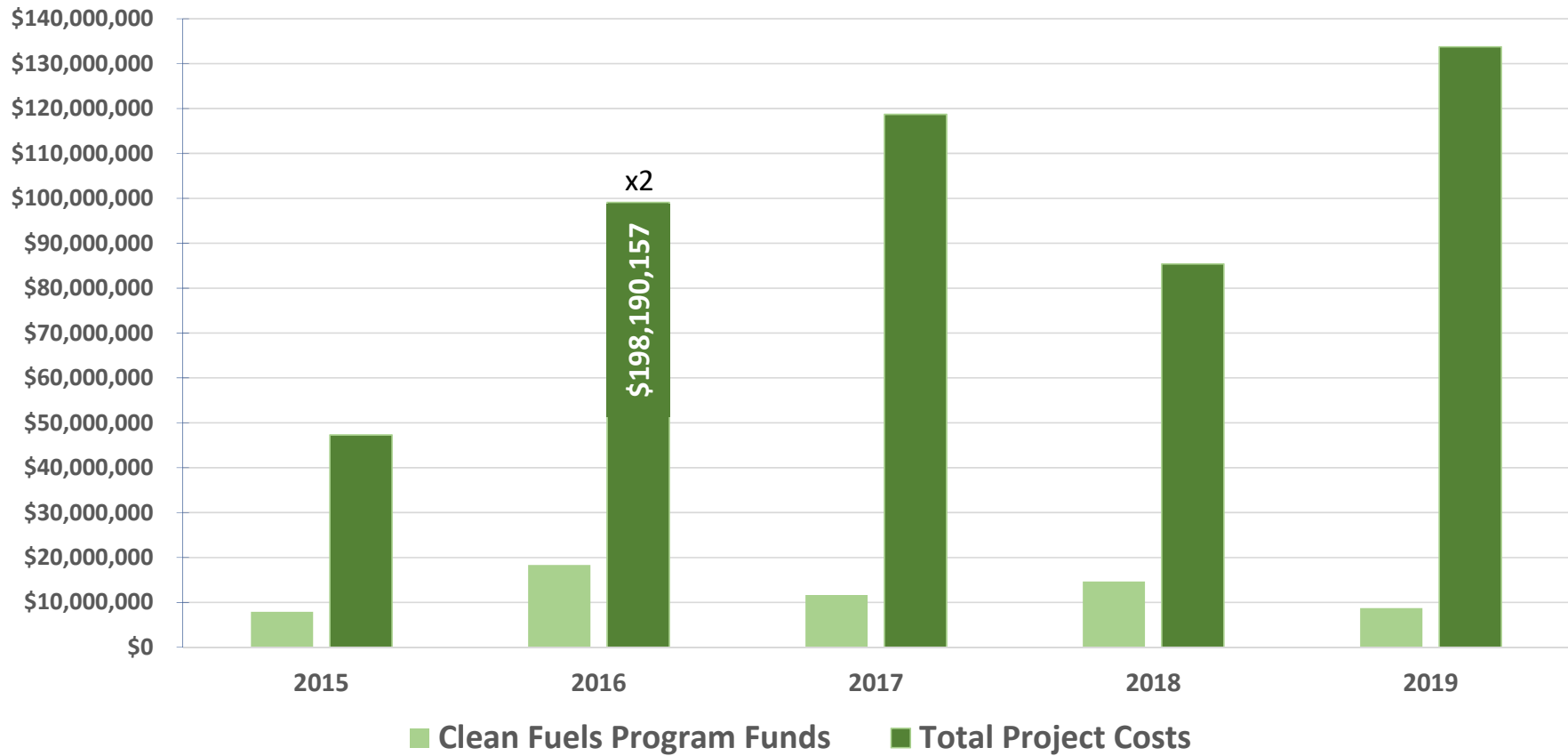


Targeted Airshed – CATI - DERA



Five-Year Snapshot of Clean Fuels Program Funding

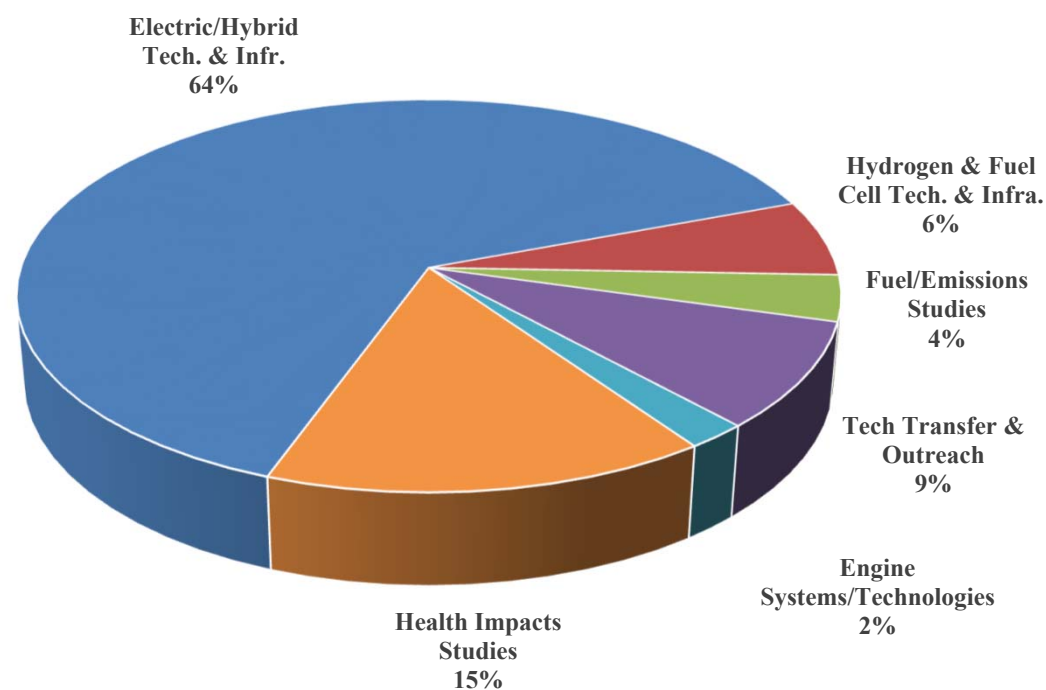
Clean Fuels Funding



CY 2019 Accomplishments

- 72 contracts executed or modified adding dollars
 - \$11.9M – total contract value
 - \$3.1 revenue recognized
 - \$134M – total project costs
 - \$1:\$14+ leveraging*
- 33 completed projects
 - 15 research, development, demonstration and deployment projects
 - 18 technology assessment and transfer/outreach projects

Distribution of Executed Contracts



*Historical cost leveraging is \$4 per every Clean Fuels \$1

2019 Key Contracts Executed

- Volvo LIGHTS
- Zero emission cargo handling vehicle demonstration
- Battery electric shuttle bus transportation
- Natural gas engine emissions and efficiency improvements
- Solid oxide fuel cell and gas turbine hybrid technology
- UCI hydrogen fueling station expansion
- UCR emission studies

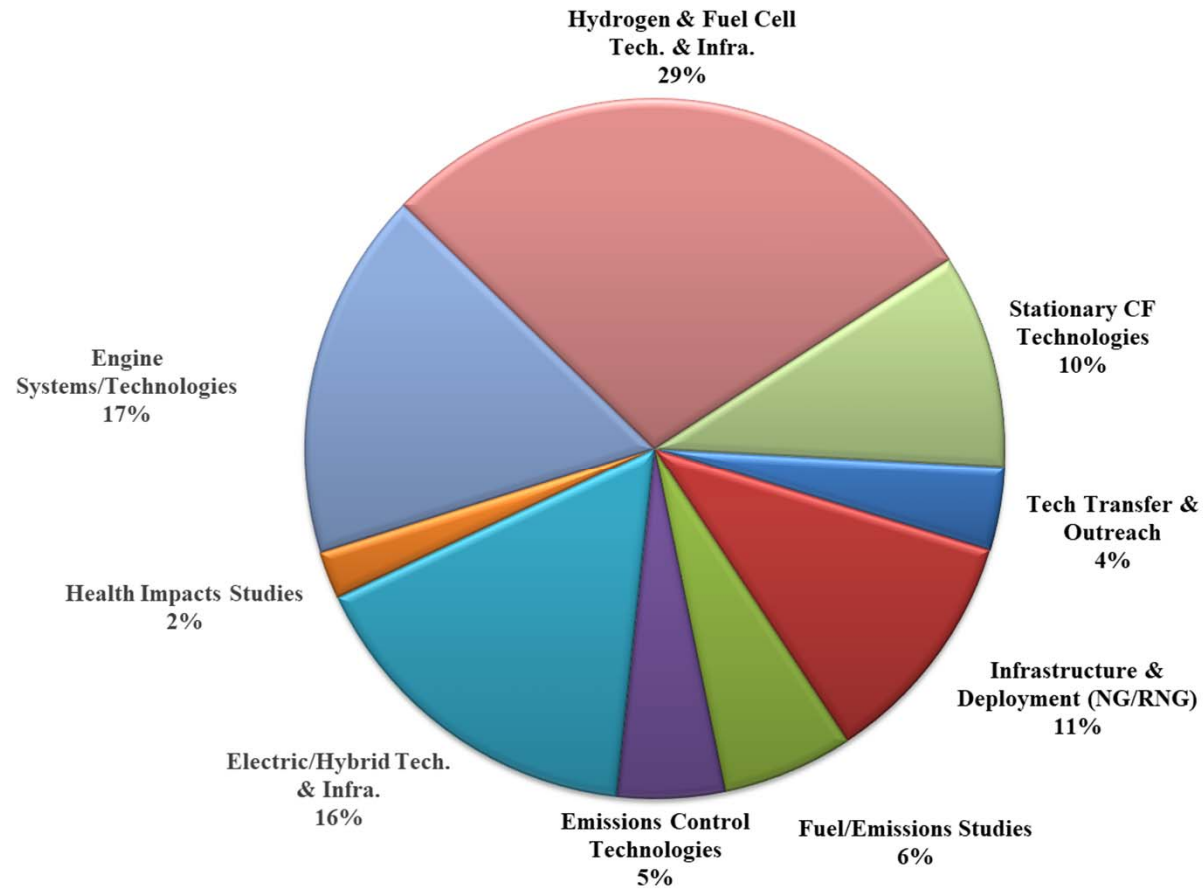


2019 Key Projects Completed

- Electric/hybrid technologies
 - Vehicle-to-grid technology development for school buses
 - Plug-in hybrid electric retrofit system Class 6-8 trucks
 - Electrification study for EJ communities
- Infrastructure & Deployment
 - Upgrade/expand NG stations including renewable natural gas
 - Support Renewable Natural Gas Center
- Emissions control technologies – develop aftertreatment systems for large diesel engines

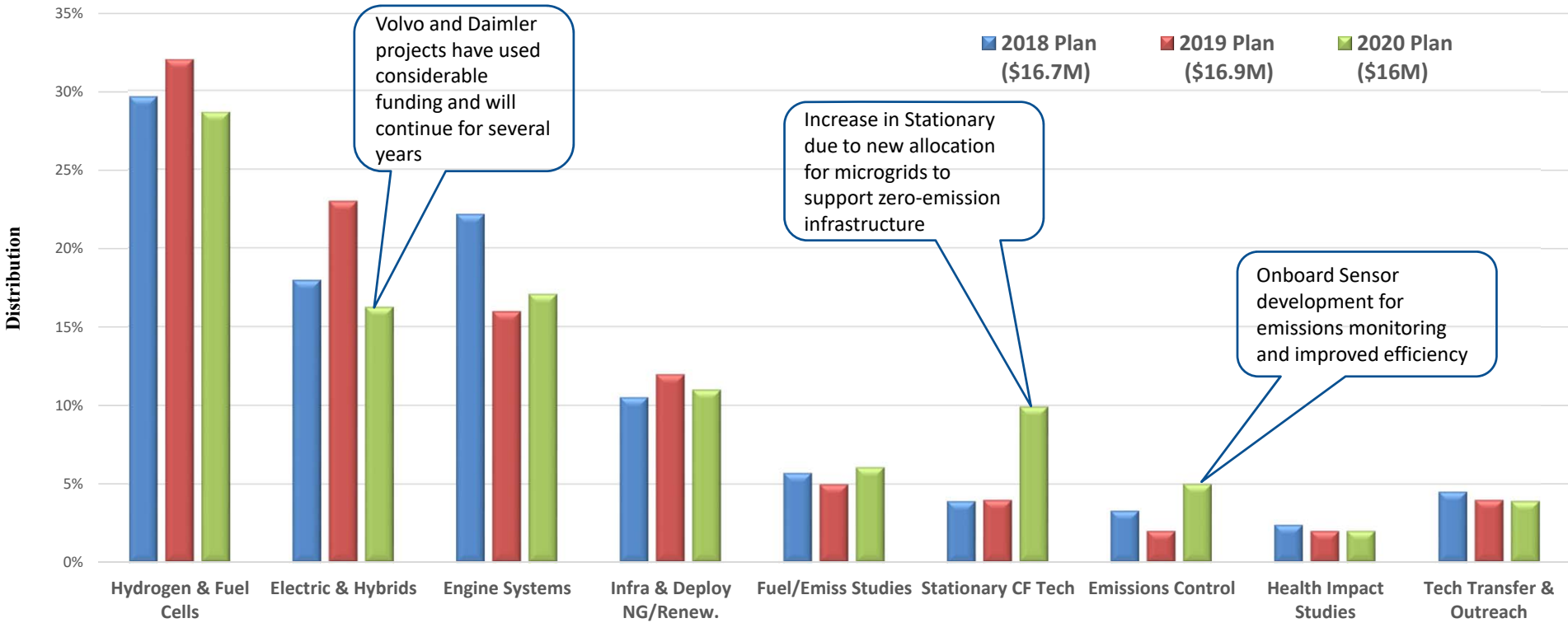


Proposed 2020 Plan Distribution



\$16.1M

Plan Update Comparison



Development Schedule

- Technology Committee October 18, 2019
(Draft 2020 Plan Update)
- Advisory Group Review September 19, 2019
February 6, 2020
- Technology Committee February 21, 2020
- Board Approval March 6, 2020
- Due to State Legislature March 31, 2020

New Advisory Group Members – for approval

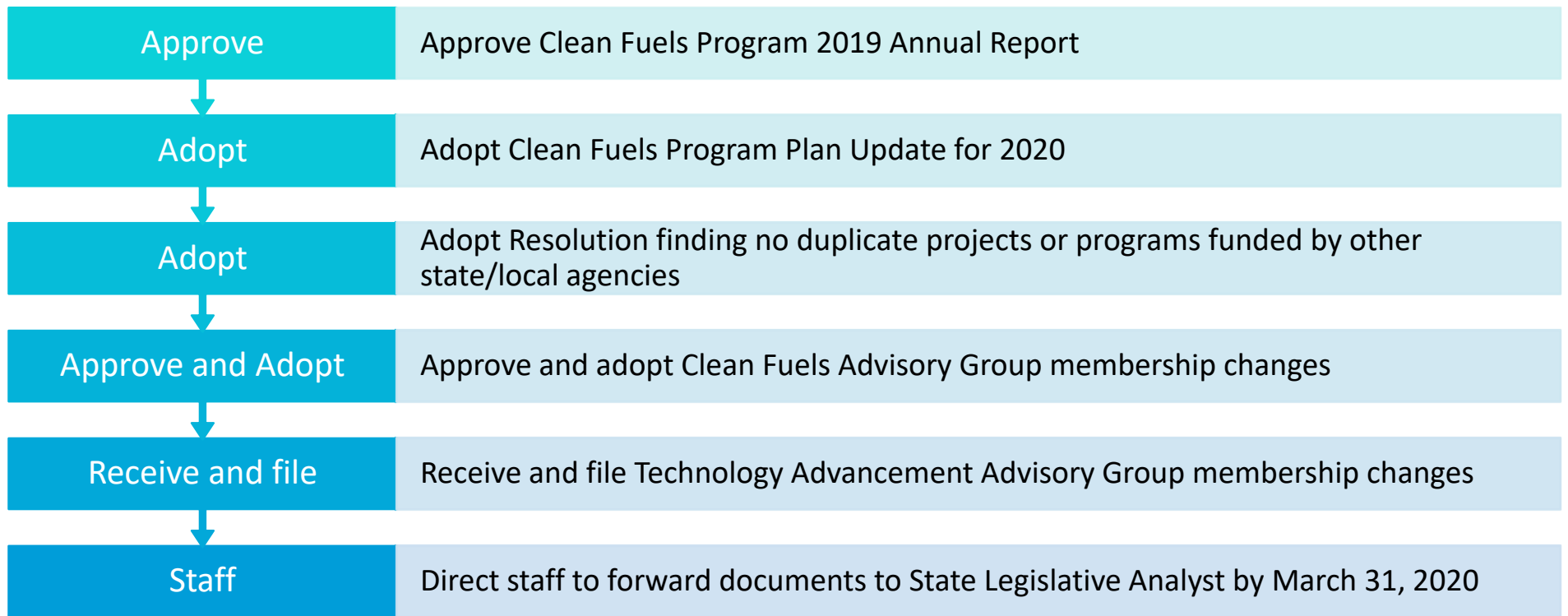
Clean Fuels Advisory Group (13 members in total):

- USC: Prof. Petros Ioannou, Ph.D.
- Honda Motors: Steve Ellis
- Independent Consultant in Combustion Technology: Dr. John Wall

Technology Advancement Advisory Group (14 members in total):

- UCI: Michael Kleinman
- TTSI: Vic La Rosa
- LADWP: George Payba

Recommended Actions



[↑ Back to Agenda](#)

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 NO_x and SO_x 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.

Wayne Natri
Executive Officer

AD:DO

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 NO_x and SO_x. 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 NO_x emissions in Compliance Year 2000. For that year, NO_x emissions exceeded programmatic allocations (by 11%) primarily due to emissions from electric generating facilities during the California energy crisis. For Compliance Year 2018, audited NO_x emissions were 22% less than programmatic NO_x allocations and audited SO_x emissions were 14% less than programmatic SO_x 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 NO_x and SO_x 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 NO_x RECLAIM.

- Facility Compliance** – The vast majority of RECLAIM facilities complied with their allocations during the 2018 compliance year (94% of NO_x facilities and 97% of SO_x facilities). Sixteen facilities (less than six percent of total facilities) exceeded their allocations (15 facilities exceeded their NO_x allocations, and one facility exceeded their SO_x allocations) during Compliance Year 2018. The 15 facilities that exceeded their NO_x allocations had total NO_x 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_x universe allocations and 6.7% of total NO_x emissions from the 15 facilities. The one SO_x facility that exceeded its SO_x allocation had total SO_x 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_x universe allocations and 58.0% of total SO_x 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_x and SO_x RTCs for Compliance Years 2018, 2019, and 2020 and IYB NO_x and SO_x 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 Nastri

Deputy Executive Officer

Engineering & Permitting

Amir Dejbakhsh

Assistant Deputy Executive Officer

Engineering & Permitting

Jason Aspell

Senior Air Quality Engineering Manager

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Barbara Baird, Chief Deputy Counsel
William Wong, Principal Deputy District Counsel

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

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Speaker of the Assembly
Appointee

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Council Member, Wildomar
Cities of Riverside County

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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

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

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 SO_x RTCs during Compliance Year 2018. Therefore, RECLAIM more than complied with the federally-required SO_x offset ratio and further quantification of the SO_x offset ratio is unnecessary. Also, the NNI is satisfied by the program's 1-to1 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%) NO_x RECLAIM facilities complied with their NO_x allocations, and 31 of the 32 SO_x facilities (97%) complied with their SO_x allocations based on South Coast AQMD audit results. So, sixteen facilities exceeded their allocations (15 facilities exceeded their NO_x allocations, and one facility exceeded its SO_x allocation). The 15 facilities that exceeded their NO_x allocations had aggregate NO_x 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_x allocations had total SO_x emissions of 0.50 tons and did not have adequate allocations to offset 0.29 tons (or 58.0%). The NO_x and SO_x exceedance amounts are relatively small compared to the overall NO_x and SO_x allocations for Compliance Year 2018 (0.35% of total NO_x allocations and 0.01% of total SO_x allocations). The exceedances from these facilities did not impact the overall RECLAIM emission reduction goals. The overall RECLAIM NO_x and SO_x 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_x emissions decreased (7.0%) relative to Compliance Year 2017, but Compliance Year 2018 SO_x emissions were 4.5% greater than the previous year. Quarterly calendar year 2018 NO_x emissions fluctuated within four percent of the mean NO_x emissions for the year. Quarterly calendar year 2018 SO_x emissions fluctuated within thirteen percent of the year's mean SO_x 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_x or SO_x emission increases are required to be equipped with BACT, which minimizes to the extent feasible the increase of NO_x and SO_x 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

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

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_x and/or SO_x emissions from permitted sources above the four ton per year threshold; or
- It ceases to be categorically excluded and its reported NO_x and/or SO_x 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_x Reductions from RECLAIM Assessment to achieve an additional five tons per day NO_x 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_x) and Oxides of Sulfur (SO_x), to initiate the transition of the NO_x and SO_x 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_x and SO_x 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_x-only, no SO_x-only, and 30 both NO_x and SO_x 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_x and SO_x 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_x 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_x 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 NOx 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.

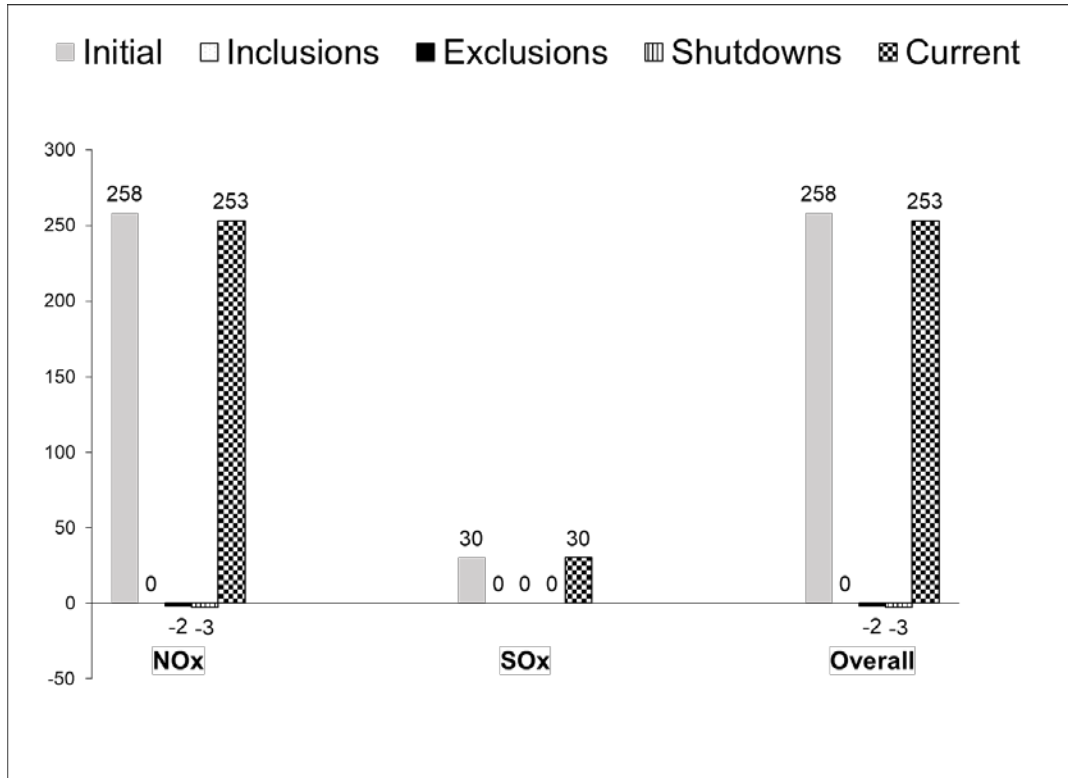
The above-mentioned changes to the RECLAIM universe resulted in a net decrease of five facilities in the RECLAIM universe during Compliance Year 2018. Table 1-1 summarizes overall changes in the RECLAIM universe between the start of the program and end of Compliance Year 2018 (December 31, 2018 for Cycle 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**

	NOx Facilities	SOx Facilities	Total* Facilities
Universe – October 15, 1993 (Start of Program)	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
Universe – June 30, 2018	258	30	258
Inclusions – Compliance Year 2018	0	0	0
Exclusions – Compliance Year 2018	-2	0	-2
Shutdowns – Compliance Year 2018	-3	0	-3
Universe – End of Compliance Year 2018	253	30	253

* “Total Facilities” is not the sum of NOx and SOx facilities due to the overlap of some facilities being in both the NOx and SOx universes.

Figure 1-1
Universe Changes in Compliance Year 2018



CHAPTER 2

RTC ALLOCATIONS AND TRADING

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 qualified¹ 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

¹ 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 facilities², 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

² 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 NO_x or SO_x 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 RTCs³. No additional facilities were excluded during Compliance Year 2018. Therefore, there were no changes to the NO_x or SO_x 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 NO_x or SO_x 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 NO_x 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 NO_x RTC Allocations was required pursuant to Rule 2002(i)(3) because all of the facility's NO_x sources were permitted with BARCT-equivalent emission limits. Therefore, there were no changes to the NO_x RTC supplies in Compliance Year 2018 due to facility shutdowns.

³ 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_x and 42.3 tons of SO_x for Compliance Year 1999, 101.8 tons of NO_x and 41.4 tons of SO_x for Compliance Year 2000, and 98.4 tons of NO_x and 40.2 tons of SO_x 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_x allocations, the NO_x 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_x RTCs (0.09% of total NO_x allocation for Compliance Year 2018) and 0.06 tons of SO_x RTCs (0.002% of total SO_x 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 accordingly⁴. 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

⁴ 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
Net change	7.9	0.06

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.

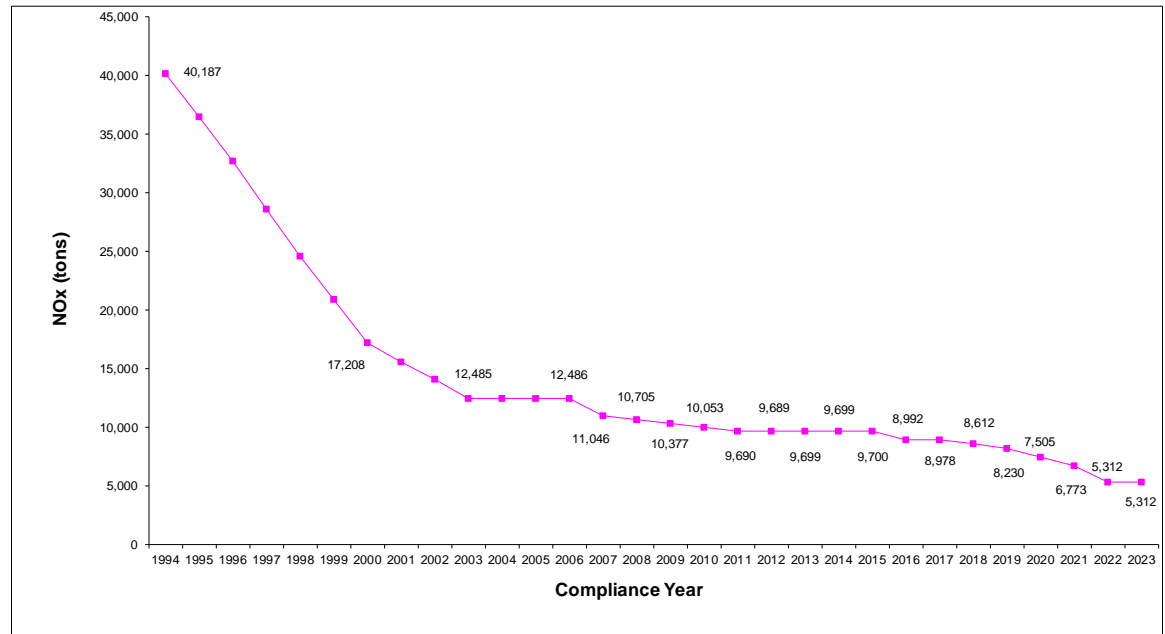
On November 5, 2010, the Governing Board adopted changes to the RECLAIM program implementing the 2007 AQMP Control Measure CMB-02 – Further SOx Reductions for RECLAIM (SOx). These amendments resulted in a

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.

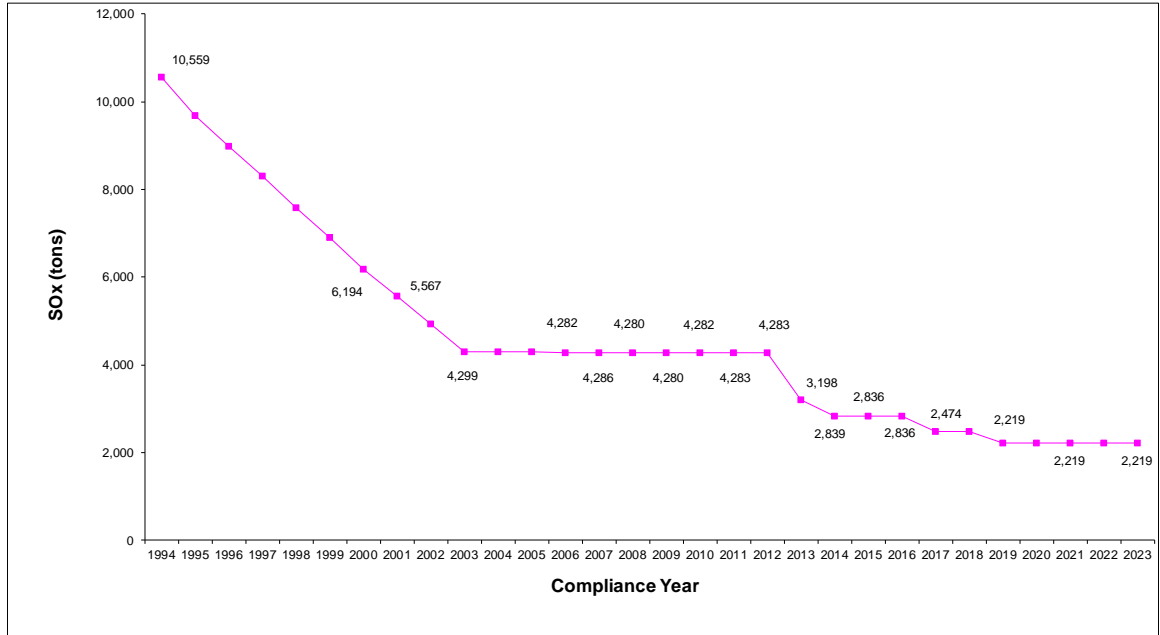
Similarly, the 2012 AQMP adopted by the Governing Board in 2012, included Control Measure CMB-01- Further NOx Reductions for RECLAIM that identified a new group of RECLAIM NOx emitting equipment that should be reviewed for new BARCT. The rulemaking process for the amendment to the NOx RECLAIM program 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 thresholds⁵ 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.

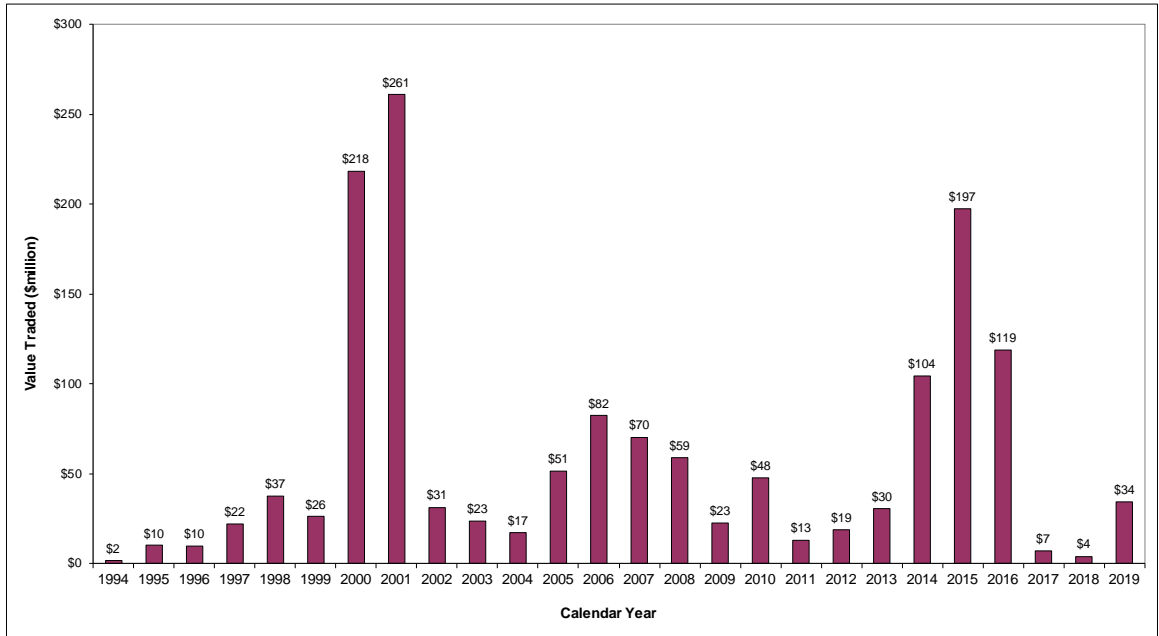
⁵ These program review thresholds were adjusted using the August 2019 Consumer Price Index (CPI), due to the unavailability of the December 2019 CPI by the end of January 2020 when this report was compiled.

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.

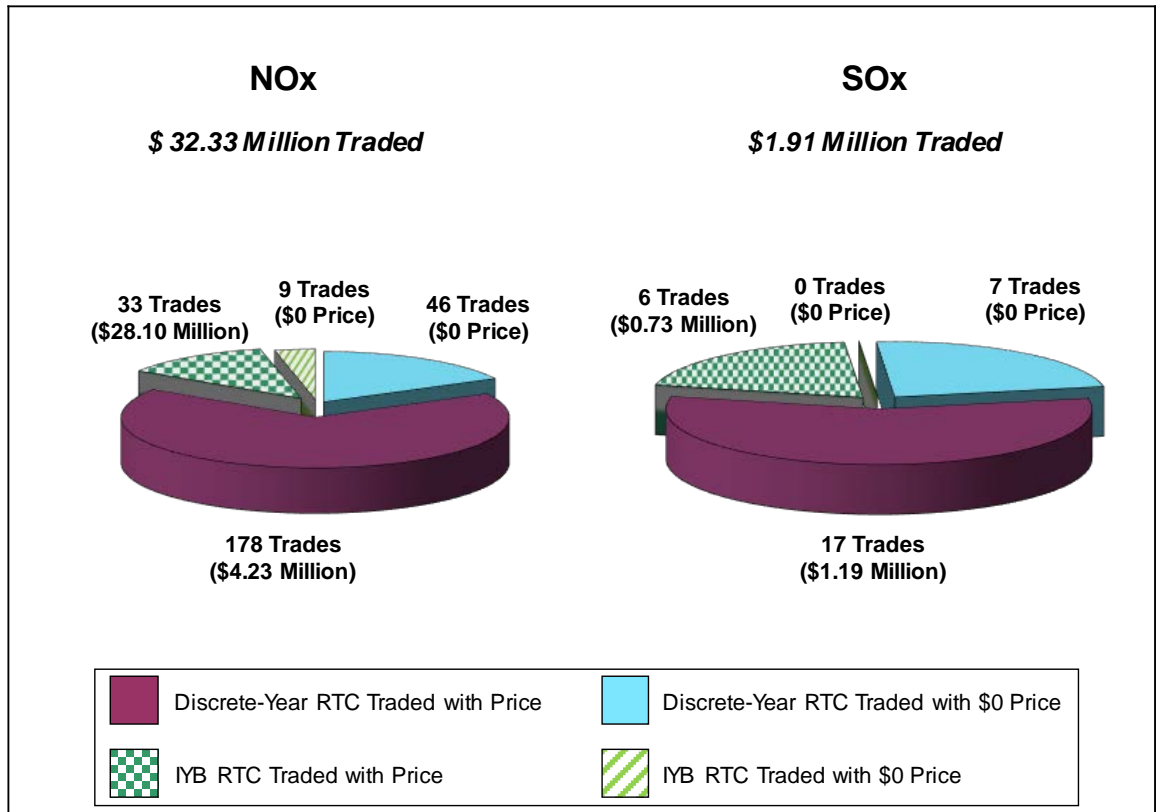
Table 2-4
Volume of Discrete-Year RTCs Traded in Calendar Years 2019 and 2018, Excluding Swaps (tons)

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

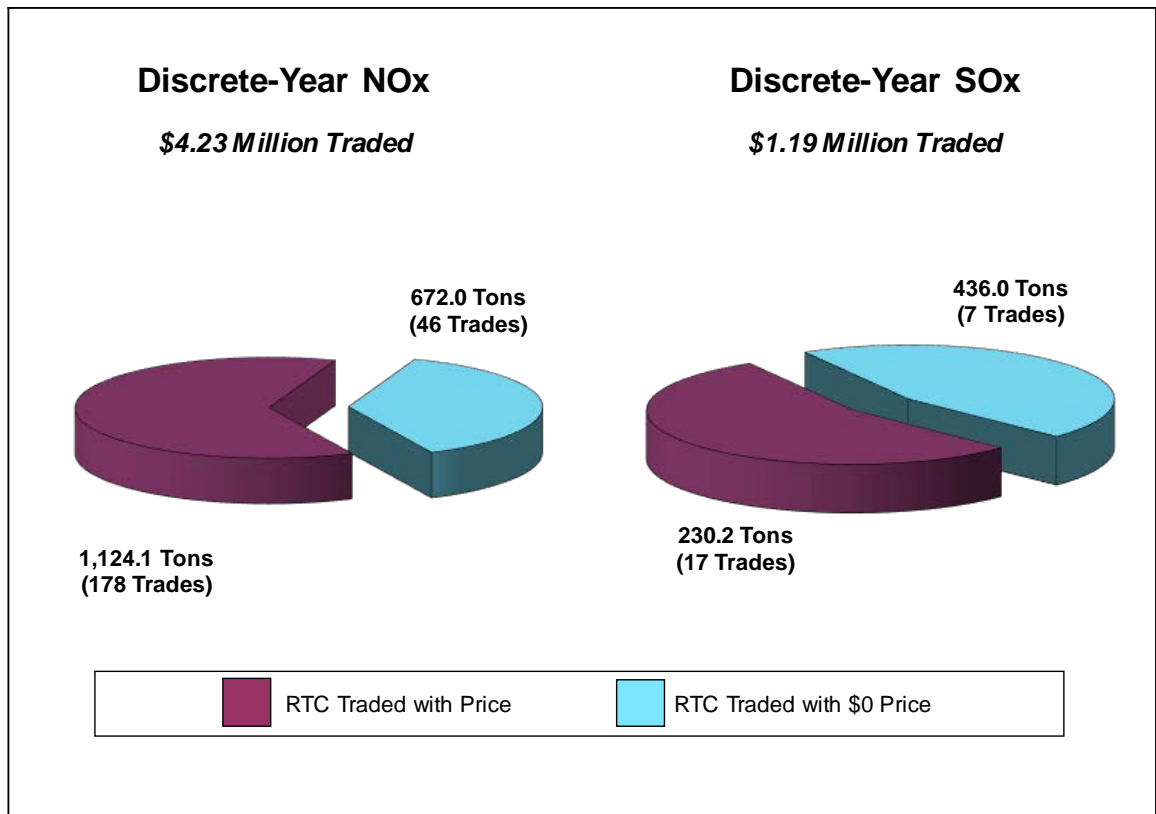
In calendar year 2019, the overall quantities of discrete-year NOx RTCs traded decreased compared to calendar year 2018, while the quantities of discrete-year SOx RTCs traded increased. Table 2-8 compares the volume of NOx and SOx RTCs traded in calendar years 2019 and 2018, excluding swap trades. Figure

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)

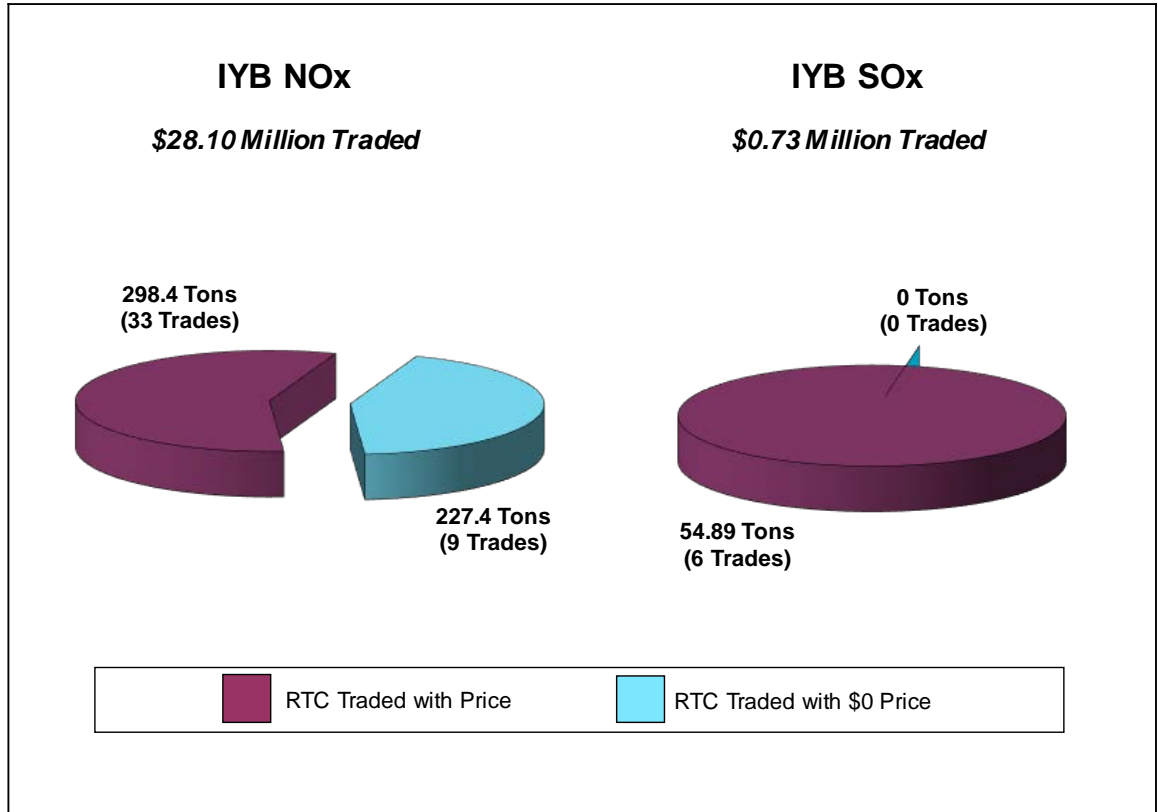
RTC	2019	2018
NOx	\$28.10	\$0.52
SOx	\$0.73	\$0.09
Total	\$28.83	\$0.62

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)

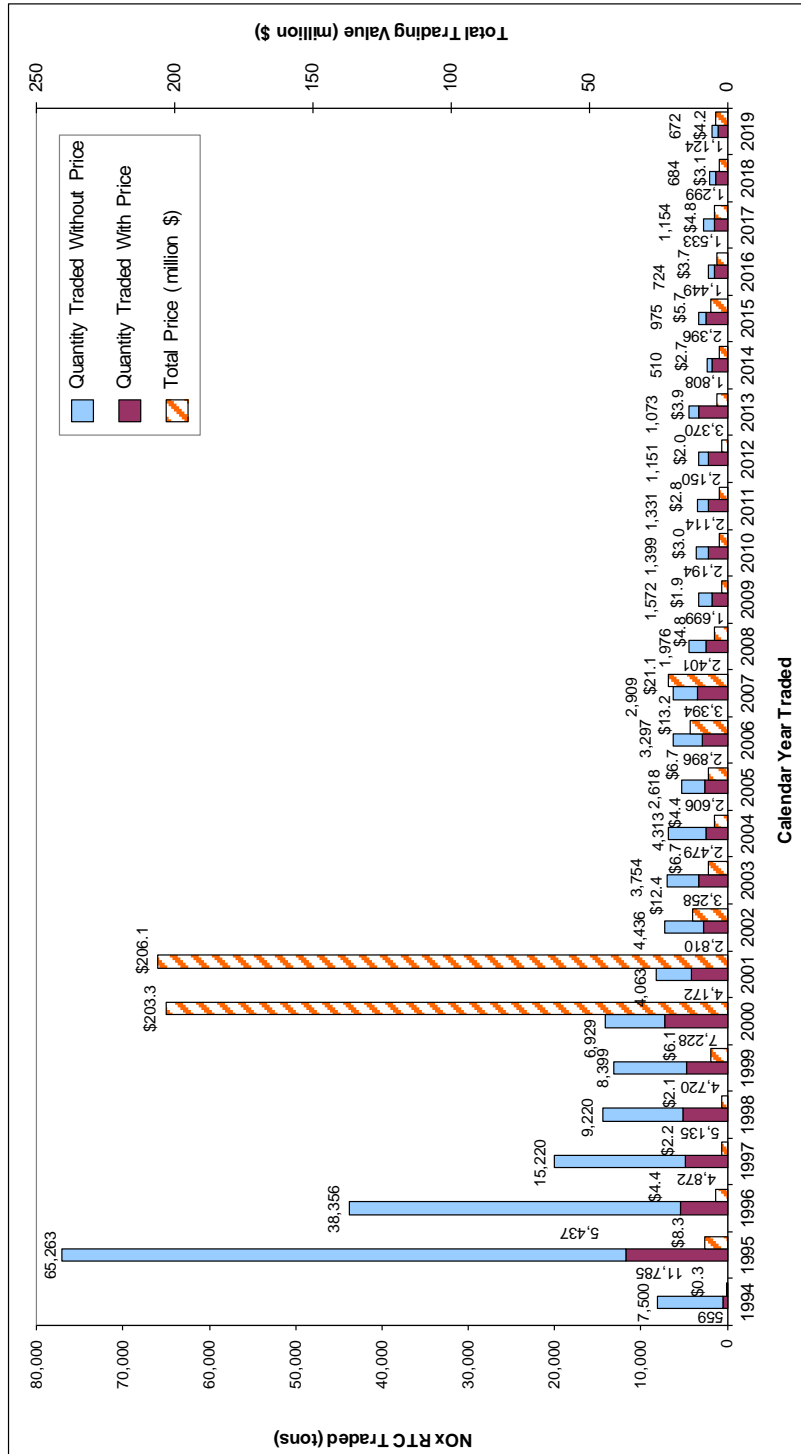
Year	RTC	With Price	With \$0 Price	Total
2019	NOx	298	227	526
	SOx	55	0	55
	Total	353	227	581
2018	NOx	40	168	208
	SOx	3	23	26
	Total	43	192	234

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)**

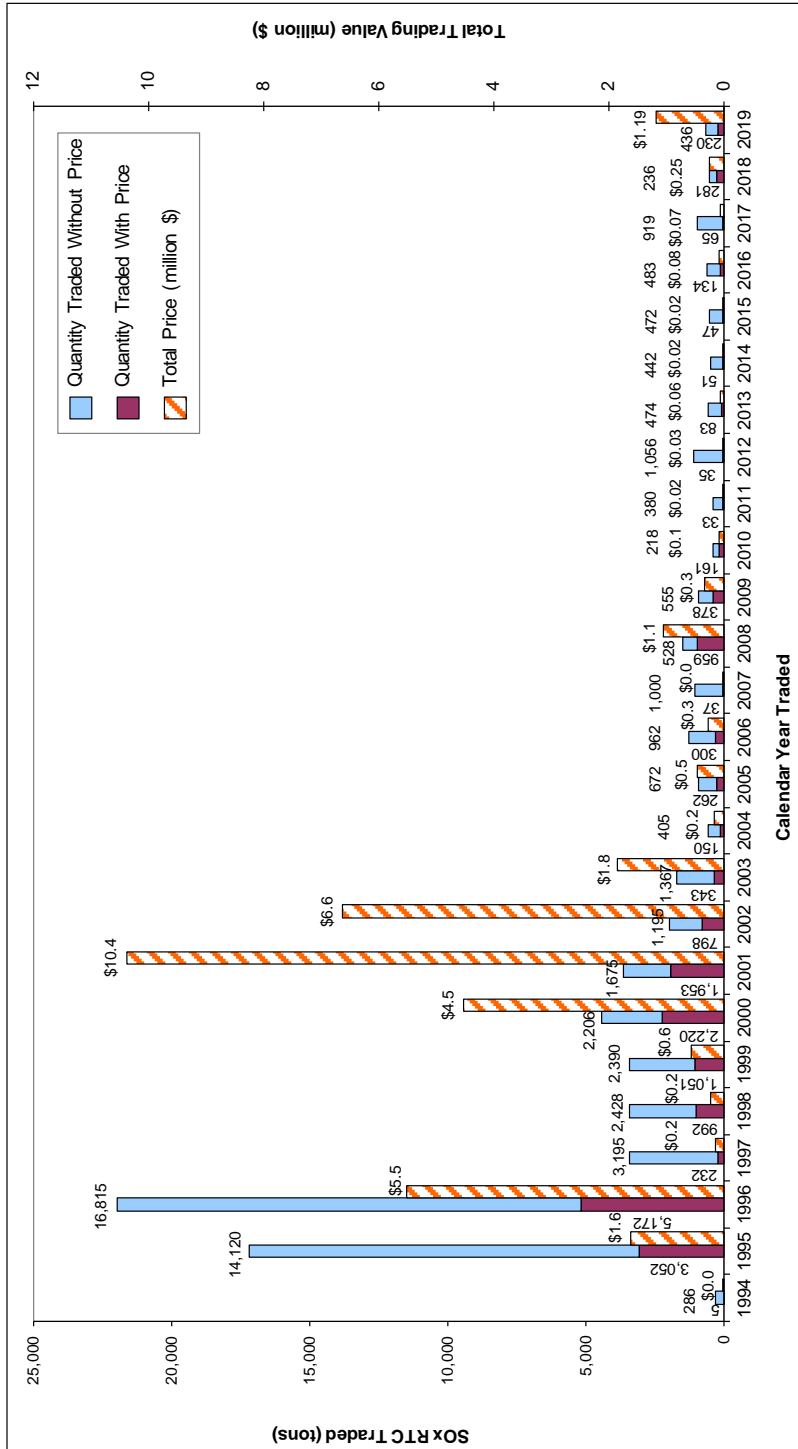


Figure 2-9
IYB NOx RTC Trades (Excluding Swaps)

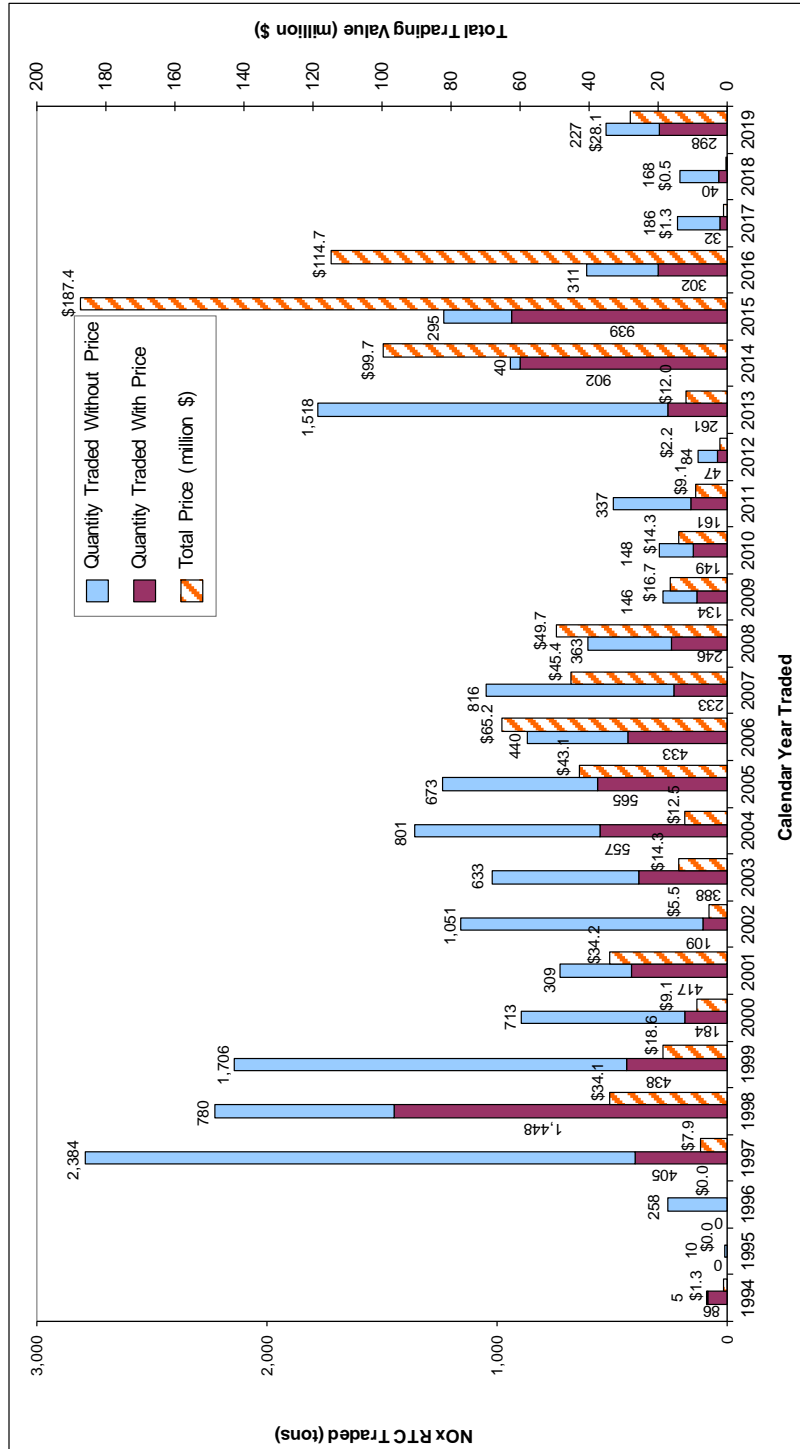
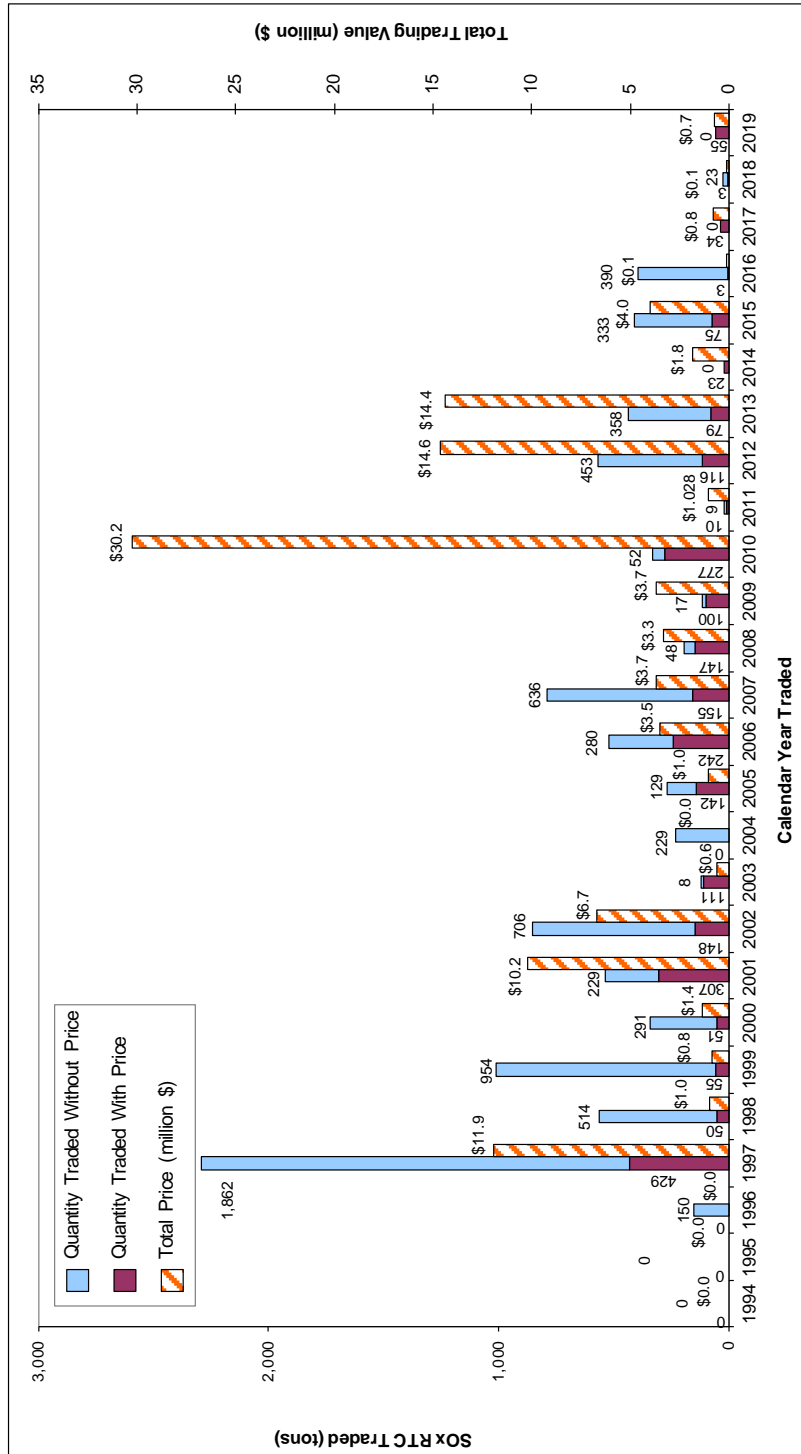


Figure 2-10
IYB SOx RTC Trades (Excluding Swaps)



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**

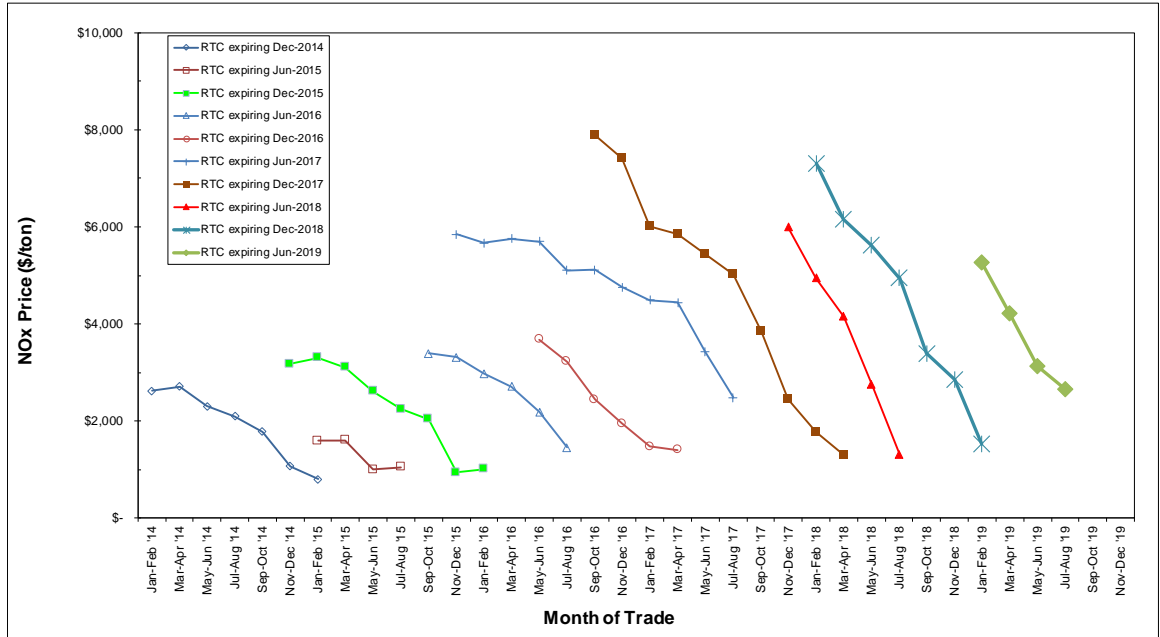
Reporting Month	12-Month Period	Average Price (\$/ton)
January 2019	January 2018 through December 2018	-
February 2019	February 2018 through January 2019	-
March 2019	March 2018 through February 2019	\$2,000
April 2019	April 2018 through March 2019	\$2,000
May 2019	May 2018 through April 2019	\$2,000
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.

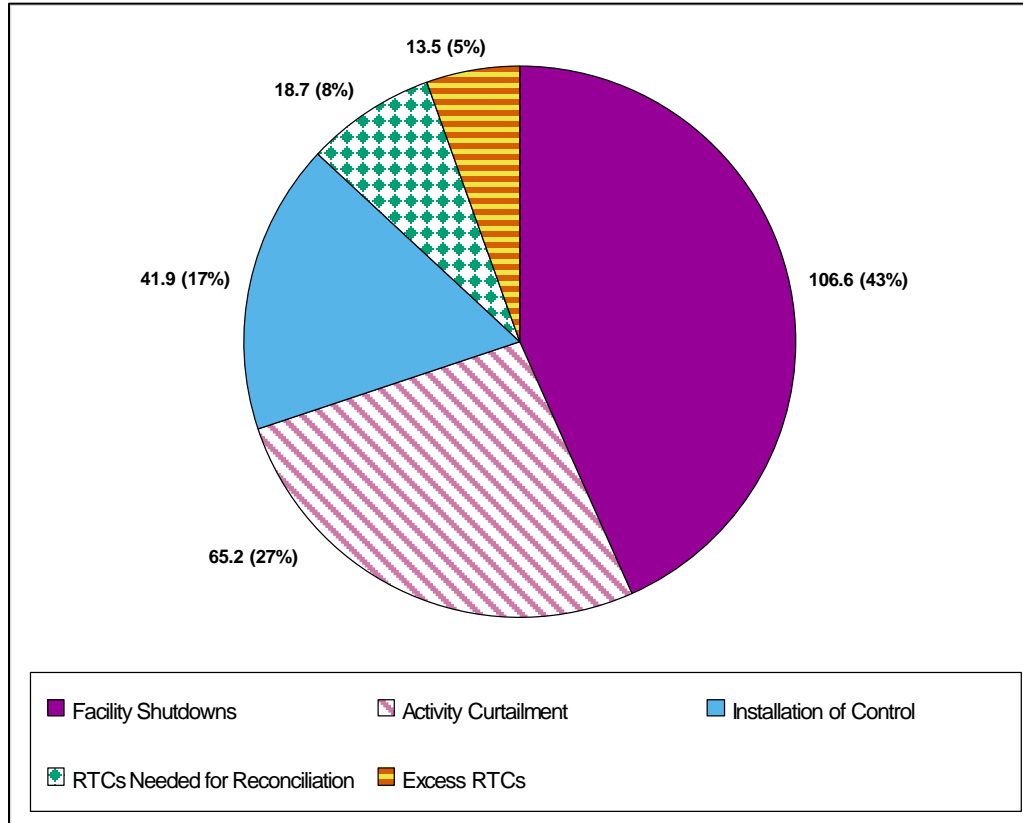
In subsequent working group meetings and discussion with USEPA, several issues were found in transitioning the New Source Review component of the program. Recent developments (see discussion on Program Amendments in Chapter 3) on RECLAIM transition have led to postponing the final transition of facilities 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 2018⁶. 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

⁶ 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

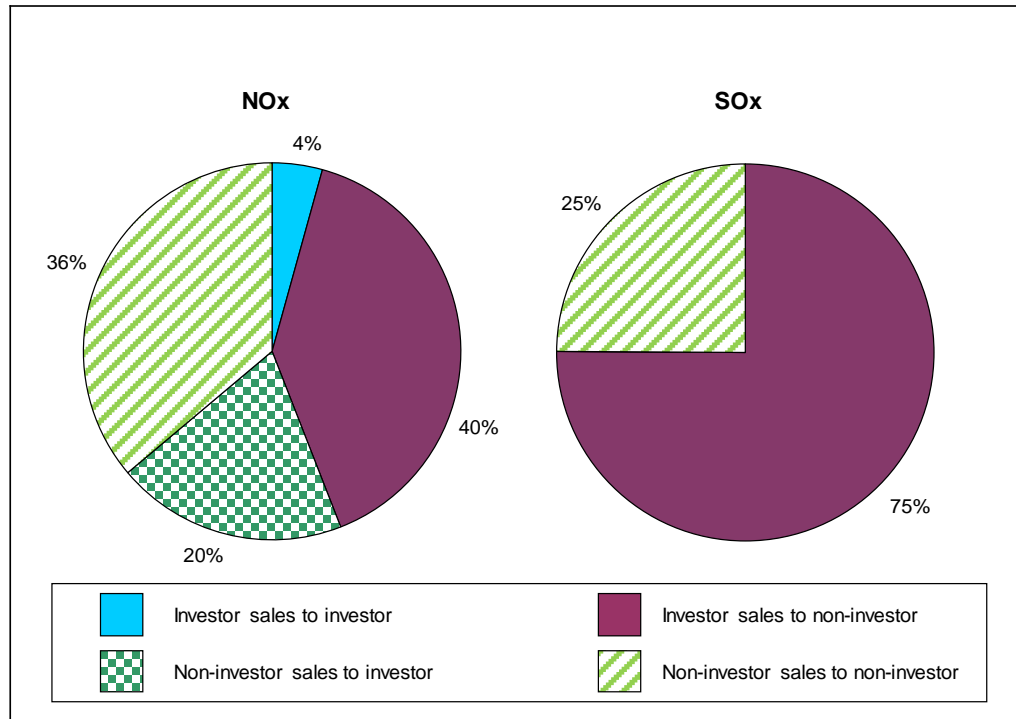


Figure 2-14
Calendar Year 2019 Investor-Involved Discrete-Year NOx and SOx Trades Based on Volume Traded with Price

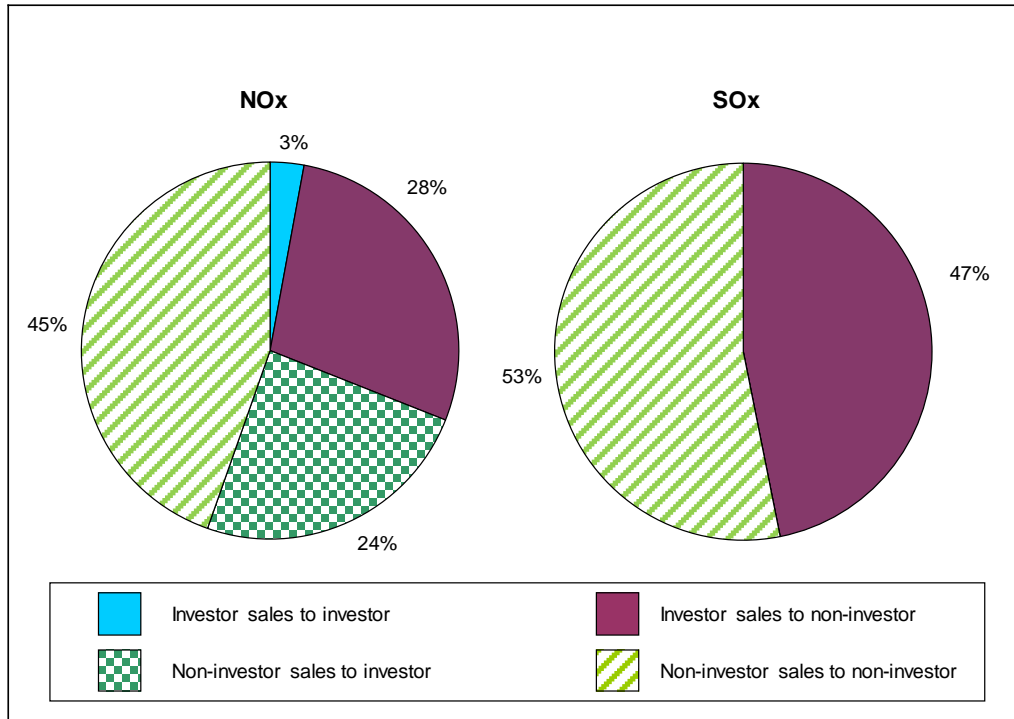


Figure 2-15
Calendar Year 2019 Investor-Involved IYB NOx and SOx Trades Based on Value Traded

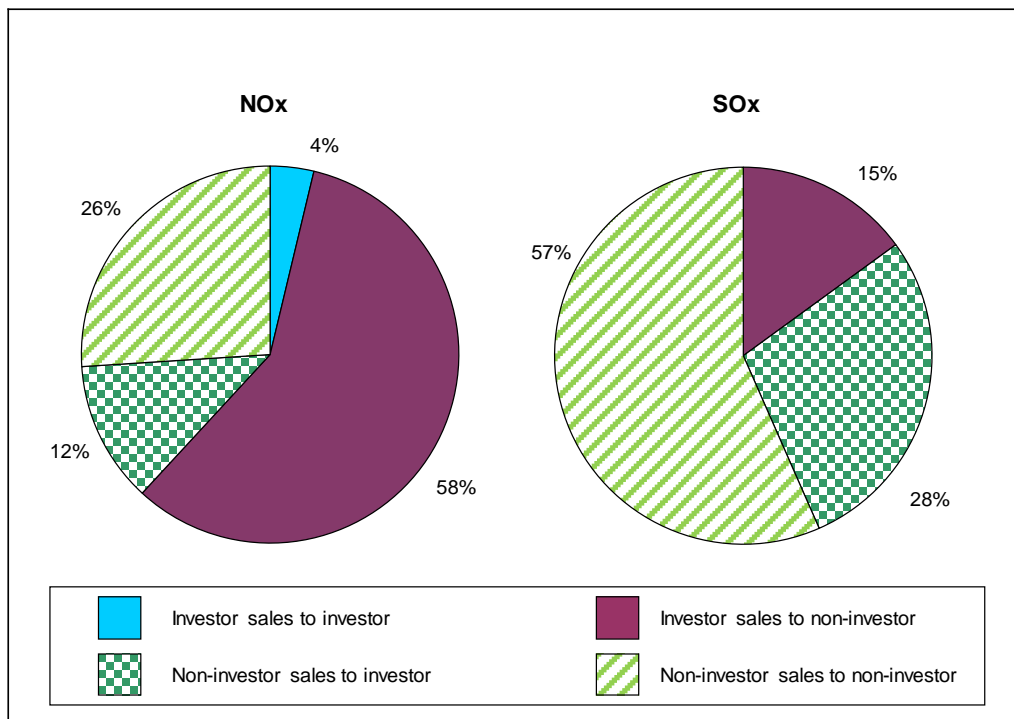
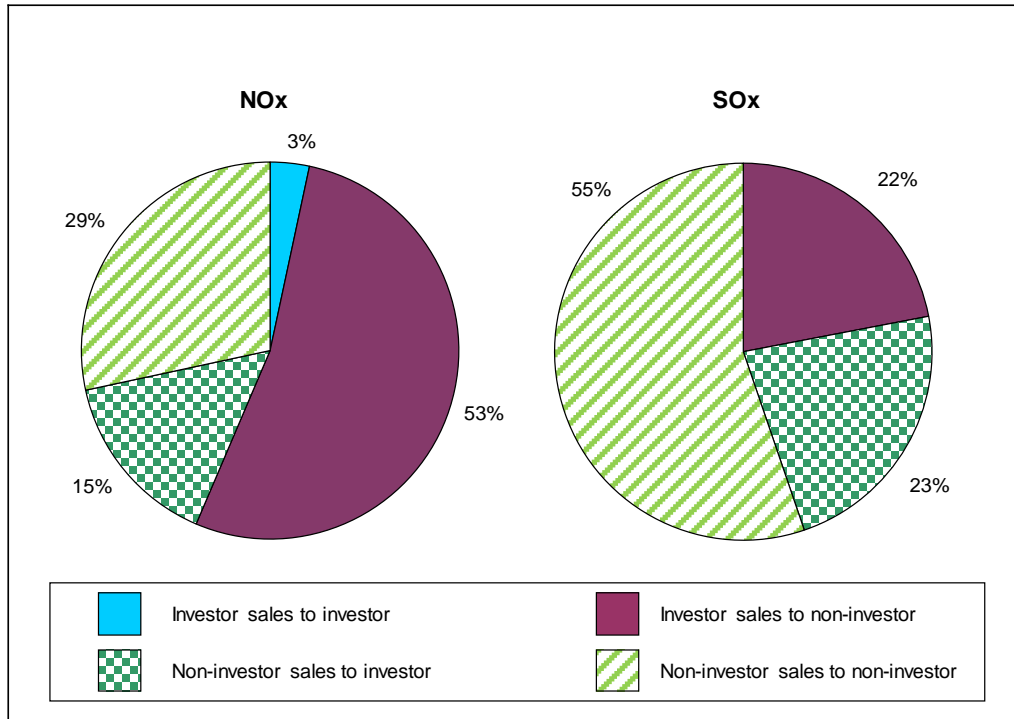


Figure 2-16
Calendar Year 2019 Investor-Involved IYB NOx and SOx Trades Based on Volume Traded with Price



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 ($7,505 - 246 - 6,740$), 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

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 NO_x 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 NO_x or SO_x 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 NO_x emissions and the aggregate annual NO_x 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 NO_x and SO_x emissions for these years are unchanged from the previous annual report. Programmatically, there were excess NO_x RTCs remaining after accounting for audited NO_x emissions for every compliance year since 1994, except for Compliance Year 2000 when NO_x emissions exceeded the total allocations due to the California energy crisis. Aggregate NO_x 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 NO_x emissions remained within a narrow range (7,246 tons to 7,691 tons annually) between Compliance Years 2011 and 2017. For Compliance Year 2018, NO_x emissions were more than 500 tons below this range at 6,740 tons. Compliance Year 2018 NO_x emissions were below total allocations by 22%. Staff determined the reduction in NO_x emissions are due to various contributing factors, including year-to-year fluctuations in facility operating schedules (e.g., refinery turnarounds), the installation of NO_x emission control equipment (one facility completed a NO_x control project with a NO_x 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.

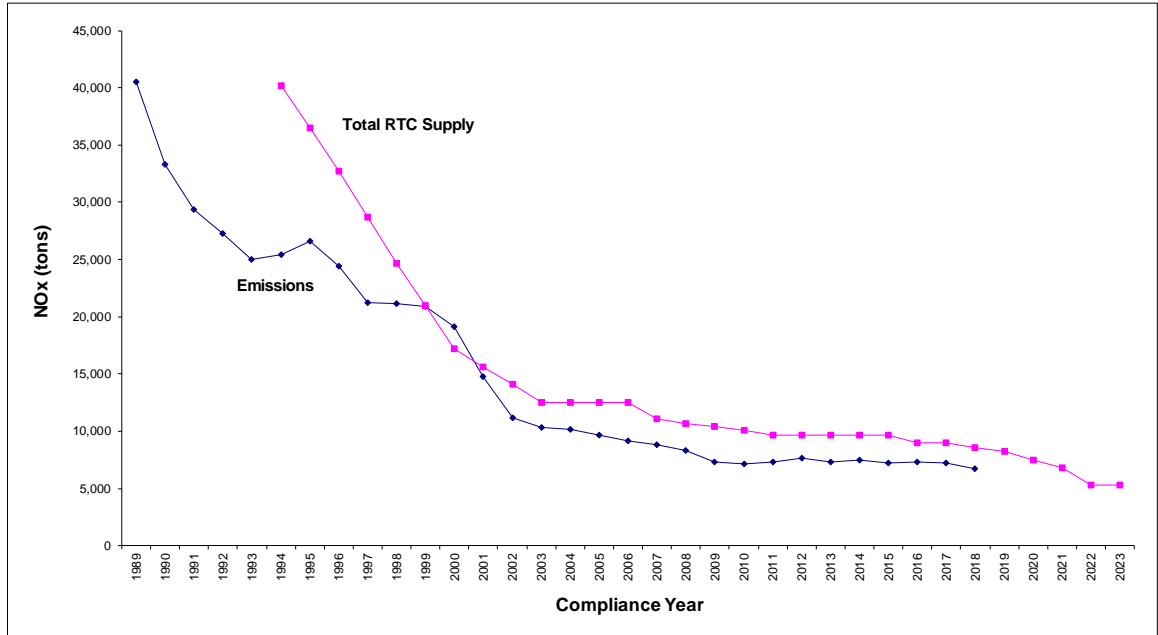
Table 3-1
Annual NOx Emissions for Compliance Years 1994 through 2018

Compliance Year	Audited Annual NOx Emissions ¹ (tons)	Audited Annual NOx Emissions Change from 1994 (%)	Total NOx RTCs ² (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%

¹ 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.

² 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.

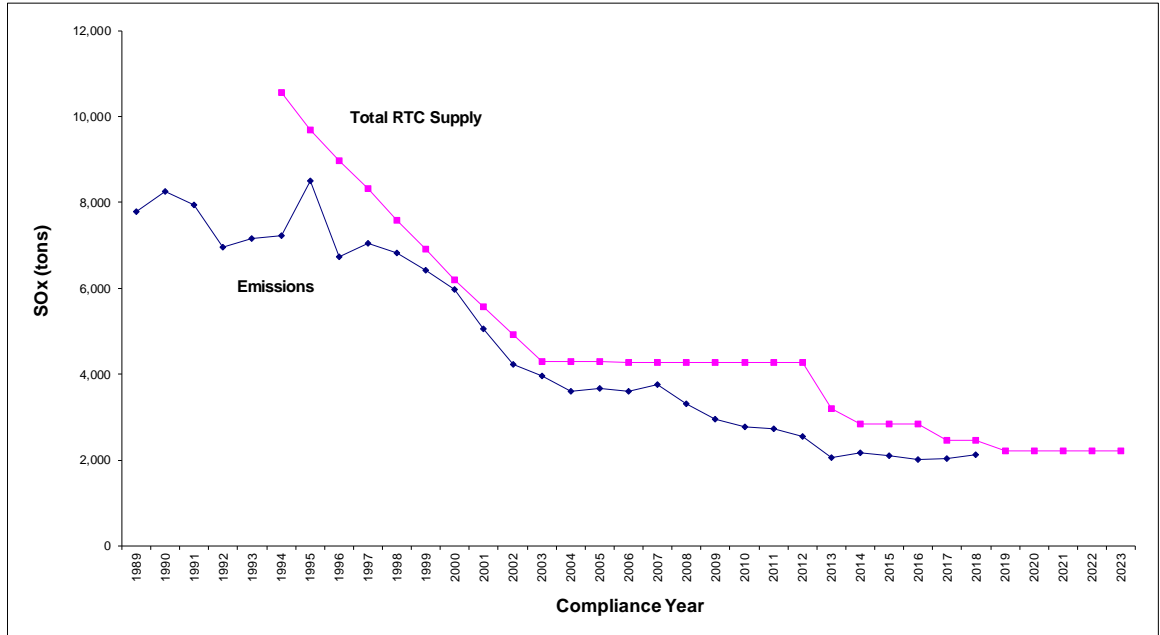
Table 3-2
Annual SOx Emissions for Compliance Years 1994 through 2018

Compliance Year	Audited Annual SOx Emissions ¹ (tons)	Audited Annual SOx Emissions Change from 1994 (%)	Total SOx RTCs ² (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%

¹ 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.

² 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 rules¹ 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 transition² 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

¹ See Tables 1 and 2 of Rule 2001.

² 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 rules³ 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 (NH₃), as required under USEPA's 2016 implementation rule for PM_{2.5} State Implementation Plans and a court decision requiring states to regulate PM_{2.5} under the same part of the Federal Clean Air Act as PM₁₀. The 2016 amendment expanded the definition of "precursors," however, it did not expand the definition of "regulated NSR pollutant" to explicitly reference the PM_{2.5} precursors VOC and NH₃. 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_x or SO_x sources at non-RECLAIM facilities. Since Rule 2001 only exempts those provisions in identified rules applicable to NO_x and SO_x 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_x Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces, was amended by the Governing Board on December 6, 2019, to reduce NO_x emissions from residential and commercial gas-fired fan-type space heating

³ 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_x RECLAIM program to provide emission reduction credits to offset any NO_x 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_x emission calculations and offsets are amended to address former RECLAIM sources. Finally, Rule 2002 removed the requirement to report IYB NO_x 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_x 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_x 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>

Rule(s)	Focus Area	Description
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"> • Implementation schedule for equipment meeting applicability under Rules 1146 and 1146.1 <i>(Adopted December 7, 2018)</i> • Implementation schedule for equipment meeting applicability under Rule 1110.2 <i>(Amended November 1, 2019)</i> This rule will be amended as necessary as a companion rule to a Landing Rule as it is amended or adopted.
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. <i>(In Progress)</i>
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"> 1. Maintains existing BARCT levels for NOx, VOC, and CO emission limits, and allows: <ul style="list-style-type: none"> • Interim alternate emission limits for compressor gas lean-burn engines, • Concentration based limits for linear generator technology, and • Interim VOC based emission limits for certain electricity generating engines. 2. Specifies emission averaging time. 3. Includes additional monitoring requirements for engines at former RECLAIM facilities. 4. Revises exemptions for: <ul style="list-style-type: none"> • Diesel engines operated at remote radio transmission sites, • Tuning of an engine and/or associated emission control equipment, • Replacement of catalytic equipment as a major repair, and • Diesel engines powering cranes located on offshore platforms, provided specific criteria are met. <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 <i>(In Progress)</i>

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"> 1. Establishes emission limits to reflect current BARCT for NO_x, VOC, and CO emission limits for new, replaced, or relocated flares. 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. 3. Establishes requirements for source testing, monitoring, reporting, and recordkeeping. 4. Provides exemptions for low-use and low-emitting flares. <p style="text-align: right;"><i>(Adopted January 4, 2019)</i></p> <p><i>[Estimated emission reductions: 0.18 tons of NO_x 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"> 1. Updates NO_x and ammonia emission limits to reflect current BARCT, effective beginning January 1, 2024. 2. Provides implementation timeframes to facilitate transition. <ul style="list-style-type: none"> • Alternative compliance date for compressor gas turbines, provided the facility demonstrates 25% or more NO_x emission reductions beginning December 31, 2023. • 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. 3. Revise monitoring, reporting, and recordkeeping requirements 4. Provide exemptions for units that are shown to be not cost effective for retrofit or replacement: <ul style="list-style-type: none"> • Low-use turbines, and • Turbines achieving emissions close to the established limit. <p style="text-align: right;"><i>(Amended April 5, 2019)</i></p> <p><i>[Estimated emission reductions: 2.8 tons of NO_x 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"> 1. Updates emission limits to reflect current BARCT: <ul style="list-style-type: none"> • NOx and ammonia emission limits for boilers and gas turbines, and • NOx, ammonia, carbon monoxide, volatile organic compounds, and particulate matter for internal combustion engines. 2. Revise monitoring, reporting, and recordkeeping requirements. 3. Provide exemptions for units that are shown to be not cost effective for retrofit: <ul style="list-style-type: none"> • Low-use units, • Units achieving emissions close to the established limits, and • Units required to be shut down in the near term. <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"> • Updates emission limits to reflect current BARCT. <ul style="list-style-type: none"> ➤ NOx and ammonia emission limits for boilers, steam generators, and heaters • Specifies compliance schedule in Rule 1100. <p>2. For Rule 1146.2 units:</p> <ul style="list-style-type: none"> • 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. <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>

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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"> 1. Prevents new NOx RECLAIM facility inclusions as of January 5, 2018. <i>(Amended January 5, 2018)</i> 2. Allows facilities to opt-out of RECLAIM, if certain conditions are met. <i>(Amended October 5, 2018)</i> 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>

Rule(s)	Focus Area	Description
2002	Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx) <i>Applicability:</i> facilities operating under the RECLAIM program.	<ol style="list-style-type: none"> 1. Establishes NOx RECLAIM facility exit notification requirements. 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. 3. Prohibits exited facilities from selling or transferring future compliance year RECLAIM Trading Credits. <i>(Amended January 5, 2018)</i> <ol style="list-style-type: none"> 1. Provides option for facilities that received an initial determination notification to stay in RECLAIM for a limited time. 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. <i>(Amended October 5, 2018)</i>
2005	New Source Review for RECLAIM <i>Applicability:</i> facilities operating under the RECLAIM program	<ol style="list-style-type: none"> 1. Allows for New Source Review provisions to address facilities that are transitioning from RECLAIM to command-and-control. 2. Amendments to Regulation XIII may be needed to address New Source Review provisions for facilities that transition out of RECLAIM. <i>(In Progress)</i>

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**

Pollutant	Compliance Year 2018 Unused RTCs (tons)	Unmitigated Breakdown Emissions¹ (tons)	Remaining Compliance Year 2018 RTCs (tons)
NOx	1,872	0	1,872
SOx	340	0	340

¹ 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 RTCs⁴. 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 activities⁵. 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 out⁶ 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

⁴ 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).

⁵ 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.

⁶ 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

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_x RECLAIM facilities had NSR NO_x emission increases, and no SO_x RECLAIM facilities had an NSR SO_x emission increase due to expansion or modification. Consistent with all prior compliance years, there were sufficient NO_x and SO_x 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_x emission increases and a 1-to-1 offset ratio for SO_x emission increases on a programmatic basis. In Compliance Year 2018, RECLAIM demonstrated federal equivalency with a programmatic NO_x offset ratio of 1,466-to-1 based on the compliance year's total unused allocations and total NSR emission increases for NO_x. There were no SO_x 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_x offset ratio for any compliance year, provided aggregate SO_x emissions under RECLAIM are lower than or equal to aggregate SO_x allocations for that compliance year. As shown in Chapter 3 (Table 3-2 and Figure 3-2), there was a surplus of SO_x RTCs during Compliance Year 2018. Therefore, RECLAIM more than complied with the federally-required SO_x offset ratio and further quantification of the SO_x 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 operations¹.

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_x and VOC).

The federal offset requirement for major SO₂ 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 SO₂ standards, SO_x is a precursor to PM_{2.5}. The Basin is in Serious Non-attainment with 2006 Federal 24-hours standard and 2012 Federal annual standard for PM_{2.5}. The applicable offset ratio for PM_{2.5} is at least 1-to-1, thus, the applicable offset ratio for SO_x 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_x and state NNI requirements for both SO_x and NO_x. 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.

¹ Federal NSR applies to federal major sources (sources with the potential to emit at least 10 tons of NO_x or 70 tons of SO_x per year for the South Coast Air Basin) and state NNI requirements apply to all NO_x sources and to SO_x 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_x or SO_x emissions, some RECLAIM facilities have actual emissions much less than 4 tons per year).

The same rule also requires all new RECLAIM facilities² 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

² 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 SO_x is 1-to-1. Since RECLAIM facilities are required to secure, at a minimum, adequate RTCs to cover their actual emissions, the SO_x 1-to-1 offset ratio is met automatically provided there is no programmatic exceedance of aggregate SO_x allocations for that compliance year. As stated earlier in Chapter 3, there were 340 tons of excess (unused) SO_x RTCs for Compliance Year 2018. Since there were no SO_x 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 SO_x offset ratio and the California NNI requirement for SO_x 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 NO_x or SO_x 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 NO_x emissions, and two for SO_x emissions.

This modeling is performed with an USEPA approved air dispersion model to assess the impact of a facilities NO_x or SO_x 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 NO_x or SO_x emission increases are added to the highest background NO_x or SO_x 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 SO_x facilities, which had initial SO_x allocations in 1994 and exceeded their initial allocations by more than 40 tons in Compliance Year 2018, submitted

modeling that demonstrated that SO_x emissions from their major sources during 2018 will not cause an exceedance of any state or federal SO₂ AAQS. The NO_x facility had an initial NO_x 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_x emissions from their major sources during 2018 will not cause an exceedance of any state or federal NO₂ AAQS.

CHAPTER 5 COMPLIANCE

Summary

Based on South Coast AQMD Compliance Year 2018 audit results, 254 of the 269 (94%) NO_x RECLAIM facilities complied with their NO_x allocations, and 31 of the 32 SO_x facilities (97%) complied with their SO_x allocations based on South Coast AQMD audit results. So, sixteen facilities exceeded their allocations (15 facilities exceeded their NO_x allocations, and one facility exceeded its SO_x allocation). The 15 facilities that exceeded their NO_x allocations had aggregate NO_x 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_x allocations had total SO_x emissions of 0.50 tons and did not have adequate allocations to offset 0.29 tons (or 58.0%). The NO_x and SO_x exceedance amounts are relatively small compared to the overall NO_x and SO_x allocations for Compliance Year 2018 (0.35% of total NO_x allocations and 0.01% of total SO_x allocations). The exceedances from these facilities did not impact the overall RECLAIM emission reduction goals. The overall RECLAIM NO_x and SO_x 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 RECLAIM¹. 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

¹ 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"² 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 emissions³.

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_x facilities and 16 SO_x 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_x emissions and 7.0% of the total reported SO_x 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).

² Based on uncontrolled emission factor at maximum rated capacity of the source and 24 hours per day.

³ 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_x 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_x MDP emissions data (62%) and majority of SO_x 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_x sources into major sources, large sources, process units, and equipment exempt from obtaining a written permit pursuant to Rule 219. All SO_x 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 ±20% for pollutant concentration, ±15% for stack flow rate, and ±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 2018¹**

Concentration						Stack Flow Rate				Mass Emissions			
NOx		SO ₂		Total ² Sulfur		In-Stack Monitor		F-Factor Based Calc.		NOx		SOx ³	
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

¹ The calculation of passing rates includes all RATAs submitted by January 11, 2019.

² Includes Cylinder Gas Audit (CGA) tests.

³ Does not include SOx emissions calculated from total sulfur analyzers.

Table 5-4
Passing Rates Based on RATAs of Certified CEMS in 2019¹

Concentration						Stack Flow Rate				Mass Emissions			
NO _x		SO ₂		Total ² Sul fur		In-Stack Monitor		F-Factor Based Calc.		NO _x		SO _x ³	
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

¹ The calculation of passing includes all RATAs submitted by January 10, 2020.

² Includes Cylinder Gas Audit (CGA) tests.

³ Does not include SO_x emissions calculated from total sulfur analyzers.

As indicated in Tables 5-3 and 5-4, the passing rates for NO_x/SO₂ 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

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 ¹
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

¹ 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

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

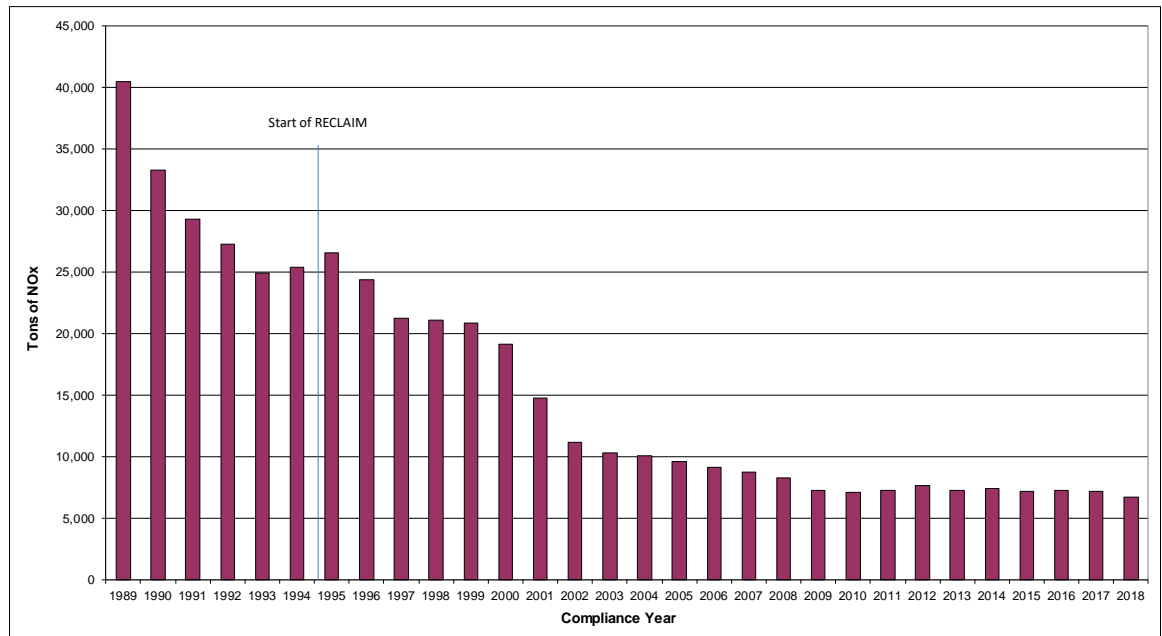
Coast AQMD's website¹, and include all the quarterly emissions maps presented in previous annual program audit reports. This chapter addresses:

- 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.

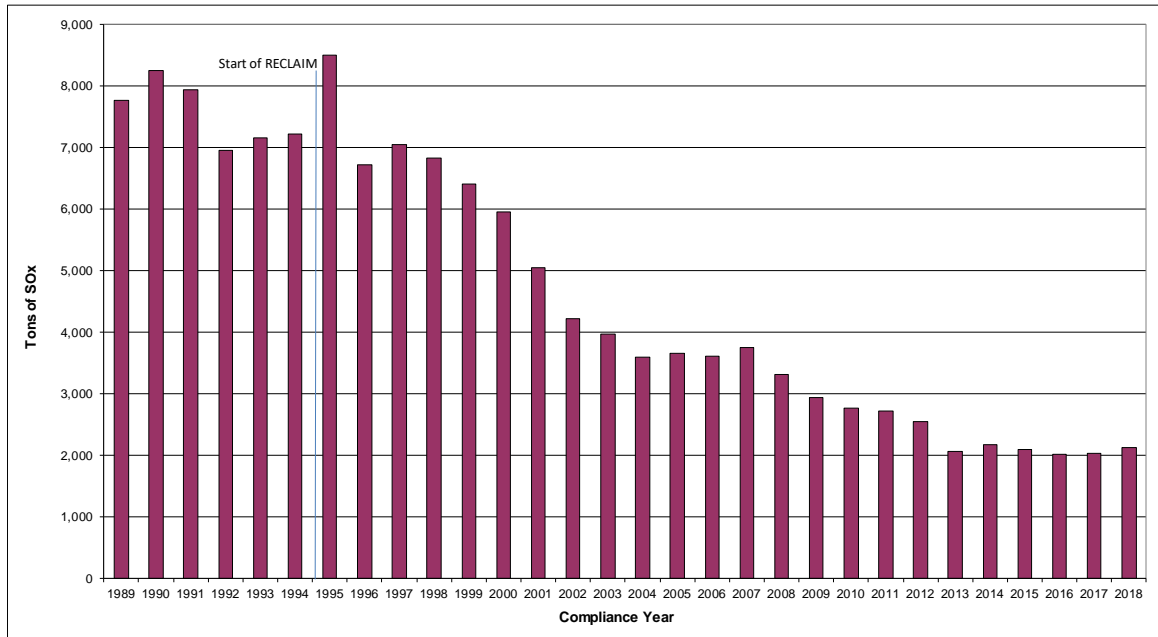
Figure 7-1
NOx Emission Trend for RECLAIM Sources



Note: 1989-1993 emissions presented in this figure are the emissions from the facilities in the 1994 NOx universe.

¹ 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 < ± 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 7-6.²

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:

- NOx emissions from RECLAIM facilities are dominated by refineries and power plants.
- SOx 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 (NOx and SOx) and from power plants (NOx) 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 NOx 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 NOx emissions with the quarterly emissions from 2007 through 2017. During calendar year 2018, quarterly NOx emissions varied from three percent below the mean in

² 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

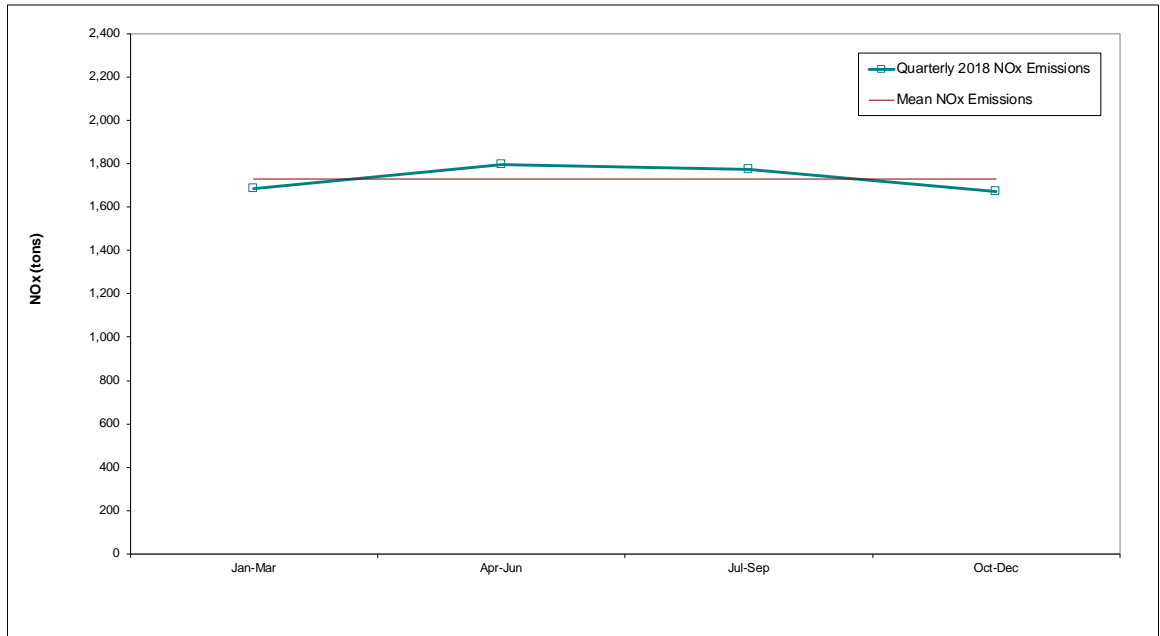
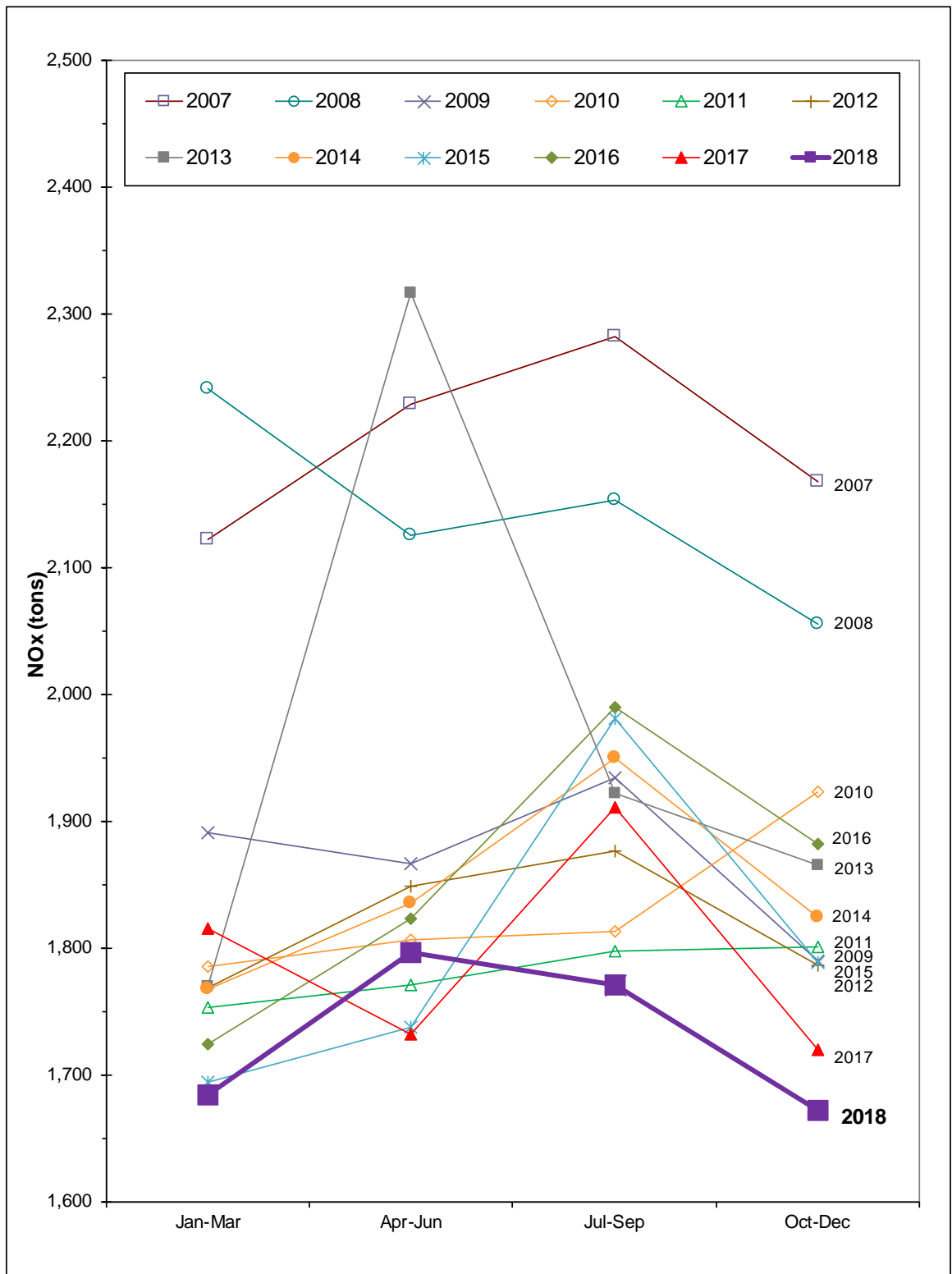


Figure 7-4
Quarterly NOx Emissions from Calendar Years 2007 through 2018



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

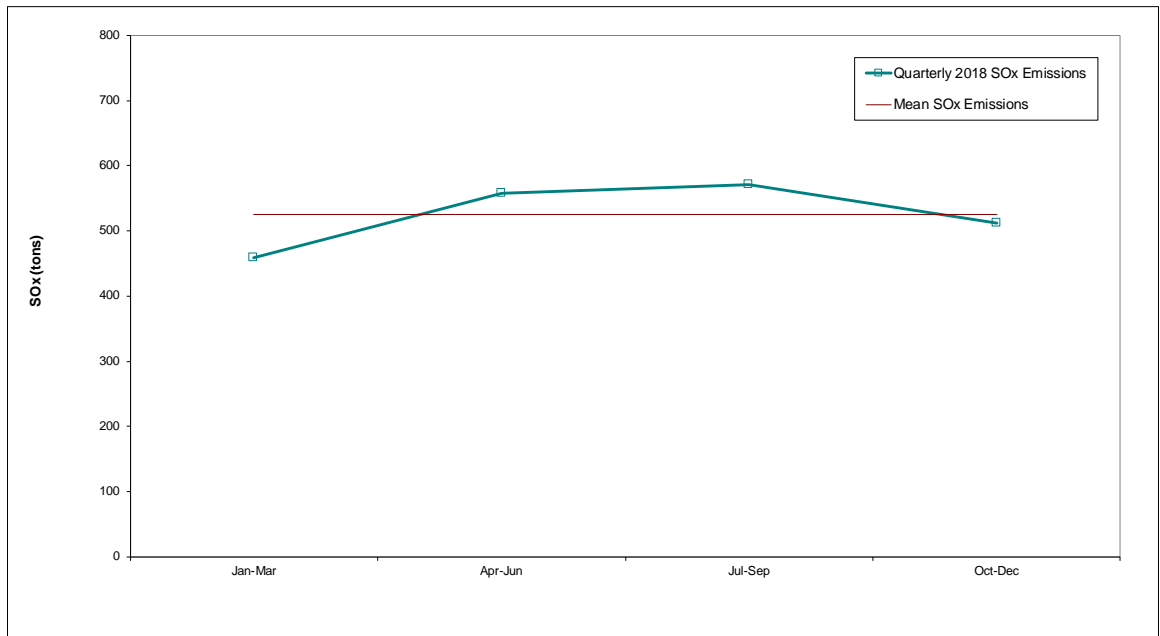
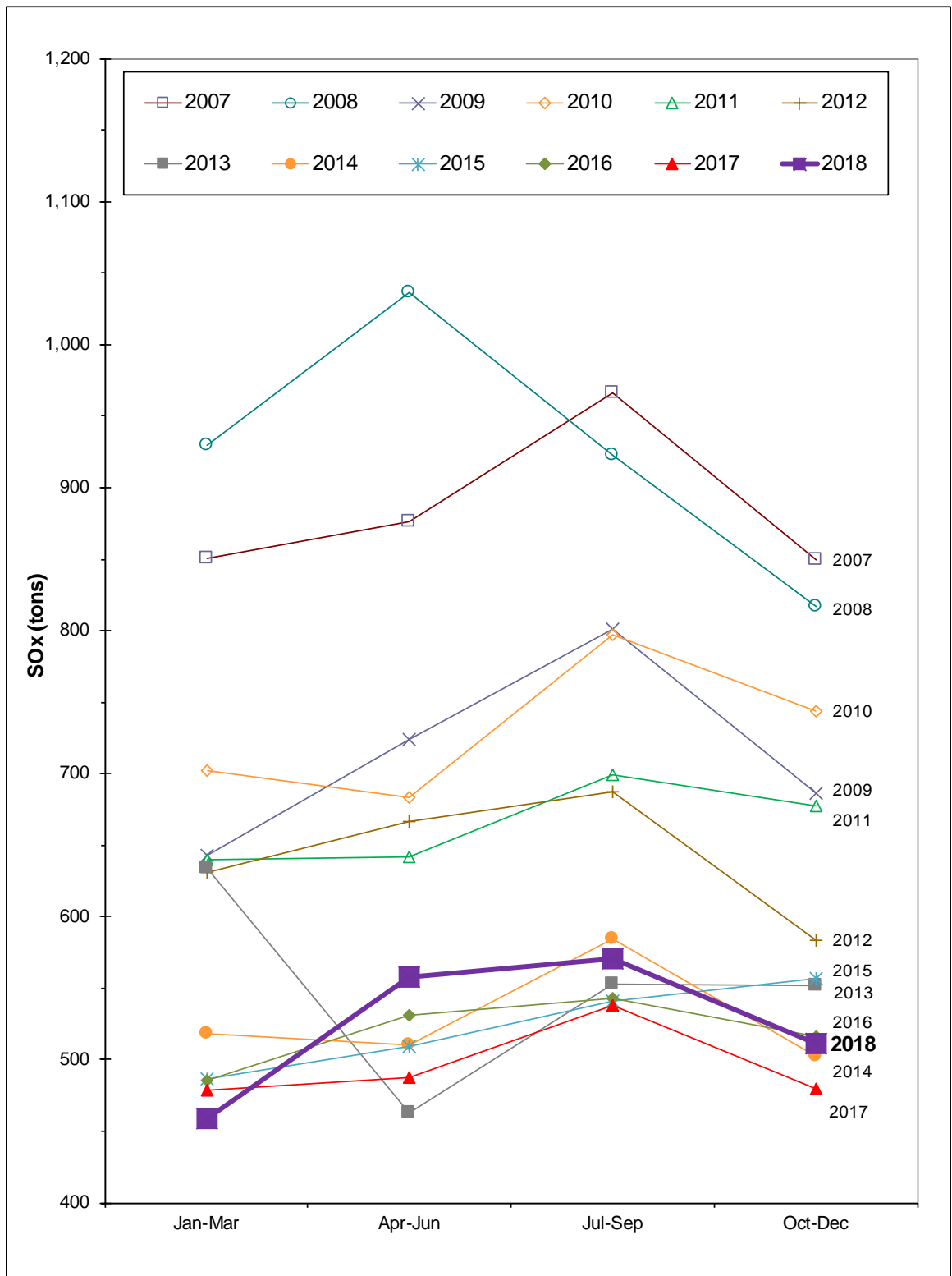


Figure 7-6
Quarterly SOx Emissions from Calendar Years 2007 through 2018



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”³) 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

³ 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 ¹	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 ²	48.3	45.5	16.3	56.5	115.6
2000 target ³	40.2	37.9	13.6	47	96.3

¹ Average over three years, 1986 through 1988.

² 60% of the 1986-88 baseline exposures.

³ 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 toxic's 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_x or SO_x emission increases are also required to be equipped with BACT, which minimizes to the extent feasible NO_x and SO_x 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_x, SO_x, 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 procedures⁴ into one of three categories: low, intermediate, or high priority. Facilities ranked with low priority are exempt from future reporting. Facilities ranked with intermediate

⁴ 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" program⁵, 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, 2015⁶. 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_x and SO_x 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

⁵ The 2018 AB2588 Annual Report can be found at: http://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab2588_annual_report_2018.pdf.

⁶ 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

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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	SNAK 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

Facility ID	Cycle	Facility Name	Program
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

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

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

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

South Coast Air Quality Management District
Governing Board Meeting
March 6, 2020

A decorative graphic consisting of several overlapping squares in yellow, red, and blue, with a white crosshair-like pattern.

RECLAIM

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_x and SO_x sources
- Specifies facility declining annual emissions caps
- Allows options to reduce emissions or buy RECLAIM Trading Credits (RTCs)

Compliance Year (CompYr) 2018 is the 25th year of the program (started in 1994)



RECLAIM Annual Audit

- 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)

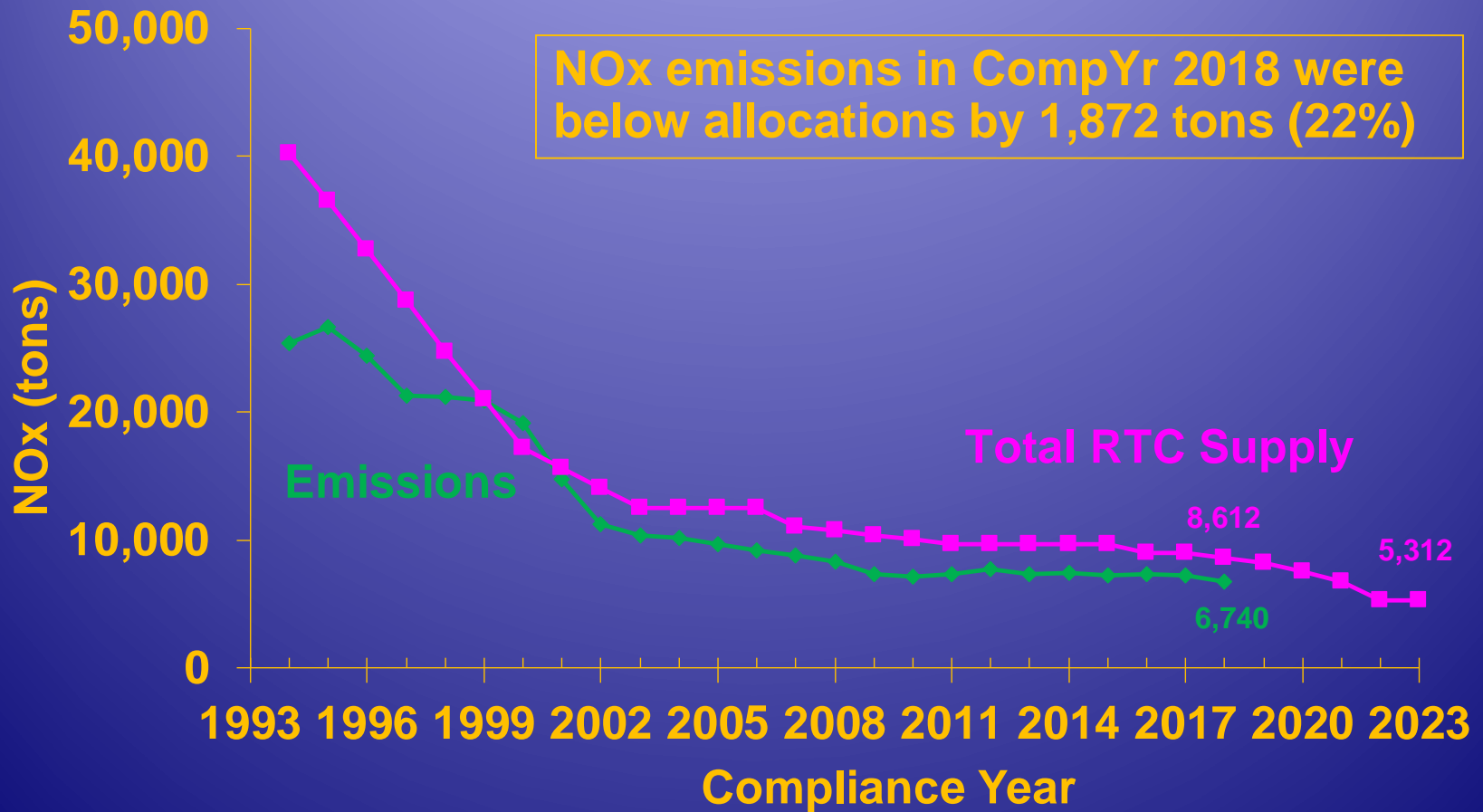
2018 Annual RECLAIM Audit Findings Compliance

- RECLAIM met overall NO_x and SO_x emissions goals:
 - NO_x emissions **22%** below allocations
 - SO_x emissions **14%** below allocations

- Allocation Shave
 - NO_x Shave of 22.5% adopted January 2005 and implemented in 2007 - 2011
 - SO_x Shave of 48.4% adopted November 2010 and implemented in 2013 – 2019
 - Additional NO_x Shave of 45.2% adopted in December 2015 and implemented in 2016 – 2022
 - Reduction of 3 tons/day (11.3%) NO_x and 5 tons /day (42.4%) SO_x allocations in Compliance Year 2018

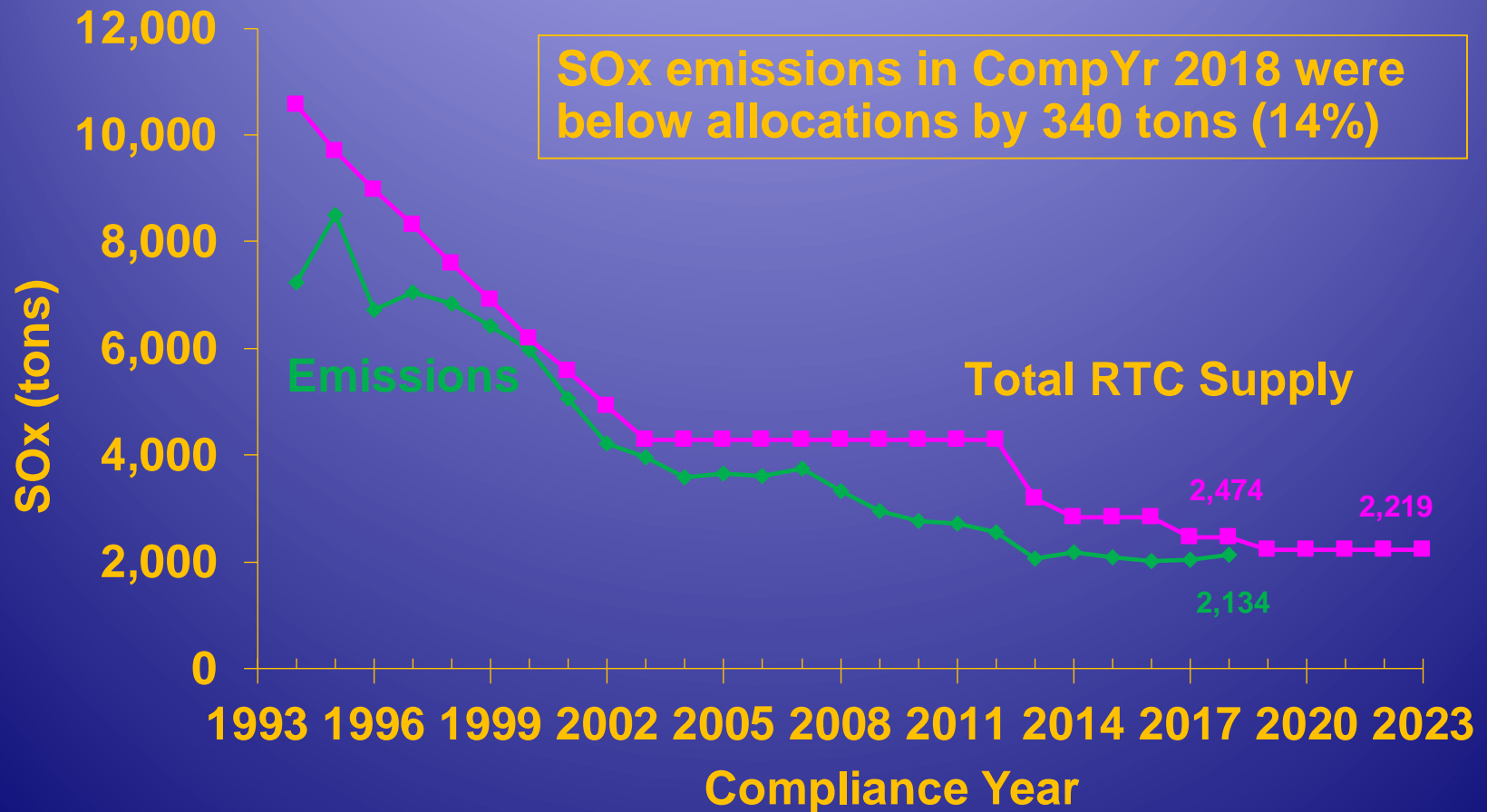
RECLAIM

NOx Emissions vs. Allocations Trends



RECLAIM

SOx Emissions vs. Allocations Trends



2018 Annual RECLAIM Audit Findings Compliance

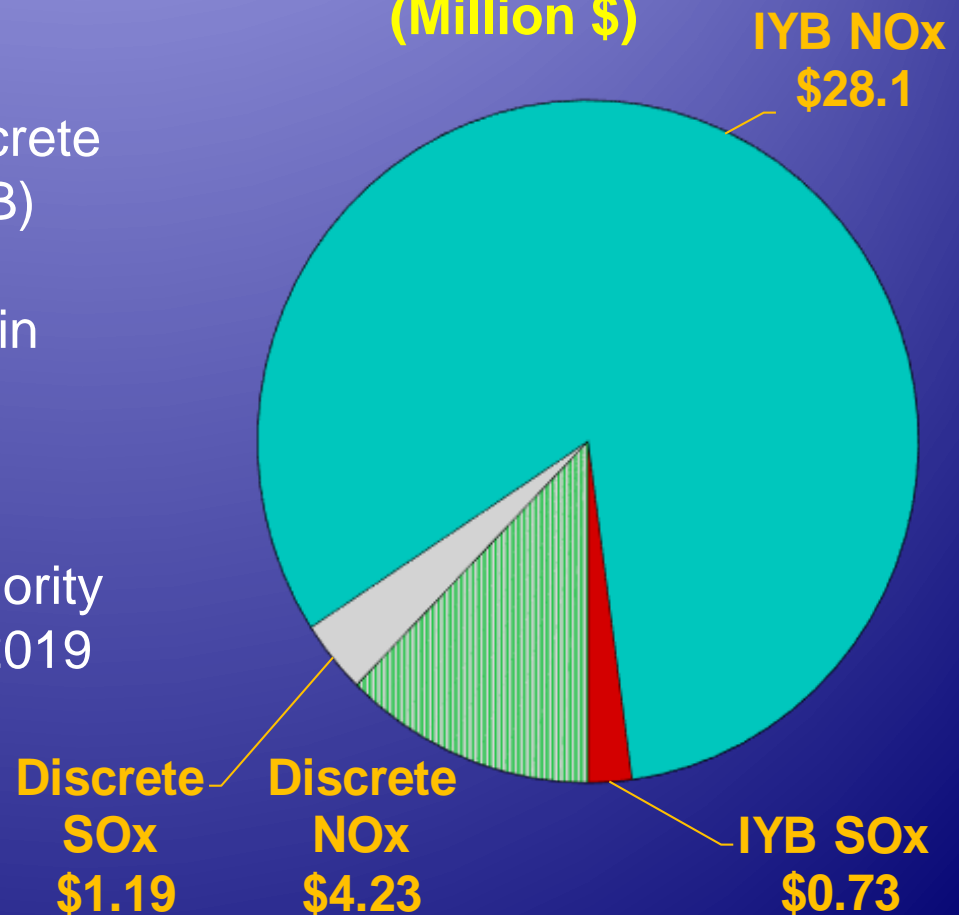
- RECLAIM had a high rate of facility compliance:
 - NO_x Facilities – 94%
 - SO_x Facilities – 97%
- Facilities exceeding their allocations
 - NO_x – 15 facilities exceeded by 454.4 tons (0.35% of total allocations)
 - SO_x – one facility exceeded by 0.5 tons (0.01% of total allocations)

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 (CalYr) 2019 (\$3.94 million in CalYr 2018)
- Refinery sector bought the majority of IYB RTCs traded in CalYr 2019

Value Traded in CalYr 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

2018 Annual RECLAIM Audit Findings

Average Discrete Year SOx RTC Prices



- Average prices in CaYr 2018 below program review thresholds:
 - \$15,000/ton [Rule 2015]
 - \$33,593*/ton [Health and Safety Code]

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*

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)

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



2018 Annual RECLAIM Audit Findings

- RECLAIM facilities overall employment 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

2018 Annual RECLAIM Audit Findings Summary/Recommendations

Summary:

- Programmatic compliance achieved (NO_x and SO_x emissions were 22% and 14% below allocations, respectively)
- Individual facility compliance rate remained high (94% & 97% for NO_x and SO_x, 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