



# South Coast Air Quality Management District

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

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## A G E N D A

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### MEETING, MARCH 4, 2022 HYBRID GOVERNING BOARD MEETING

Pursuant to Assembly Bill 361, a meeting of the South Coast Air Quality Management District Board will be held at 9:00 a.m. on Friday, March 4, 2022 through a hybrid format of in-person attendance in the Dr. William A. Burke Auditorium at the South Coast AQMD Headquarters, 21865 Copley Drive, Diamond Bar, California, and/or virtual attendance via videoconferencing and by telephone.

Given health and safety concerns, seating availability may be limited, and the meeting format may be changed to full remote via webcast. Please refer to South Coast AQMD's website for information regarding the format of the meeting, updates if the meeting is changed to a full remote via webcast format, and details on how to participate:

<http://www.aqmd.gov/home/news-events/meeting-agendas-minutes>

**Proof of full vaccination or a negative COVID test within 72 hours prior to the start of the Governing Board meeting will be required for admittance.**

**Proof of COVID-19 Vaccination includes:**

- COVID-19 Vaccination Record Card (issued by the Department of Health and Human Services Centers for Disease Control & Prevention or WHO Yellow Card 1) which includes name of person vaccinated, type of vaccine provided and date doses administered); OR
- A photo of a vaccination card as a separate document; OR
- A photo of the vaccine card stored on a phone or electronic device; OR
- Documentation of vaccination from a healthcare provider; OR
- [Digital record](#) that includes a QR code that when scanned by a SMART Health Card reader displays to the reader: name, date of birth, vaccine dates and vaccine type

**Reminder: Mask wearing is required indoors during this meeting, unless proof of full vaccination is provided.**

### **ELECTRONIC PARTICIPATION INFORMATION (Instructions provided at bottom of the agenda)**

**Join Zoom Meeting - from PC, Laptop or Phone**

<https://scaqmd.zoom.us/j/93128605044>

Meeting ID: **931 2860 5044** (applies to all)

Teleconference Dial In +1 669 900 6833 or +1 253 215 8782

One tap mobile +16699006833,,93128605044# or +12532158782,,93128605044#

**Audience will be allowed to provide public comment in person or through Zoom connection or telephone.**

### **PUBLIC COMMENT WILL STILL BE TAKEN**

Phone controls for participants:

The following commands can be used on your phone's dial pad while in Zoom Webinar meeting:

- \*6 - Toggle mute/unmute
- \*9 - Raise hand

*Cleaning the air that we breathe...*

**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.

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 South Coast AQMD's Clerk of the Boards Office, 21865 Copley Drive, Diamond Bar, CA 91765 or web page at [www.aqmd.gov](http://www.aqmd.gov)

**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. 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 Boards 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](mailto:cob@aqmd.gov)

**A webcast of the meeting is available for viewing at:**  
<http://www.aqmd.gov/home/news-events/webcast>

## **CALL TO ORDER**

- Pledge of Allegiance
- Roll Call
- Swearing in of Newly Appointed Board Members Andrew Do and **Benoit**  
Nithya Raman
- Opening Comments: Ben J. Benoit, Chair  
Other Board Members  
Wayne Nastri, Executive Officer

**PUBLIC COMMENT PERIOD** – (Public Comment on Non-Agenda Items, Pursuant to Government Code Section 54954.3) The public may comment on any subject within the South Coast AQMD's authority that **does not** appear on the agenda, during the Public Comment Period. Each speaker addressing non-agenda items may be limited to a total of (3) minutes.

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Staff/Phone (909) 396-

## **CONSENT AND BOARD CALENDAR (Items 1 through 28)**

Note: Consent and Board Calendar items held for discussion will be moved to Item No. 29.

### **Items 1 through 3B – Action Items/No Fiscal Impact**

1. Comply with AB 361 Requirements to Allow South Coast AQMD Board and South Coast AQMD Brown Act Committees to Continue to Meet Remotely **Gilchrist/3459**  

This action is to adopt the attached Resolution finding that the Board: 1) has reconsidered the circumstances of the state of emergency; and 2) State or local officials continue to impose or recommend measures to promote social distancing. See California Government Code Section 54953(e)(3). (No Committee Review)
2. Approve Minutes of February 4, 2022 Board Meeting **Thomas/3268**
3. Set Public Hearings April 1, 2022 to Consider Adoption of and/or Amendments to South Coast AQMD Rules and Regulations: **Nastri/3131**
  - A. Determine That Proposed Amendments to Rule 1147 – NOx Reductions from Miscellaneous Sources, Are Exempt from CEQA; and Amend Rule 1147 **Krause/2706**  

Proposed Amended Rule 1147 applies to RECLAIM and non-RECLAIM facilities and is being amended to update the NOx emission limits and establish new CO limits to reflect BARCT emission limits for applicable equipment categories. The proposed amendment also includes additional combustion equipment that is currently not regulated, establishes compliance schedules with interim emission limits, includes provisions for monitoring, reporting, recordkeeping, and revises exemptions. This action is to adopt the Resolution: 1) Determining that Proposed Amended Rule 1147 – NOx Reductions from Miscellaneous Sources, is exempt from the requirements of the California Environmental Quality Act; and 2) Amending Rule 1147 – NOx Reductions from Miscellaneous Sources. (Reviewed: Stationary Source Committee, February 18, 2022)

- B. Determine That Proposed Rule 1147.2 – NOx Reductions from Metal Melting and Heating Furnaces, Is Exempt from CEQA and Adopt Rule 1147.2 **Krause/2706**

Proposed Rule 1147.2 will establish NOx and CO emission limits for metal melting, metal heat treating, and metal heating and forging units at non-RECLAIM, RECLAIM, and former RECLAIM facilities. The proposed rule also establishes compliance schedules with interim emission limits, includes provisions for emissions monitoring, reporting, and recordkeeping, and incorporates exemptions. This action is to adopt the Resolution: 1) Determining that Proposed Rule 1147.2 – NOx Reductions from Metal Melting and Heating Furnaces, is exempt from the requirements of the California Environmental Quality Act; and 2) Adopting Rule 1147.2 – NOx Reductions from Metal Melting and Heating Furnaces. (Reviewed: Stationary Source Committee, February 18, 2022)

**Items 4 through 10 -- Budget/Fiscal Impact**

4. Amend Contracts to Deploy Trucks for Volvo Low Impact Green Heavy Transport Solutions Project **Miyasato/3249**

In November 2018, the Board approved execution of contracts for the Volvo Low Impact Green Heavy Transport Solutions (LIGHTS) project. CARB approved reallocation of up to \$1,044,854 of administrative funding to project costs and extending the project to September 2022 to deploy up to five trucks at freight handling facilities. This action is to amend a contract with Volvo Group North America, LLC in an amount not to exceed \$1,044,854 from the GHG Reduction Projects Special Revenue Fund (67) to deploy up to five trucks, and amend a contract with Green Paradigm Consulting, Inc. in an amount not to exceed \$14,000 from the GHG Reduction Projects Special Revenue Fund (67) to provide project implementation assistance. (Reviewed: Technology Committee, February 18, 2022; Recommended for Approval)

5. Recognize California Natural Gas Vehicle Partnership as a Nonprofit Corporation and Transfer Funds, Contracts and Administrative Activities to this Nonprofit **Miyasato/3249**

The Board established the California Natural Gas Vehicle Partnership (CNGVP) and the Natural Gas Vehicle Partnership Fund (Fund 40) in 2002 to promote greater deployment of natural gas vehicles in California. To provide the CNGVP with greater autonomy and help reduce South Coast AQMD's administrative responsibilities, the CNGVP is registering as a California nonprofit corporation. These actions are to: 1) recognize the CNGVP as a California nonprofit corporation; 2) close all CNGVP contracts; 3) transfer all unspent funds, including interest earned, of up to \$290,000 from the Natural Gas Vehicle Partnership Fund (Fund 40) to CNGVP nonprofit corporation; 4) close the Natural Gas Vehicle Partnership Fund (Fund 40); and 5) discontinue administrative activities on behalf of the CNGVP. (Reviewed: Technology Committee, February 18, 2022; Recommended for Approval)



6. **Renew Membership in California Fuel Cell Partnership, Execute Contract, Receive and File California Fuel Cell Partnership Executive Board Meeting Agendas and Activity Updates** **Miyasato/3249**

South Coast AQMD has been a member of the California Fuel Cell Partnership (CaFCP) since 2000. These actions are to renew South Coast AQMD's membership in the CaFCP for Calendar Year 2022, execute a contract from the Clean Fuels Program Fund (31) with Frontier Energy, Inc., acting on behalf of the CaFCP in an amount not to exceed \$40,000 and receive and file the CaFCP Executive Board Meeting Agendas for March 30, 2021 and October 20, 2021; and Activity Updates for 2021. (Reviewed: Technology Committee, February 18, 2022; Recommended for Approval)
7. **Transfer Funds Between Major Objects and Execute Purchase Orders for AB 617 Implementation** **Low/2269**

In May and June 2021, the Board recognized up to \$21,880,000 for implementation of the AB 617 program. In November 2021, the Board authorized appropriations up to \$2,555,420 into the FY 2021-22 and/or FY 2022-23 Budget. Based on an assessment of the existing AB 617 program priorities and resources, there is a need to reallocate funds and realign expenditures. These actions are to transfer funds between Major Objects and execute a purchase order not to exceed \$200,000 for equipment to implement the AB 617 Community Air Monitoring Plans. (Reviewed: Administrative Committee, February 11, 2022; 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**

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 18, 2022)
9. **Authorize Purchase of Maintenance and Support Services for Servers and Storage Devices** **Moskowitz/3329**

The servers and storage devices are used by enterprise-level software applications that currently support the Clean Air Support System for all South Coast AQMD core activities. Maintenance support for these systems will expire on April 30, 2022. This action is to obtain approval for the sole source purchase of hardware and software maintenance and support services for servers and storage devices from Hewlett Packard Enterprise Company for one year, in an amount not to exceed \$130,000. Funds for these purchases are included in Information Management's FY 2021-22 Budget. (Reviewed: Administrative Committee, February 11, 2022; Recommended for Approval)

10. Transfer and Appropriate Funds from Interest Earned from Special Revenue Funds to General Fund and Transfer Funds to Information Management's Budget to Support South Coast AQMD Operations, and Close Special Revenue Fund **Moskowitz/3329**
- Information Management (IM) provides a wide range of information technology systems and services in support of South Coast AQMD operations to achieve the agency mission, goals, and objectives. Many components of the agency's critical information technology infrastructure are aging and in need of upgrade and/or replacement to maintain staff effectiveness and improve efficiency. The funding would be used to support critical projects in the areas of cybersecurity, and critical system upgrades and support. This action is to transfer \$2,529,500 from four Special Revenue Funds to the General Fund, transfer funds to Information Management's Budget and close the El Monte Park Settlement Fund (57). (Reviewed: Administrative Committee, February 11, 2022; Recommended for Approval)

**Item 11 – Action Item/No Fiscal Impact**

11. Special Meeting of Health Effects of Air Pollution Foundation **Gilchrist/3459**
- This item is to ratify and approve the appointments of Board Member Michael Cacciotti and Vice Chair Vanessa Delgado as Directors of the Health Effects of Air Pollution Foundation and to adopt a Resolution to reduce the number of Directors of the Foundation from four to three. (No Committee Review)

**Items 12 through 18 – Information Only/Receive and File**

12. Legislative, Public Affairs and Media Report **Alatorre/3122**
- This report highlights the January 2022 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 **Verdugo-Peralta/2500**
- This reports the actions taken by the Hearing Board during the period of January 1 through January 31, 2022. (No Committee Review)
14. Civil Filings and Civil Penalties Report **Gilchrist/3459**
- This report summarizes monthly penalties and legal actions filed by the General Counsel's Office from January 1 through January 31, 2022. An Index of South Coast AQMD Rules is attached with the penalty report. (Reviewed: Stationary Source Committee, February 18, 2022)

15. **FY 2021-22 Contract Activity** **Jain/2804**  
This report lists the number of contracts let during the first six months of FY 2021-22, the respective dollar amounts, award type, and the authorized contract signatory for the South Coast AQMD. (No Committee Review)
16. **Lead Agency Projects and Environmental Documents Received** **Krause/2706**  
This report provides a listing of CEQA documents received by South Coast AQMD between January 1, 2022 and January 31, 2022, and those projects for which South Coast AQMD is acting as a lead agency pursuant to CEQA. (Reviewed: Mobile Source Committee, February 18, 2022)
17. **Rule and Control Measure Forecast** **Rees/2856**  
This report highlights South Coast AQMD rulemaking activities and public hearings scheduled for 2022. (No Committee Review)
18. **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 11, 2022)

**Items 19 and 20 -- Staff Presentations/Board Discussion/Receive and File**

19. **Budget and Economic Outlook Update** (*Presentation in Lieu of Board Letter*) **Nakamura/3105**  
Staff will provide an update on economic indicators and key South Coast AQMD metrics. (Reviewed: Administrative Committee, February 11, 2022)
20. **2022 Air Quality Management Plan Overview** (*Presentation in lieu of Board Letter*) **Rees/2856**  
Staff will provide a brief summary of the overall process and work completed to date on the 2022 AQMP, as well as the preliminary strategy to attain the 2015 8-hour ozone National Ambient Air Quality Standard. (Reviewed: Mobile Source Committee, February 18, 2022)

**Items 21 through 28 -- Reports for Committees and CARB**

21. **Administrative Committee** (Receive & File) **Chair: Benoit** **Nastri/3131**
22. **Investment Oversight Committee** (Receive & File) **Chair: Cacciotti** **Jain/2804**

23. Legislative Committee **Chair: Cacciotti Alatorre/3122**  
Receive and file; and take the following action as recommended:
- | <b>Agenda Item</b>                            | <b>Recommendation</b> |
|---|-----------------------|
| HR 6662 (Barragán)<br>EVs for All Act of 2022 | Support               |
24. Mobile Source Committee (Receive & File) **Chair: Kracov Rees/2856**
25. Stationary Source Committee (Receive & File) **Chair: Benoit Aspell/2491**
26. Technology Committee (Receive & File) **Chair: Richardson Miyasato/3249**
27. Mobile Source Air Pollution Reduction Review Committee (Receive & File) **Board Liaison: Benoit Katzenstein/2219**
28. California Air Resources Board Monthly Report (Receive & File) **Board Rep: Kracov Thomas/2500**
29. Items Deferred from Consent and Board Calendar

## **PUBLIC HEARINGS**

30. Determine That Proposed Amendments to Rule 1115 – Motor Vehicle Assembly Line Coating Operations, Are Exempt from CEQA; and Amend Rule 1115 **Krause/2706**
- Rule 1115 - Motor Vehicle Assembly Line Coating Operations regulates VOC emissions from coatings and solvents used in operations conducted on motor vehicle assembly lines. Proposed Amended Rule 1115 will revise VOC emission limits consistent with VOC limits established under Reasonably Achievable Control Technology requirements. In addition, the proposed amendment will update definitions, recordkeeping, and testing requirements. This action is to adopt the Resolution: 1) Determining that the proposed amendments to Rule 1115 – Motor Vehicle Assembly Line Coating Operations, are exempt from the requirements of the California Environmental Quality Act, and 2) Amending Rule 1115 – Motor Vehicle Assembly Line Coating Operations. (Reviewed: Stationary Source Committee, January 21, 2022)

31. Approve and Adopt Technology Advancement Office Clean Fuels Program 2021 Annual Report and 2022 Plan Update, Resolution and Membership Changes for Clean Fuels 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 2021 and 2022 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. (Reviewed: Technology Committee, February 18, 2022; Recommended for Approval)

32. Annual RECLAIM Audit Report for 2020 Compliance Year **Aspell/2491**

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-seventh 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 2020 Compliance Year is also included in the report. This action is to approve the Annual RECLAIM Audit Report for 2020. (Reviewed: Stationary Source Committee, February 18, 2022)

### **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.

### **CONFLICT OF INTEREST DISCLOSURES – (No Written Material)**

The South Coast AQMD will enter into a contract with Waste Management (Contract No. C22110). Waste Management made a campaign contribution to Governing Board Chair Ben J. Benoit in the amount of \$1,000 on November 17, 2021. Chair Benoit abstained from any participation in the making of the contract.

### **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:

- Communities for a Better Environment v. SCAQMD, Los Angeles Superior Court Case No. BS161399 (RECLAIM);
- 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);
- 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 1925894;
- 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);
- SCAQMD, et al. v. NHTSA, EPA, et al., United States Court of Appeals, D.C. Circuit, Filed May 28, 2020;
- Natural Resources Defense Council, et al. v. City of Los Angeles, et al., San Diego Superior Court, Case No. 37-2021-00023385-CU-TT-CTL (China Shipping Case) (transferred from Los Angeles Superior Court, Case No. 20STCP02985);
- Terry Lee Williams v. SCAQMD, Los Angeles Superior Court Case No. 19STCV37587; and
- California Trucking Association v. South Coast Air Quality Management; the Governing Board of the South Coast Air Quality Management District; and Does 1 through 25, inclusive, Case No.: 2:21-cv-06341.

## **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 (two 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).

## **ADJOURNMENT**

**\*\*PUBLIC COMMENTS\*\***

Members of the public are afforded an opportunity to speak on any agenda item before consideration of that item. Persons wishing to speak may do so in person or remotely via Zoom or telephone. To provide public comments via a Desktop/Laptop or Smartphone, click on the "Raise Hand" at the bottom of the screen, or if participating via Dial-in/Telephone Press \*9. This will signal to the host that you would like to provide a public comment and you will be added to the list.

All agendas are posted at South Coast AQMD Headquarters, 21865 Copley Drive, Diamond Bar, California, and website, <http://www.aqmd.gov/home/news-events/meeting-agendas-minutes>, at least 72 hours in advance of the meeting. At the beginning of the agenda, an opportunity is also provided for the public to speak on any subject within the South Coast AQMD's authority. Speakers may be limited to a total of three (3) minutes for the entirety of the Consent Calendar plus Board Calendar, and three (3) minutes or less for each of the 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. Individuals who wish to submit written or electronic comments must submit such comments to the Clerk of the Board, South Coast AQMD, 21865 Copley Drive, Diamond Bar, CA 91765-4178, (909) 396-2500, or to [cob@aqmd.gov](mailto:cob@aqmd.gov), on or before 5:00 p.m. on the Tuesday prior to the Board meeting.

**ACRONYMS**

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| AQ-SPEC = Air Quality Sensor Performance Evaluation Center                       | NESHAPS = National Emission Standards for Hazardous Air Pollutants |
| AQIP = Air Quality Investment Program  | NGV = Natural Gas Vehicle  |
| AQMP = Air Quality Management Plan   | NOx = Oxides of Nitrogen   |
| AVR = Average Vehicle Ridership  | NSPS = New Source Performance Standards                            |
| BACT = Best Available Control Technology   | NSR = New Source Review  |
| BARCT = Best Available Retrofit Control Technology                               | OEHA = Office of Environmental Health Hazard Assessment            |
| Cal/EPA = California Environmental Protection Agency                             | PAMS = Photochemical Assessment Monitoring Stations                |
| CARB = California Air Resources Board  | PEV = Plug-In Electric Vehicle                                     |
| CEMS = Continuous Emissions Monitoring Systems                                   | PHEV = Plug-In Hybrid Electric Vehicle                             |
| CEC = California Energy Commission   | PM10 = Particulate Matter ≤ 10 microns                             |
| CEQA = California Environmental Quality Act                                      | PM2.5 = Particulate Matter ≤ 2.5 microns                           |
| CE-CERT =College of Engineering-Center for Environmental Research and Technology | RECLAIM=Regional Clean Air Incentives Market                       |
| CNG = Compressed Natural Gas   | RFP = Request for Proposals  |
| CO = Carbon Monoxide   | RFQ = Request for Quotations                                       |
| DOE = Department of Energy   | RFQQ=Request for Qualifications and Quotations                     |
| EV = Electric Vehicle  | SCAG = Southern California Association of Governments              |
| EV/BEV = Electric Vehicle/Battery Electric Vehicle                               | SIP = State Implementation Plan                                    |
| FY = Fiscal Year   | SOx = Oxides of Sulfur   |
| GHG = Greenhouse Gas   | SOON = Surplus Off-Road Opt-In for NOx                             |
| HRA = Health Risk Assessment   | SULEV = Super Ultra Low Emission Vehicle                           |
| LEV = Low Emission Vehicle   | TCM = Transportation Control Measure                               |
| LNG = Liquefied Natural Gas  | ULEV = Ultra Low Emission Vehicle                                  |
| MATES = Multiple Air Toxics Exposure Study                                       | U.S. EPA = United States Environmental Protection Agency           |
| MOU = Memorandum of Understanding  | VOC = Volatile Organic Compound                                    |
| MSERCs = Mobile Source Emission Reduction Credits                                | ZEV = Zero Emission Vehicle  |
| MSRC = Mobile Source (Air Pollution Reduction) Review Committee                  |  |
| NATTS =National Air Toxics Trends Station  |  |

## **INSTRUCTIONS FOR ELECTRONIC PARTICIPATION**

### **Instructions for Participating in a Virtual Meeting as an Attendee**

As an attendee, you will have the opportunity to virtually raise your hand and provide public comment.

Before joining the call, please silence your other communication devices such as your cell or desk phone. This will prevent any feedback or interruptions during the meeting.

**Please note:** During the meeting, all participants will be placed on Mute by the host. You will not be able to mute or unmute your lines manually.

After each agenda item, the Chairman will announce public comment.

Speakers may be limited to a total of 3 minutes for the entirety of the consent calendar plus board calendar, and three minutes or less for each of the other agenda items.

A countdown timer will be displayed on the screen for each public comment.

If interpretation is needed, more time will be allotted.

**Once you raise your hand to provide public comment, your name will be added to the speaker list. Your name will be called when it is your turn to comment. The host will then unmute your line.**

### **Directions for Video ZOOM on a DESKTOP/LAPTOP:**

- If you would like to make a public comment, please click on the “**Raise Hand**” button on the bottom of the screen.
- This will signal to the host that you would like to provide a public comment and you will be added to the list.

### **Directions for Video Zoom on a SMARTPHONE:**

- If you would like to make a public comment, please click on the “**Raise Hand**” button on the bottom of your screen.
- This will signal to the host that you would like to provide a public comment and you will be added to the list.

### **Directions for TELEPHONE line only:**

- If you would like to make public comment, please **dial \*9** on your keypad to signal that you would like to comment.



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BOARD MEETING DATE: March 4, 2022

AGENDA NO. 1

**PROPOSAL:** Comply with AB 361 Requirements to Allow South Coast AQMD Board and South Coast AQMD Brown Act Committees to Continue to Meet Remotely

**SYNOPSIS:** This action is to adopt the attached Resolution finding that the Board: 1) has reconsidered the circumstances of the state of emergency; and 2) State or local officials continue to impose or recommend measures to promote social distancing. See California Government Code Section 54953(e)(3).

**COMMITTEE:** No Committee Review

Review **RECOMMENDED ACTIONS:**

Adopt the attached Resolution finding that the Board:

1. Has reconsidered the circumstances of the state of emergency; and
2. State or local officials continue to impose or recommend measures to promote social distancing.

Wayne Nastri  
Executive Officer

BTG:lal

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### **Background**

Governor Newsom previously issued Executive Orders (EOs) N-29-20 and N-35-2 in March 2020, as a response to the public health crisis brought about by the COVID-19 pandemic. These EOs authorized local legislative bodies subject to the Ralph M. Brown Act to conduct meetings entirely via telephonic or other electronic means in lieu of requiring the physical presence of Board members or members of the public. On June 11, 2021, the Governor issued EO N-08-21, which continued suspension of the Brown Act's teleconferencing requirements, without requiring that members of the public be given the right to access all teleconference locations, through September 30, 2021, in anticipation of the State's proposed re-opening.

Assembly Bill 361, signed into law by Governor Newsom on September 16, 2021, amends the Brown Act and will stay in effect from October 1, 2021 through January 1, 2024. In part, AB 361 amends subparagraph (e) of Section 54953 of the California Government Code to state that local agencies may continue to use teleconferencing without complying with the teleconferencing requirements of the Brown Act in any of the following circumstances:

- A. When the legislative body holds a meeting during a proclaimed state of emergency and State or local officials have imposed or recommended measures to propose social distancing;
- B. When the legislative body holds a meeting during a proclaimed state of emergency for the purpose of determining, by majority vote, whether as a result of the emergency, meeting in person would present imminent risks to the health or safety of attendees; or
- C. When the legislative body holds a meeting during a proclaimed state of emergency and has already determined, by majority vote, pursuant to subparagraph (B), that, as a result of the emergency, meeting in person would present imminent risks to the health or safety of attendees.

In the event of an ongoing proclaimed state of emergency, or where state or local officials have imposed or recommended measures to promote social distancing, in order to continue to utilize the teleconferencing measures set forth above, a legislative body must, no later than 30 days after teleconferencing for the first time pursuant to California Government Code Section 54953(e)(1), and every 30 days thereafter, make the following findings by majority vote:

- A. The legislative body has reconsidered the circumstances of the state of emergency.
- B. Any of the following circumstances exist:
  - i. The state of emergency continues to directly impact the ability of the members to meet safely in person; or
  - ii. State or local officials continue to impose or recommend measures to promote social distancing.

See California Government Code Section 54953(e)(1). Governor Newsom first declared a statewide emergency resulting from the COVID-19 pandemic on March 4, 2020. Furthermore, although the State no longer requires physical distancing, both South Coast AQMD and the Los Angeles County Department of Public Health, have recommended proposed social distancing measures.

### **Proposal**

This action is to address the requirements of AB 361 to allow South Coast AQMD

Board and South AQMD Brown Act Committees to continue to meet remotely. The recommended action is to adopt the attached Resolution finding that the Board: 1) has reconsidered the circumstances of the state of emergency; and 2) State or local officials continue to impose or recommend measures to promote social distancing. See California Government Code Section 54953(e)(3).

**Resource Impacts**

No fiscal impact.

**Attachment**

Resolution

**RESOLUTION 22 - \_\_\_\_\_**

**A RESOLUTION OF THE GOVERNING BOARD OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RECOGNIZING THE PROCLAMATION OF A STATE OF EMERGENCY BY GOVERNOR NEWSOM ON MARCH 4, 2020 AND THAT THE COUNTY OF LOS ANGELES CONTINUES TO RECOMMEND MEASURES TO PROMOTE SOCIAL DISTANCING; AND AUTHORIZING FULLY OR PARTIALLY REMOTE TELECONFERENCE MEETINGS OF THE GOVERNING BOARD OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT, AND SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT COMMITTEES SUBJECT TO THE BROWN ACT, FOR THE PERIOD OF MARCH 4, 2022 THROUGH APRIL 3, 2022 PURSUANT TO PROVISIONS OF THE BROWN ACT.**

**WHEREAS**, the Governing Board of the South Coast Air Quality Management District (South Coast AQMD) is committed to preserving and nurturing public access and participation in all meetings subject to the provisions of the Ralph M. Brown Act (Cal. Gov. Code §§54950-54963, hereafter Brown Act); and

**WHEREAS**, pursuant to the provisions of the Brown Act, all meetings of legislative bodies of the South Coast AQMD, which include the South Coast AQMD Governing Board, all Brown Act standing committees ultimately reporting to the South Coast AQMD Governing Board, and all advisory committees and groups subject to the Brown act, (collectively, hereinafter, “legislative bodies”), are required to be open and public so that any member of the public may attend, participate, and watch the South Coast AQMD’s legislative bodies conduct their business; and

**WHEREAS**, the Brown Act Government Code §54953(e), makes provisions for remote teleconferencing participation in meetings by members of a legislative body, without compliance with the requirements of Government Code §54953(b)(3), subject to the existence of certain conditions; and

**WHEREAS**, a required condition is that a state of emergency has been declared by the Governor pursuant to Government Code §8625, proclaiming the existence of conditions of

disaster or of extreme peril to the safety of persons and property within the state caused by conditions as described in Government Code §8558; and

**WHEREAS**, on March 4, 2020 the Governor proclaimed a State of Emergency to exist in California as a result of the threat of the novel coronavirus (COVID-19); and

**WHEREAS**, the jurisdiction of the South Coast AQMD includes portions of the Counties of Los Angeles, Orange, Riverside, and San Bernardino areas in the Counties of Riverside and San Bernardino as set forth in Health & Safety Code §40410 and South Coast AQMD Rule 103; and

**WHEREAS**, the South Coast AQMD headquarters is located in the County of Los Angeles; and

**WHEREAS**, it is further required that state or local officials have imposed or recommended measures to promote social distancing, or, the legislative body meeting would present imminent risks to the health and safety of attendees; and

**WHEREAS**, local and California public authorities still recommend measures promoting social distancing and/or mask wearing indoors and in public gatherings as well as recommending compliance with the latest advice issued by the Center for Disease Control (CDC) regarding same; and

**WHEREAS**, on December 16, 2021, the County of Los Angeles Department of Public Health issued further guidance promoting such measures; and

**WHEREAS**, on June 23 and August 10, 2021, the South Coast AQMD issued further guidance promoting such measures; and

**WHEREAS**, the spread of the Omicron and Delta Variants of COVID-19 poses a continued risk to the health and safety of members of the South Coast AQMD legislative bodies,

South Coast AQMD staff, and members of the general public who attend such meetings in that unvaccinated or partially vaccinated persons are at a high risk of contracting these variants and even fully vaccinated persons can contract and potentially unknowingly spread the variants; and

**WHEREAS**, the Governing Board of the South Coast AQMD does hereby find that the legislative bodies of the South Coast AQMD shall conduct their meetings without compliance with paragraph (3) of subdivision (b) of Government Code §54953, as authorized by subdivision (e) of §54953, and that such legislative bodies shall comply with the requirements to provide the public with access to the meetings as prescribed in paragraph (2) of subdivision (e) of §54953; and

**WHEREAS**, the legislative bodies of the South Coast AQMD will continue to ensure access to their meetings by making them available telephonically and via virtual access for both members of the legislative bodies and the general public; and

**WHEREAS**, a notice of meetings along with information regarding all methods which may be used for public participation in such meetings will continue to be published in the newspaper, posted at the South Coast AQMD's headquarters, posted at any teleconference locations which are officially noticed on the agenda, posted on the South Coast AQMD's website, provided to anyone who requests such information, and clearly printed on any agendas produced for such meetings.

**NOW, THEREFORE, BE IT RESOLVED**, that the Governing Board of the South Coast AQMD hereby finds that highly contagious nature of the Omicron and Delta Variants of COVID-19 poses an imminent risk to large numbers of persons meeting indoors in a single location; and

**BE IT FURTHER RESOLVED**, that the Governing Board of the South Coast AQMD hereby finds that the Governor of California issued a Proclamation of Emergency on March 4, 2020; and

**BE IT FURTHER RESOLVED**, that the Governing Board of the South Coast AQMD hereby finds that local officials continue to impose or recommend measures to promote social distancing in the South Coast AQMD's jurisdiction and where the South Coast AQMD's headquarters is located; and

**BE IT FURTHER RESOLVED**, that the Governing Board of the South Coast AQMD authorizes and directs staff to take all actions necessary to carry out the intent and purpose of this Resolution, including, conducting open and public meetings in accordance with Government Code section 54953(e) and other applicable provisions of the Brown Act; and

**BE IT FURTHER RESOLVED**, that this resolution shall take effect immediately upon adoption and remain in effect until April 3, 2022, or until such time as the South Coast AQMD Governing Board adopts a subsequent resolution in accordance with Government Code section 54953(e)(3) to extend the time during which legislative bodies of the South Coast AQMD may continue to teleconference without strict compliance with paragraph 3 of Government Code section 54953(b).

DATE: \_\_\_\_\_

\_\_\_\_\_  
CLERK OF THE BOARDS

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BOARD MEETING DATE: March 4, 2022

AGENDA NO. 2

MINUTES: Governing Board Monthly Meeting

SYNOPSIS: Attached are the Minutes of the February 4, 2022 Board Meeting.

RECOMMENDED ACTION:

Approve Minutes of the February 4, 2022 Board Meeting.

Faye Thomas  
Clerk of the Boards

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**FRIDAY, FEBRUARY 4, 2022**

Notice having been duly given, the regular meeting of the South Coast Air Quality Management District Board was conducted remotely via videoconferencing and telephone. Members present:

Mayor Ben J. Benoit, Chair  
Cities of Riverside County

Senator Vanessa Delgado (Ret.), Vice Chair  
Senate Rules Committee Appointee

Supervisor Lisa A. Bartlett  
County of Orange

Council Member Joe Buscaino  
City of Los Angeles

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

Gideon Kracov  
Governor's Appointee

Supervisor Sheila Kuehl  
County of Los Angeles

Mayor Larry McCallon  
Cities of San Bernardino County

Veronica Padilla-Campos  
Speaker of the Assembly Appointee

Supervisor V. Manuel Perez  
County of Riverside

Vice Mayor Rex Richardson  
Cities of Los Angeles County – Western Region

Mayor Carlos Rodriguez  
Cities of Orange County

Supervisor Janice Rutherford  
County of San Bernardino

Members absent: None

**CALL TO ORDER:** Chair Benoit called the meeting to order at 9:00 a.m.

- Pledge of Allegiance: Led by Chair Benoit
- Roll Call

Vice Chair Delgado was absent for roll call and joined the meeting at 9:05 a.m.

- Recognition of Service to Outgoing Board Members Supervisor Lisa A. Bartlett and Council Member Joe Buscaino.

Chair Benoit made remarks in recognition of Supervisor Bartlett's service on the Board from March 2019 to February 2022 as the County of Orange representative; and Council Member Buscaino's service on the Board from August 2013 to February 2022 as the City of Los Angeles representative.

Several Board members expressed appreciation to Supervisor Bartlett and Council Member Buscaino for their dedicated service and shared highlights of milestones and accomplishments achieved during their tenure on the South Coast AQMD Board.

- Recognition of Service to Chief Operating Officer Jill Whynot

Chair Benoit made remarks in recognition of Chief Operating Officer Jill Whynot's upcoming retirement and expressed appreciation for her years of service and leadership at the South Coast AQMD. Other Board members also thanked Ms. Whynot for her service.

Ms. Whynot thanked members of the Board for their kind remarks and described her tenure at the South Coast AQMD as a rewarding experience. She expressed appreciation to staff, and her husband and family for their encouragement and support over the years.

- Opening Comments

Executive Officer Wayne Nastri reported on two comment letters received and responded to regarding odors from rendering plants in Vernon that impact Southeast Los Angeles communities: one letter from Los Angeles County Supervisor Janice Hahn and a second letter from SELA United that was signed by 37 elected officials and three environmental and community organizations. He explained that a key issue of concern in the letters is the process for residents to report complaints and to establish a public nuisance under our Rule 402 and state law. Mr. Nastri highlighted the compliance and enforcement actions that have been taken and that all of the rendering facilities are expected to have fully implemented permanent total enclosures by the end of the year as required by

Rule 415 which should help to reduce odors. Staff is committed to continue working with the community and is looking at ways to address the reporting concerns and additional enforcement actions.

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

Rebecca Overmeyer Velazquez, Clean Air Coalition of North Whittier and Avocado Heights, spoke in opposition of the pending permit application for Quemetco to expand its throughput by 25 percent. She stated that South Coast AQMD has the responsibility and authority to deny the permit given that dangerous toxins emitted from Quemetco's operations that endanger the health and safety of the community. She urged the Board to review Quemetco's long history of violations and lack of compliance.

Oralia Rebollo, City of Commerce Mayor Pro Tem  
Erica Bojorquez, City of Commerce resident

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Commented on how the unpleasant odors from the rendering plants disrupt outdoor activities for children and families and affects their daily lives. Expressed frustration with the South Coast AQMD's reporting process, including the response time to investigate complaints and the criteria required for inspectors to verify the source of the complaints before enforcement action can be taken. Emphasized the need to make the process to report Rule 415 – Odors from Rendering Facilities, violations more effective and transparent.

Denise Diaz, City of South Gate Council Member  
Elizabeth Alcantar, City of Cudahy Mayor  
Marisela Santana, City of Lynwood Council Member,  
Ali Saleh, City of Bell Council Member  
Evelyn Nuno, Field Representative for Assemblymember Cristina Garcia,  
Jason Gardea-Stinnet, City of Commerce resident and IBEW Local 18  
Liseth Flores, City of Bell Gardens Council Member  
Idalmis Vaquero, Communities for a Better Environment, Boyle Heights resident  
Ernesto Gonzales, City of Commerce resident

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Commented about their experiences growing up in Southeast Los Angeles and smelling unpleasant odors emanating from the local rendering facilities. Noted that this has been a problem for decades that continues to affect the health and quality of life of children and residents in communities that are also burdened with other pollution sources. Noted that the January 25, 2022 letter from SELA United that was signed by several elected officials who grew up in the impacted communities as an immediate call for action. Expressed frustration with the South Coast AQMD's investigation and enforcement policies for reporting odor complaints and emphasized the need to reduce the reporting burden. Presented three recommendations to ensure the reporting process is transparent and effective: 1) Make it easy for the public to report and confirm violations of Rule 415; 2) Lower the threshold for South Coast AQMD staff to issue notices of violations; and 3) Establish clear rules and specific consequences for violations of Rule 415.

Vice Mayor Richardson requested that staff respond to the three recommendations at the conclusion of public comments.

Jerry Desmond, Metal Finishing Association of Southern California, expressed concerns about CARB's proposed amendments to the Airborne Toxic Control Measure (ATCM) for hexavalent chromium that includes a phaseout provision for decorative chrome plating and hard chrome plating. CARB's proposed amendments to the ATCM will override the 2018 amendments to South Coast AQMD's Rule 1469 – Hexavalent Chromium Emissions from Chromium Electroplating and Chromic Acid Anodizing Operations, and undo years of work that went into coming up with a workable rule. The metal finishing industry has invested significant capital to further reduce hexavalent chromium emissions to comply with Rule 1469, and is requesting that CARB implement Rule 1469 statewide which would enable facilities to reduce emissions and continue to operate. He urged the South Coast AQMD Board to engage in the process as CARB updates the ATCM.

Board Member Kracov indicated that as the South Coast AQMD's representative on the CARB Board he is aware of the proposed updates to the ATCM. He added that the metal finishing industry are important stakeholders in this process.

Giovanna Negrete, Boyle Heights resident for the past 4-1/2 years, described her reaction when she first experienced the unpleasant rendering odors, adding that she was sad to learn that residents had been living with this issue for decades. She expressed dissatisfaction with the South Coast AQMD process to report the odors and asked that the rules be changed to make the process easier.

Todd Campbell, Clean Energy, thanked Council Member Buscaino and Supervisor Bartlett for their service and dedication to air quality. He expressed sadness over Ms. Whynot's retirement, and recognized her service and leadership at the South Coast AQMD.

Steven Goldsmith, Torrance Refinery Action Alliance, noted that the seventh-year anniversary of the explosion that occurred February 2015 at the Exxon Mobil refinery in Torrance is approaching and expressed concern that the Torrance Refining Company and Valero Refinery continue to use modified hydrofluoric acid (MHF). The February 2015 explosion was a near miss for a mass release of MHF that could have caused serious injury or death to many community members. He added that viable alternative technologies have matured and are being implemented at refineries in Utah, Oklahoma and Louisiana.

Anna Christiansen, Sierra Club (Los Cerritos Wetlands Task Force), questioned the accuracy of a South Coast AQMD map of toxic GHG emissions that was presented at a recent Long Beach City Council meeting that excluded the Los Cerritos Wetlands and Port of Long Beach, emphasizing the importance for data to accurately reflect the overall impact of pollution. She commented on how much effort it takes to get South Coast AQMD staff to respond to repeated reports of violations and that the process

allows violators to continue polluting, noting the continued pollution at the Los Cerritos Wetlands on Native American sacred ground. She emphasized the need for more air quality monitors to detect and report pollution to hold violators accountable.

Harvey Eder, Public Solar Power Coalition, expressed support for total solar conversion that is equitable. He emphasized the need to address the climate change crisis.

Ranji George, a member of the public, expressed disappointment with the significant investments allocated to natural gas technology over the past 20 years, in comparison to only a fraction of funding that has gone to battery and hydrogen fuel cell technologies. He also emphasized the need to support sustainable battery technology such as the emerging lithium iron phosphate battery. The current emphasis is on lithium-ion batteries that contain cobalt, which have detrimental impacts to disadvantaged populations worldwide. He urged the Board to provide more support for hydrogen fuel cell technologies.

Tom Hazelleaf, Seal Beach resident, stated that hydrofluoric acid is too dangerous to be used in populated areas. He emphasized that safer, commercially viable processes are available.

Duncan McKee, Avocado Heights resident, submitted a booklet on behalf of his brother, David McKee, titled "Protect your Health: Living Near Quemetco" that was prepared by the Los Angeles County Department of Public Health as a resource for residents living near Quemetco. He expressed concern that the South Coast AQMD could issue a permit allowing Quemetco to increase their throughput. He commented on the harmful chemicals Quemetco releases into the community, noting that his brother believes that the toxic emissions from their operations caused his cancer. He expressed frustration that despite numerous calls made to the South Coast AQMD over the years to report the smell of burning plastic from the facility, inspectors have not been able to trace the smell back to the facility. He questioned the results of Quemetco's emissions profile. He urged South Coast AQMD to protect the health and safety of the surrounding community.

Chair Benoit expressed empathy for residents living in communities surrounding the rendering plants and recalled the overwhelming odors from the rendering plants while visiting Exide Technologies with his father several years ago. He requested that this matter be brought before the Stationary Source Committee to get more information and discuss options to make the complaint reporting process more effective.

Mr. Nastri acknowledged that more needs to be done to address the odors from rendering facilities. Staff is scheduled to provide a status update on efforts to address these issues at the February 18, 2022 Stationary Source Committee meeting. He noted that staff will also focus on legislative changes needed to better address odor nuisances, as well as enforcement actions to motivate facilities to come into compliance quickly or that can be used as a deterrent. Staff will develop and discuss recommendations in the

appropriate Board committee.

Vice Mayor Richardson emphasized the need for outreach to residents living near the rendering facilities to explain the reporting process, noting that the reporting process should be more customer friendly. He looks forward to hearing about staff efforts and recommendations to address odors from rendering facilities.

Senator Delgado thanked everyone for comments about odors from rendering plants. She expressed admiration for the collaborative effort that went into bringing this issue before the Board and noted that she also grew up near the rendering plants and is in support of any effort that needs to be taken on the state level to address the communities' concerns. She added that because Southeast Los Angeles is densely populated, the lives of many people are impacted by the odors. She thanked staff for efforts they have taken to address this issue, but acknowledged that more may need to be done.

Written Comments Regarding: Quemetco Submitted by:

Duncan McKee

David McKee ("Protect Your Health" booklet by County of Los Angeles/Public Health)

Written Comments Regarding Rendering Plant Odor Affecting Southeast Los Angeles Communities Submitted by:

Ulysses Gonzalez, Commerce resident

Cristina Garcia, California State Assemblymember, 58th District

Los Angeles County Supervisor Janice Hahn

--One letter submitted by SELA United with the signature of the following elected officials:

Anthony Rendon, Speaker, California State Assembly, 63rd District; Cristina Garcia, California State Assemblymember, 58th District; Jackie Goldberg, Board Member District 5, Los Angeles Unified School District; Alicia Romero, Mayor, City of Bell; Ana Maria Quintana, Vice Mayor, City of Bell; Ali Saleh, Councilmember, City of Bell; Fidencio Joel Gallardo, Councilmember, City of Bell; Monica Arroyo, Councilmember, City of Bell; Maria Pulido, Mayor, City of Bell Gardens; Marco Barcena, Councilmember, City of Bell Gardens; Lisseth Flores, Councilmember, City of Bell Gardens; Leonard Mendoza, Mayor, City of Commerce; Oralia Rebollo, Mayor Pro Tem, City of Commerce; Ivan Altamirano, Councilmember, City of Commerce; Elizabeth Alcantar, Mayor, City of Cudahy; Jose R. Gonzalez, Vice Mayor, City of Cudahy; Daisy Lomeli, Councilmember, City of Cudahy; Graciela Ortiz, Mayor, City of Huntington Park; Eddie Martinez, Vice Mayor, City of Huntington Park; Karina Macias, Councilmember, City of Huntington Park; Marilyn Sanabria, Councilmember, City of Huntington Park; Manuel Avila, Councilmember, City of Huntington Park; Jorge Casanova, Mayor City of Lynwood; Jose Luis Solache, Mayor Pro Tem, City of Lynwood; Marisela Santana, Councilmember, City of Lynwood; Oscar Flores, Councilmember, City of Lynwood; Rita Soto, Councilmember, City of Lynwood; Heber Marquez, Mayor, City of Maywood; Eddie De La Riva, Councilmember, City of Maywood; Jessica Torres, Councilmember, City of Maywood; Ricardo Lara, Councilmember, City of Maywood; Mary Mariscal,

Treasurer, City of Maywood; Al Rios, Mayor, City of South Gate; Maria del Pilar Avalos, Vice Mayor, City of South Gate; Denise Diaz, Councilmember, City of South Gate; Maria Davila, Councilmember, City of South Gate; and Gil Hurtado, Councilmember, City of South Gate.

## **CONSENT AND BOARD CALENDAR**

### **Items 1 through 3 – Action Items/No Fiscal Impact**

1. Comply with AB 361 Requirements to Allow South Coast AQMD Board and South Coast AQMD Brown Act Committees to Continue to Meet Remotely
2. Approve Minutes of January 7, 2022 Board Meeting
3. Set Public Hearing March 4, 2022 to Consider Adoption of and/or Amendments to South Coast AQMD Rules and Regulations  
  
Determine That Proposed Amendments to Rule 1115 – Motor Vehicle Assembly Line Coating Operations, Are Exempt from CEQA; and Amend Rule 1115

### **Items 4 through 7 -- Budget/Fiscal Impact**

4. Establish List of Prequalified Vendors to Provide Computer, Network, Printer, Hardware and Software
5. Approve Two-Year Labor Agreement with SC-PEA for Professional Unit Bargaining Group
6. Execute Contract for Janitorial Services at Diamond Bar Headquarters
7. Approve Contract Modification as Approved by MSRC

### **Items 8 through 15 – 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. Report of RFQs/RFPs Scheduled for Release in February
14. Status Report on Regulation XIII – New Source Review
15. Status Report on Major Ongoing and Upcoming Projects for Information Management

**Items 16 and 17 -- Staff Presentations/Board Discussion/Receive and File**

16. Budget and Economic Outlook Update *(Presentation in Lieu of Board Letter – No Action Required)*
17. Update on Facility-Based Mobile Source Measure Development for Marine Ports *(Presentation in lieu of Board Letter – No Action Required)*

**Items 18 through 23 -- Reports for Committees and CARB**

18. Administrative Committee
19. Legislative Committee
20. Marine Port Committee
21. Stationary Source Committee
22. Mobile Source Air Pollution Reduction Review Committee
23. California Air Resources Board Monthly Report

**Disclosures:**

Mayor McCallon, Council Member Buscaino, Vice Mayor Richardson and Chair Benoit announced that they have no financial interests in Agenda Item No. 7 but are required to identify for the record that they are Regional Council Members for the Southern California Association of Governments (SCAG), which is involved in this item.



Harvey Eder provided comments on Agenda Items 7 & 12. He emphasized the need for contracts to include environmental justice and equity and integrate solar. He added that South Coast AQMD rules scheduled for rulemaking need to respond to exhibits in the Solar New Deal.

MOVED BY CACCIOTTI, SECONDED BY KUEHL, AGENDA ITEMS 1 THROUGH 16 AND 18 THROUGH 23 APPROVED AS RECOMMENDED; AND TO ADOPT RESOLUTION NO. 22-6, RECOGNIZING THE PROCLAMATION OF A STATE OF EMERGENCY BY GOVERNOR NEWSOM ON MARCH 4, 2020 AND THAT THE COUNTY OF LOS ANGELES CONTINUES TO RECOMMEND MEASURES TO PROMOTE SOCIAL DISTANCING; AND AUTHORIZING FULLY OR PARTIALLY REMOTE TELECONFERENCE MEETINGS OF THE GOVERNING BOARD OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT, AND SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT COMMITTEES SUBJECT TO THE BROWN ACT, FOR THE PERIOD OF FEBRUARY 4, 2022 THROUGH MARCH 6, 2022 PURSUANT TO PROVISIONS OF THE BROWN ACT; AND TO RECEIVE AND FILE THE COMMITTEE, MSRC AND CARB REPORTS, BY THE FOLLOWING VOTE:

AYES: Bartlett, Benoit, Buscaino, Cacciotti, Delgado, Kracov, Kuehl, McCallon, Padilla-Campos, Perez, Rodriguez, Richardson and Rutherford

NOES: None

ABSENT: None

24. Items Deferred from Consent and Board Calendar/Pulled for Discussion

Agenda Item No. 17 was pulled for comment and discussion.

Disclosure:

Vice Mayor Richardson announced that he does not have a financial interest in Agenda Item No. 17 but is required to identify for the record that he is a Council Member of the City of Long Beach, which is involved in this item.

Items Deferred from Consent and Board Calendar/Pulled for Discussion

17. Update on Facility-Based Mobile Source Measure Development for Marine Ports  
(*Presentation in lieu of Board Letter – No Action Required*)

Wayne Nastri provided an update on discussions that occurred over the past six months to negotiate and agree on language for an MOU with the Port of Los Angeles (POLA) and the Port of Long Beach (POLB). He acknowledged the willingness of POLB to work with the South Coast AQMD staff and noted that they identified additional measures in their draft MOU such as advanced funding of \$100 million to accelerate truck replacement. He explained that it has been challenging to reach an agreement because the Ports have significantly different perspectives regarding enforceable mechanisms. Because an agreement was not reached, staff will now move forward with developing an indirect source rule (ISR), as directed by the Board at its August meeting, to fulfill the South Coast AQMD's obligation under the Clean Air Act to pursue all feasible measures to reduce emissions.

Ian MacMillan, Assistant DEO/Planning, Rule Development and Area Sources gave the staff presentation on Agenda Item No. 17.

Peter Warren, San Pedro Peninsula Homeowners Coalition, commented on litigation brought against POLA for CEQA violations, alleging that POLA failed to implement and enforce mitigation measures in its original 2008 EIR for the China Shipping Container Terminal project and then eliminated or weakened measures in a supplemental EIR without adequate substitutes. He questioned the intentions of the Ports to develop an effective MOU and urged the Board to proceed with an ISR.

Karen Jakpor, M.D., physician volunteer for the American Lung Association and Riverside resident, provided comments in support of an ISR for the Ports, noting that the Ports complex is the largest source of air pollution in the region. She expressed concern that very little has been accomplished through a voluntary approach and therefore, there is an urgency to implement rulemaking to address air pollution and the climate change crisis which is worsening due to the recent dramatic increase in cargo volume. She emphasized that the region cannot afford to wait endlessly for an MOU. As a federal nonattainment area for air pollution, actions need to be taken to reduce emissions to achieve attainment of the federal clean air standards or risk federal sanctions.

Fernando Gaytan, Earthjustice, spoke in favor of staff embarking on rulemaking for an ISR that will address pollution at the port. He expressed disappointment that the MOU negotiations have been ongoing since 2016; and that despite direction from the Board in August 2021 that extended MOU negotiations for an additional six months, neither Port has offered an approach that will get the emission reductions needed to meet federal air quality standards. He further explained that the offers by the Ports fall short of meeting their 2017 Clean Air Action Plan (CAAP) goals and makes the South Coast AQMD solely responsible for any shortfall in emissions reductions not met through the voluntary measures they propose.

Luis Portillo, San Gabriel Valley Economic Partnership  
Harry Semerdjian, Los Angeles Area Chamber of Commerce  
Sarah Wiltfong, BizFed (Los Angeles County Business Federation)  
Peter Ward, Valley Industry and Commerce Association  
Lakshmi Jayaram, Future Ports  
Thomas Jelenic, Pacific Merchant Shipping Association  
Henry Rogers, Harbor Association of Industry Commerce  
Edgar Arreola, Inland Empire Economic Partnership

Encouraged the South Coast AQMD to continue working with the Ports on an MOU, as POLA and POLB have a proven track record in doing their part to reduce emissions and are committed to continuing efforts to comply with federal air quality standards. Emphasized that the voluntary, collaborative approach under the CAAP has resulted in significant and measurable emissions reductions. Expressed concern that the Board's direction to staff to work with the Ports on an MOU while the ISR was still on the table had hindered productive conversations. Voluntary measures have proven to reduce emissions while balancing the economic impacts. Urged the Board to withdraw the pre-authorization for staff to begin work on an ISR and allow the MOU negotiations to continue.

Chris Chavez, Coalition for Clean Air, Wilmington, Carson, West Long Beach AB 617 Community Steering Committee member, and Long Beach resident, urged the South Coast AQMD to fulfill its commitment to develop an ISR for the San Pedro Bay Ports. He expressed concern that the MOU process has dragged on for years. He stated that the most recent proposals from the Ports will not result in meaningful emission reductions to address Southern California's air pollution crisis, fails to go beyond the goals under the CAAP, prevents South Coast AQMD from implementing future port-related regulations and re-inserted the "claw back" language that would require South Coast AQMD to pay back millions of dollars if they leave the MOU early. He added that the South Coast AQMD is required by law to adopt all feasible measures to achieve attainment of clean air standards, and that addressing port pollution is also a priority for AB 617 communities, especially Wilmington, Carson and West Long Beach.

Ranji George expressed concern that to address emission reductions at the Ports, there will be more emphasis towards natural gas and battery technologies with very little funding for hydrogen fuel cell technologies. He urged the Board to support more funding for solar, wind, and hydrogen fuel technologies. He reiterated concerns about the recycling and disposal of lithium-ion batteries due to the rising demand for electric vehicles.

Gene Seroka, Port of Los Angeles, expressed disappointment that the MOU negotiations have been unsuccessful. He stated that POLA never received a formal response to the draft MOU they submitted jointly with POLB on August 11, 2021. He commented on POLA's commitment to zero emissions technology, citing the Clean Truck Fund rate and the significant amount of funding that would go specifically to zero-emissions technology; and the Green Shipping Corridor to reduce emissions from ocean-going vessels. He committed to continuing the MOU negotiations in good faith and cautioned about the economic impacts of an ISR. He emphasized the need to secure monetary investments to accelerate the technology.

Mario Cordero, Port of Long Beach, commended the Board for their service and mutual quest to clean the air in the region. He emphasized that POLB has consistently demonstrated a commitment to improving environmental performance while supporting economic development and good jobs. He commented on emission reductions and targets achieved under the CAAP and added that POLB's MOU proposal provides an aggressive and comprehensive commitment that pushes further than the strategies of the CAAP and offers significant investments to achieve zero-emissions goals that includes advancing \$100 million for accelerated emission reduction for drayage trucks. The strategies put forward in their proposal was done out of a collaborative spirit and in good faith to accelerate emission reductions, benefit public health and local communities, and allow for continued cooperative progress. He expressed disappointment that South Coast AQMD staff has dismissed their proposal and is instead in favor of pursuing an ISR.

Steven Goldsmith, Torrance Refinery Action Alliance, expressed concerns for the safety of port workers who go to the International Longshore & Warehouse Union (ILWU) dispatch hall because it is located close to a refinery with HF storage tanks. He emphasized that there are safer, commercially available alternatives to HF, noting that the Valero refinery could convert its HF alkylation unit with one of the new alkylation processes with very little downtime. He urged staff to develop a rule to remove and replace HF with one of the available safer alternatives.

Jessica Craven, Los Angeles Democratic Party elected member/California Democratic Party Environmental Caucus, Northeast Los Angeles Climate Collective,  
Jessie Parks, Sierra Club  
Faraz Rizvi, Center for Community Action and Environmental Justice (CCA EJ)  
Mandeera Wijetunga, Pacific Environment/Los Angeles resident  
Darby Osnaya, Sierra Club and Colton resident,  
Theral Golden, West Long Beach Association  
Ann Cantrell, Sierra Club and Los Cerritos Wetlands Taskforce  
Cindy Santiago, Sierra Club and UCLA student  
Ian Patton, West Long Beach resident  
Sylvia Betancourt, Long Beach Alliance for Children with Asthma,  
Joaquin Castillejos  
Marven Norman, CCA EJ  
Angie Balderas, Sierra Club

Elliott Gonzales

Ana Gonzalez, CCAEJ

Ivette Torres, CCAEJ

Taylor Thomas, East Yard Communities for Environmental Justice and  
Long Beach resident

Andrea Vidaurre, CCAEJ

Mark Masoka, Asian Pacific Policy and Planning Council

Ana Gonzalez, CCAEJ

Yassi Kavezade, Sierra Club-My Generation Campaign

These commenters expressed support for a strong ISR to electrify the Ports. They noted that the ports are the largest source of pollution in the region and frontline communities near the ports bear a disproportionate burden on their health from air pollution exposure. They commented on record-breaking cargo volume at the Ports and the related increase in harmful pollutants. They stated that the voluntary approaches through an MOU process has failed and urged the Board to not allow further delays to the rulemaking process.

Al Sattler, South Bay resident, spoke in support of an ISR for the Ports. He stated that the MOUs for the ports and refineries are not working. He pointed out that existing low-NOx technologies have not been widely implemented by the Ports and expressed support for electrifying rail and allocating more funds for clean trucks, noting that the Clean Truck Fund rate of \$10 is a substantially small amount.

Marvin Pineda, ILWU Local 13, 63, and 94, expressed support for environmental justice as ILWU members work and live in communities surrounding the Port complex; however, they would prefer an MOU agreement rather than a regulatory approach that could potentially be challenged in court and delay progress to provide clean air to communities. He emphasized the need to ensure that jobs at the Ports are protected and requested that a socioeconomic analysis be performed to determine the impact on jobs. He also expressed concern about the automation of ports operations that would impact dockworkers, communities, and small businesses. He urged the parties to find a solution that considers the environment as well as the economic impacts.

Kat Janowicz, 3COTECH and Long Beach resident, commented about the development of the CAAP that would not have been as significant without close collaboration, noting that many of the measures voluntarily agreed upon by stakeholders became regulations in the years that followed its adoption. She added that the CAAP measures provided a platform for emission reductions and technology demonstration that has achieved significant results. She encouraged continued collaboration with the Ports on an MOU rather than imposing an ISR. She expressed concern that an ISR may lead to unintended consequences and have adverse impacts on the economy, port congestion and increased emissions.

Bernice Jimenez Creager, California Trucking Association, commented on the cooperative approach between the trucking and goods movement industries that has resulted in diesel and NOx emission reductions. She added that the MOU process has worked well historically and is the best way to achieve emission reductions. She urged the South Coast AQMD to continue working with the Ports on an MOU.

Todd Campbell, speaking as a South Bay resident, expressed frustration that the Ports have been dragging their feet on MOU negotiations for years that never come to any conclusion and that POLA has failed to fully implement the 2003 settlement agreement on the China Shipping Container Terminal project. He questioned the emission reductions achieved since the updated 2017 CAAP and urged the Board to allow staff to begin developing an ISR.

Dave Cook, local technology worker, stated that there have been commitments to the port communities to purchase the cleanest locomotives available. He expressed concerns that locomotives purchased by the Ports are not the cleanest locomotives available and barely meet the Tier 4 standards.

Harvey Eder emphasized the need for environmental justice and equity, phasing out fossil fuels and integrating the Solar New Deal.

Supervisor Kuehl cited public health concerns and the economic impact of adverse health outcomes due to air pollution. Additionally, she disagreed with the public comment about ISR hindering MOU discussions and stated that ISR provided a deadline for the MOU process. She emphasized that the Board had directed staff back in August 2021 to continue pursuing an MOU approach for another six months, and if after the six months there is no MOU, staff would shift its efforts to a rulemaking approach. She added that it was a reasonable approach and attempt by the Board and staff to come to some agreement and now as decided previously it is time to move onto the ISR.

Board Member Padilla-Campos thanked Supervisor Kuehl and everyone for their comments. She noted her agreement to move forward with the ISR process and looks forward to working with all stakeholders and paying attention to what our communities have been saying for a long time.

Vice Mayor Richardson explained that the additional six months for MOU negotiations was important given the new members on the Board and the need to have a clear starting point, and goal to get emission reductions as quickly as possible through voluntary measures rather than an ISR process that will take 12 to 18 months. He requested that staff continue to engage on issues regarding the threat of port automation and other labor concerns and address these issues through a resolution or Board action in a couple of months.

Mr. Nastri responded that staff is cognizant of labor concerns and is committed to addressing those issues to ensure they are included in any rule that is brought before the Board.

Vice Mayor Richardson expressed disappointment with the pace of the negotiations, untimely responses to the Ports, technical evaluation, and very little community engagement. He suggested that staff heighten engagement, technical scrutiny and transparency moving forward. He added that there needs to be some degree of accountability from the Ports and not just voluntary agreement, noting that their lack of commitment made the process difficult. He urged the Ports to continue to take voluntary measures and not wait for 18 months.

Mr. Nastri responded that there were discussions with Ports staff on a regular basis and staff always made themselves available. Staff was engaged in the process faithfully and transparently, noting there was never a lack of effort and communication on the part of staff. He added that the public had an opportunity to provide comments at the Marine Port Committee meetings and will have more opportunities during the rulemaking process.

In response to Mayor Cacciotti, Mr. MacMillan clarified that the \$3 million dollars referenced in the staff presentation is POLA's early deployment proposal for zero-emission drayage trucks, and that the \$130 million dollars that was referenced by POLA is for the first three years of fee revenue from the Clean Truck Program which they are planning to implement. He added that there are about 20,000 trucks in the drayage truck registry. Mayor Cacciotti commented that \$200 million from the Ports might address 1,500 to 1,600 trucks and will not be sufficient for the scope of the problem.

Written Comments Submitted by:

Eugene Seroka, Port of Los Angeles

Ann Dorsey, Northridge resident

Dave Hall, Long Beach resident

Billy Patterson, Yucaipa resident

Thomas Jelenic, Pacific Merchant Shipping Association (PMSA)

Jessica Alvarenga, PMSA

Michele Grubbs, PMSA

Matthew Sullivan, SSA Marine Company

Brissa Sotelo

Martin Kai

Joanne McClaskey

Nancy Starczyk

Pat Anderson

**PUBLIC HEARING**

- 25. Determine That Proposed Amendments to Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines, Are Exempt from CEQA; and Amend Rule 1134

Staff waived the presentation on this item.

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

Harvey Eder expressed his desire to hear the presentation on this item. He noted that Scotland is phasing out natural gas in the next two years, and commented on the causes and effects of climate change.

There being no further testimony on this item, the public hearing was closed.

MOVED BY MCCALLON, SECONDED BY CACCIOTTI, AGENDA ITEM NO. 25 APPROVED AS RECOMMENDED, TO ADOPT RESOLUTION NO. 22-7 DETERMINING THAT PROPOSED AMENDED RULE 1134 – EMISSIONS OF OXIDES OF NITROGEN FROM STATIONARY GAS TURBINES IS EXEMPT FROM THE REQUIREMENTS OF CEQA AND AMENDING RULE 1134 – EMISSIONS OF OXIDES OF NITROGEN FROM STATIONARY GAS TURBINES, BY THE FOLLOWING VOTE:

AYES: Bartlett, Benoit, Buscaino, Cacciotti, Delgado, Kracov, Kuehl, McCallon, Padilla-Campos, Perez, Richardson, Rodriguez, and Rutherford

NOES: None

ABSENT: None

**CLOSED SESSION**

There was no closed session.



**ADJOURNMENT**

There being no further business, the meeting was adjourned by Vice Chair Delgado at 1:10 p.m.

The foregoing is a true statement of the proceedings held by the South Coast Air Quality Management District Board on February 4, 2022.

Respectfully Submitted,

Faye Thomas  
Clerk of the Boards

Date Minutes Approved: \_\_\_\_\_

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Ben J. Benoit, Chair

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**ACRONYMS**

AQMP = Air Quality Management Plan  
BARCT = Best Available Retrofit Control Technology  
CARB = California Air Resources Board  
CEQA = California Environmental Quality Act  
FY = Fiscal Year  
ISR = Indirect Source Rule  
MOU = Memorandum of Understanding  
MSRC = Mobile Source (Air Pollution Reduction) Review Committee  
NOx = Oxides of Nitrogen  
PM = Particulate Matter  
RECLAIM = Regional Clean Air Incentives Market  
RFP = Request for Proposals  
RFQ = Request for Quotations  
U.S. EPA = United States Environmental Protection Agency  
VOC = Volatile Organic Compound  
WCWLB = Wilmington, Carson, West Long Beach

BOARD MEETING DATE: March 4, 2022

AGENDA NO. 3

PROPOSAL: Set Public Hearings April 1, 2022 to Consider Adoption of and/or Amendments to South Coast AQMD Rules and Regulations:

A. Determine That Proposed Amendments to Rule 1147 – NO<sub>x</sub> Reductions from Miscellaneous Sources, Are Exempt from CEQA; and Amend Rule 1147

Proposed Amended Rule 1147 applies to RECLAIM and non-RECLAIM facilities and is being amended to update the NO<sub>x</sub> emission limits and establish new CO limits to reflect BARCT emission limits for applicable equipment categories. The proposed amendment also includes additional combustion equipment that is currently not regulated, establishes compliance schedules with interim emission limits, includes provisions for monitoring, reporting, recordkeeping and revises exemptions. This action is to adopt the Resolution: 1) Determining that Proposed Amended Rule 1147 – NO<sub>x</sub> Reductions from Miscellaneous Sources, is exempt from the requirements of the California Environmental Quality Act; and 2) Amending Rule 1147 – NO<sub>x</sub> Reductions from Miscellaneous Sources. (Reviewed: Stationary Source Committee, February 18, 2022)

B. Determine That Proposed Rule 1147.2 – NO<sub>x</sub> Reductions from Metal Melting and Heating Furnaces, Is Exempt from CEQA and Adopt Rule 1147.2

Proposed Rule 1147.2 will establish NO<sub>x</sub> and CO emission limits for metal melting, metal heat treating, and metal heating and forging units at non-RECLAIM, RECLAIM, and former RECLAIM facilities. The proposed rule also establishes compliance schedules with interim emission limits, includes provisions for emissions monitoring, reporting, and recordkeeping and incorporates exemptions. This action is to adopt the Resolution:

1) Determining that Proposed Rule 1147.2 – NO<sub>x</sub> Reductions from Metal Melting and Heating Furnaces, is exempt from the requirements of the California Environmental Quality Act; and 2) Adopting Rule 1147.2 – NO<sub>x</sub> Reductions from Metal Melting and Heating Furnaces. (Reviewed: Stationary Source Committee, February 18, 2022)

The complete text of the proposed amended rule, proposed rule, staff report and other supporting documents will be available from the South Coast AQMD's Public Information Center at (909) 396-2001, or Mr. Derrick Alatorre – Deputy Executive Officer/Public Advisor, South Coast AQMD, 21865 Copley Drive, Diamond Bar, CA 91765, (909) 396-2432, [dalatorre@aqmd.gov](mailto:dalatorre@aqmd.gov) and on the Internet ([www.aqmd.gov](http://www.aqmd.gov)) as of March 2, 2022.

**RECOMMENDED ACTIONS:**

Set public hearings April 1, 2022 to determine that Proposed Amended Rule 1147 – NOx Reductions from Miscellaneous Sources, is exempt from CEQA; and amend Rule 1147; and determine that Proposed Rule 1147.2 – NOx Reductions from Metal Melting and Heating Furnaces, is exempt from CEQA and adopt Rule 1147.2.

Wayne Nastri  
Executive Officer

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BOARD MEETING DATE: March 4, 2022

AGENDA NO. 4

**PROPOSAL:** Amend Contracts to Deploy Trucks for Volvo Low Impact Green Heavy Transport Solutions Project

**SYNOPSIS:** In November 2018, the Board approved execution of contracts for the Volvo Low Impact Green Heavy Transport Solutions (LIGHTS) project. CARB approved reallocation of up to \$1,044,854 of administrative funding to project costs and extending the project to September 2022 to deploy up to five trucks at freight handling facilities. This action is to amend a contract with Volvo Group North America, LLC in an amount not to exceed \$1,044,854 from the GHG Reduction Projects Special Revenue Fund (67) to deploy up to five trucks, and amend a contract with Green Paradigm Consulting, Inc. in an amount not to exceed \$14,000 from the GHG Reduction Projects Special Revenue Fund (67) to provide project implementation assistance.

**COMMITTEE:** Technology, February 18, 2022; Recommended for Approval

**RECOMMENDED ACTIONS:**

1. Authorize the Chair (or by the Chair's designation, the Executive Officer) to amend a contract with Volvo Group North America, LLC, in an amount not to exceed \$1,044,854 from the GHG Reduction Projects Special Revenue Fund (67) to deploy up to five trucks at freight handling facilities; and
2. Authorize the Chair (or by the Chair's designation, the Executive Officer) to amend a contract with Green Paradigm Consulting, Inc., in an amount not to exceed \$14,000 from the GHG Reduction Projects Special Revenue Fund (67) to provide project implementation assistance.

Wayne Nastri  
Executive Officer

## **Background**

In November 2018, the Board approved an award of \$44,839,686 for the Volvo Low Impact Green Heavy Transport Solutions (LIGHTS) project to develop and demonstrate Class 8 battery electric trucks, freight handling equipment, infrastructure and solar under CARB's Low Carbon Transportation GHG Reduction Fund Investments. South Coast AQMD received 5 percent of the total grant for administrative funding towards project management including reporting, contracting, invoicing, and other administrative tasks.

## **Proposal**

As the Volvo LIGHTS project nears completion, South Coast AQMD staff recommends reallocating up to \$1,044,854 of its unspent administrative funding to project costs for deployment of up to five battery electric trucks. This will enable the deployment of trucks with the latest generation battery pack with higher than expected vehicle range. Volvo will also be providing approximately \$600,000 in match share for this work. The LIGHTS project will be extended from March 2022 to September 2022. Therefore, staff is requesting an additional \$14,000 from CARB administrative funds for continued project implementation assistance from Green Paradigm Consulting, Inc. These actions are to amend a contract with Volvo Group North America, LLC (Volvo) to add up to \$1,044,854 in CARB funding for the Volvo LIGHTS project and amend a contract with Green Paradigm Consulting, Inc., in an amount not to exceed \$14,000 from the GHG Reduction Projects Special Revenue Fund (67). CARB has approved these reallocations and there are no net changes in grant funds.

## **Benefits to South Coast AQMD**

Projects to support development and demonstration of various electric container and freight transport technologies and infrastructure, as well as to demonstrate solar and energy storage technologies to enable development and demonstration of microgrids with fleets charging heavy-duty trucks, yard tractors, and forklifts are included in the *Technology Advancement Office Clean Fuels Program 2021 Plan Update* under the categories of "Develop and Demonstrate Electric and Hybrid Vehicles," "Develop and Demonstrate Electric Container Transport Technologies," "Develop and Demonstrate Electric Charging Infrastructure," and "Develop and Demonstrate Microgrids with Photovoltaic/Fuel Cell/Battery Storage/EV Chargers and Energy Management." This project is to develop and demonstrate zero emissions heavy-duty trucks, freight handling equipment, infrastructure and solar. Successful demonstrations of such projects will contribute to the attainment of national ambient air quality standards in the South Coast Air Basin by eliminating PM and NOx emissions from replaced diesel heavy-duty trucks and off-road freight handling equipment. The project also includes installation of infrastructure powered by solar and energy storage.

**Resource Impacts**

The amended contract with Volvo will not exceed \$47,733,409 from the GHG Reduction Projects Special Revenue Fund (67). This will not exceed CARB funding of \$43,233,409, \$4,000,000 in South Coast AQMD cost share from the Clean Fuels Fund (31), and \$500,000 from the U.S. EPA Clean Air Technology Initiative (CATI) program. CARB funding of \$42,188,555 was previously recognized by the Board, and up to \$1,044,854 is being reallocated from South Coast AQMD administrative funding to project funding from this grant. The funding sources and amounts for the project are in the following table:

**Proposed Volvo Project Costs**

| <b>Source</b>   | <b>Amount</b>       | <b>Percent</b> |
|---|---------------------|----------------|
| CARB<br><i>(previously recognized)</i>                    | \$42,188,555        | 46%            |
| CARB<br><i>(reallocation from admin to project funds)</i> | \$1,044,854         | 1%             |
| Volvo and partners<br><i>(cash &amp; in-kind)</i>         | \$43,146,552        | 48%            |
| South Coast AQMD<br><i>(approved Nov 2018)</i>            | \$4,000,000         | 4.4%           |
| U.S. EPA (CATI)<br><i>(approved Sept 2020)</i>            | \$500,000           | .6%            |
| <b>Total</b>  | <b>\$90,879,961</b> | <b>100%</b>    |

Sufficient funds will be available in GHG Reduction Projects Special Revenue Fund (67) to amend the Volvo and Green Paradigm Consulting, Inc. contracts from CARB funding for the Volvo LIGHTS project.

BOARD MEETING DATE: March 4, 2022

AGENDA NO. 5

**PROPOSAL:** Recognize California Natural Gas Vehicle Partnership as a Nonprofit Corporation and Transfer Funds, Contracts and Administrative Activities to this Nonprofit

**SYNOPSIS:** The Board established the California Natural Gas Vehicle Partnership (CNGVP) and the Natural Gas Vehicle Partnership Fund (Fund 40) in 2002 to promote greater deployment of natural gas vehicles in California. To provide the CNGVP with greater autonomy and help reduce South Coast AQMD's administrative responsibilities, the CNGVP is registering as a California nonprofit corporation. These actions are to: 1) recognize the CNGVP as a California nonprofit corporation; 2) close all CNGVP contracts; 3) transfer all unspent funds, including interest earned, of up to \$290,000 from the Natural Gas Vehicle Partnership Fund (Fund 40) to CNGVP nonprofit corporation; 4) close the Natural Gas Vehicle Partnership Fund (Fund 40); and 5) discontinue administrative activities on behalf of the CNGVP.

**COMMITTEE:** Technology, February 18, 2022; Recommended for Approval

**RECOMMENDED ACTIONS:**

1. Recognize the CNGVP as a California nonprofit corporation;
2. Authorize the Executive Officer to:
  - a) Close all CNGVP contracts;
  - b) Transfer all unspent funds of up to \$290,000 from the Natural Gas Vehicle Partnership Fund (40) to CNGVP nonprofit corporation; and
  - c) Close the Natural Gas Vehicle Partnership Fund (Fund 40).
3. Discontinue all administrative activities on behalf of the CNGVP.

Wayne Natri  
Executive Officer

## **Background**

In 2002, the Board established the California Natural Gas Vehicle Partnership (CNGVP or the Partnership) to accelerate development of advanced natural gas vehicle technologies, establish a benchmark for lowering emissions from petroleum-based engines, and provide a pathway for transitioning towards hydrogen fuel cells in the future. The CNGVP is comprised of state and federal air quality agencies, transportation and energy agencies, vehicle and engine manufacturers, fuel providers, transit organizations and refuse haulers. The Partnership's Steering Committee meets on a quarterly basis and is comprised of high-level representation from each participating member. South Coast AQMD's representation on the CNGVP includes three South Coast AQMD Board Members.

To help foster the development of the Partnership, the Board in 2002, established the Natural Gas Vehicle Partnership Fund (Fund 40) to recognize and receive dues from members and established South Coast AQMD as the Partnership's financial and contracts administrator for projects approved by the Partnership's Steering Committee. Since 2002, South Coast AQMD staff and resources have been utilized to administer quarterly meetings, record, and transpose minutes, develop, and enforce contracts, invoice for and ensure collection of member's dues, issue payments for contracts and provide fiduciary oversight of the CNGVP's funds and budget. To help alleviate South Coast AQMD workload associated with the CNGVP, the Partnership secured a two-year contract with Gladstein, Neandross, and Associates (GNA) in 2020 to provide administrative services of its quarterly meetings as well as provide the CNGVP with assistance in developing its projects and managing its website. In 2021, the Partnership initiated registration as a California non-profit 501(c)(6); this action will enable the CNGVP to establish a secure financial account to receive and deposit its funds currently held by South Coast AQMD in the Natural Gas Vehicle Partnership Fund (Fund 40), as well as assume all administrative and financial responsibilities including contract development and management, invoicing, and payments.

## **Proposal**

Staff proposes the Board recognize the CNGVP (Partnership) as a non-profit California-based 501(c)(6) and to direct staff to work with the Partnership to execute the secure transfer of the Partnership's funds from the Board's established Natural Gas Vehicle Partnership Fund (Fund 40) to an account identified by the Partnership. In addition, staff proposes the Board direct staff to work with the Partnership to transfer pertinent information to the Partnership concerning outstanding active or pending contracts executed or in development by South Coast AQMD for and on behalf of the CNGVP and conclude all South Coast AQMD responsibilities associated with the administration of the CNGVP. These actions are to recognize the CNGVP as a California nonprofit corporation; authorize the Executive Officer to close all CNGVP contracts and transfer all unspent funds up to \$290,000 from the Natural Gas Vehicle Partnership Fund (40) to



CNGVP nonprofit corporation and close the Natural Gas Vehicle Partnership Fund (Fund 40).

### **Benefits to South Coast AQMD**

The implementation of this Partnership has brought public and private stakeholders together to assist in the development and deployment of advanced natural gas vehicles and refueling infrastructure. As a self-administered nonprofit 501(c)(6), the CNGVP is expected to continue its leadership role to work with original equipment manufacturers, government, and the public towards the advancement of natural gas vehicles in the marketplace, and further address criteria pollutant emissions as well as greenhouse gases and energy needs. This transfer of responsibilities to the CNGVP from South Coast AQMD is expected to alleviate staff and resources that are currently dedicated to the administration and management of the CNGVP's budget, contracts, and projects. In turn, the CNGVP will have exclusive control over its finances, contracts, payments, and invoicing processes, all of which are expected to become more streamlined as a result.

South Coast AQMD will continue its membership and participation with the CNGVP and will continue to work collaboratively with the Partnership and its members in achieving the objectives of the CNGVP. South Coast AQMD continues to recognize the use and air quality benefits of natural gas as a transportation fuel when used in ultra-low NOx engines. In addition, the use of RNG can increase domestic fuel supply, help address landfill diversion efforts and waste biomass challenges, and concurrently reduce greenhouse gas emissions associated with waste biomass. The deployment of ultra-low NOx natural gas heavy-duty vehicles continue to be included in the *Technology Advancement Office Clean Fuels Program Plan Update* under “Infrastructure and Deployment (NG/RNG)” and “Assess and Support Advanced Technologies and Disseminate Information.”

### **Resource Impacts**

As a registered California-based nonprofit 501(c)(6) business entity, the CNGVP will now be able to open a bank account that will enable a secure transfer of all unspent funds of up to \$290,000 from the Natural Gas Vehicle Partnership Fund (Fund 40) to such an account. Concurrently, the CNGVP will assume full administrative responsibilities for its operations and the management of its projects and finances.

 [Back to Agenda](#)

BOARD MEETING DATE: March 4, 2022

AGENDA NO. 6

**PROPOSAL:** Renew Membership in California Fuel Cell Partnership, Execute Contract, Receive and File California Fuel Cell Partnership Executive Board Meeting Agendas and Activity Updates

**SYNOPSIS:** South Coast AQMD has been a member of the California Fuel Cell Partnership (CaFCP) since 2000. These actions are to renew South Coast AQMD's membership in the CaFCP for Calendar Year 2022, execute a contract from the Clean Fuels Program Fund (31) with Frontier Energy, Inc., acting on behalf of the CaFCP in an amount not to exceed \$40,000 and receive and file the CaFCP Executive Board Meeting Agendas for March 30, 2021 and October 20, 2021; and Activity Updates for 2021.

**COMMITTEE:** Technology, February 18, 2022; Recommended for Approval

**RECOMMENDED ACTIONS:**

1. Authorize the Chair to execute a contract with Frontier Energy, Inc., acting on behalf of the CaFCP, to renew South Coast AQMD's membership in the CaFCP for Calendar Year 2022 in an amount not to exceed \$40,000 from the Clean Fuels Program Fund (31); and
2. Receive and file the CaFCP Executive Board Meeting Agendas for March 30, 2021 and October 20, 2021 and Activity Updates for 2021.

Wayne Natri  
Executive Officer

MMM:AK:JI:LHM

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**Background**

California Fuel Cell Partnership 2022 Membership

The California Fuel Cell Partnership (CaFCP) was initiated in 1999 to accelerate response to CARB's Zero Emission Vehicle (ZEV) regulations. The AQMP and the Technology Advancement Office's Clean Fuels Program 2022 Plan Update have

identified fuel cells for on- and off-road applications, especially medium- and heavy-duty vehicles, as well as hydrogen technologies and infrastructure as a core technology for attaining and maintaining cleaner air quality. Because of the alignment of South Coast AQMD and CaFCP goals for accelerated fuel cell vehicle commercialization, the Board accepted the CaFCP's formal invitation to join at the highest level of membership in March 2000.

Each CaFCP Executive Board Member has a representative on the Board of Directors (will be renamed Champion Board Member in 2022). Mayor Carlos Rodriguez serves as the representative on the CaFCP Board of Directors for South Coast AQMD. As of December 31, 2021, Executive Members included:

- Seven automotive manufacturers (cellcentric, Daimler Trucks, Honda, Hyundai, Mercedes, Nikola Motor Co. and Toyota);
- Seven industry stakeholders (Air Liquide, Anglo American, Chevron, Cummins, Iwatani, Shell and SoCalGas);
- Two government agencies (South Coast AQMD and CARB); and
- Energy Independence Now and the California Governor's Office of Economic Development (GO-Biz).

By the end of 2021, there were also 46 Full (will be renamed Champion - Steering Team in 2022) and Associate Members, with commensurate benefits and voting rights.

Major accomplishments during Calendar Year 2021 include:

- Continued retail production and deployment of fuel cell cars, trucks, buses and infrastructure in California. As of January 1, 2022, there have been 12,283 cumulative total fuel cell electric vehicle (FCEV) sales and leases by Honda, Hyundai and Toyota in California<sup>1</sup>, 49 retail hydrogen stations are operating (24 in South Coast) with 58 more new/upgraded retail stations planned. Of the 49 operating, three were constructed without CEC co-funding (but will generate LCFS credits during operation). There are 48 fuel cell buses in operation served by four stations plus 58 fuel cell buses in development. Two demonstration truck stations are operating, one demonstration station is in commissioning, plus co-funding was approved for four more truck stations. As of November 4, 2021, 62 light-duty hydrogen stations were approved for CARB LCFS ZEV infrastructure crediting;
- Developed and published the Fuel Cell Electric Truck Vision document in July, supported through presentations at conferences and other opportunities. Conducted monthly teleconferences of the Heavy-Duty Fuel Cell Electric Truck Task Force, providing a forum for members to learn more about funding

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<sup>1</sup>Number of cumulative total FCEV sales data from HybridCars.com and Carsalesdatabase.com

opportunities and proposed regulations, as well as multiple other sector-focused groups;

- Since in-person events were restricted due to COVID-19, virtual activities included quarterly online briefings about hydrogen station status and vehicle rollout in California, the California Hydrogen Policy Series continues with participation and co-sponsorship from California Hydrogen Coalition, California Hydrogen Business Council and others, and periodic webinars on topics like the CEC – CARB AB 8 joint report, and GO-Biz Briefings; and
- Continued to develop the legal transition to a new non-profit organization to expand capabilities to support implementation of the *California Fuel Cell Revolution*.

### **Proposal**

The proposed CaFCP activities for 2022 include:

- Develop the necessary infrastructure and processes to support expanded vehicle rollout for the first 200 hydrogen stations and longer-term exponential growth to reach 1,000 stations for light duty, as well as the initial 200 heavy-duty stations, along with related infrastructure tracking and customer interface tools;
- Provide forums and opportunities for members to advance group collaboration and progress within CaFCP and among an expanding stakeholder base, including national coordination and expansion; and
- Reach target markets, audiences and communities to educate, inform and promote hydrogen and fuel cell vehicles and accelerate greater commercial adoption across applications.

The CaFCP retains Frontier Energy, Inc., to provide the needed support for the common tasks agreed to by the CaFCP, and each member contracts directly with Frontier Energy acting on behalf of the CaFCP.

Staff proposes the following actions:

- Continue South Coast AQMD's membership for Calendar Year 2022 at the Champion Board of Directors level for a total amount not to exceed \$40,000 for common expenses of the CaFCP.
- Receive and file the CaFCP Executive Board Meeting Agenda for March and 2021 and Activity Updates for 2021.

### **Sole Source Justification**

Section VIII.B.2. of the Procurement Policy and Procedure identifies provisions under which a sole source award may be justified. This request for a sole source award is made under provision B.2.d.: Other circumstances exist which in the determination of the Executive Officer require such waiver in the best interests of South Coast AQMD.

Specifically, these circumstances are B.2.d.(1): Projects involving cost-sharing by multiple sponsors. The major sponsors expected to contribute financially to the CaFCP include seven automakers, seven industry stakeholders, one non-profit and two government agencies (in addition to South Coast AQMD). CaFCP membership is only available via sole source contract with Frontier Energy.

**Benefits to South Coast AQMD**

Membership in the CaFCP is consistent with the draft *Technology Advancement Office Clean Fuels Program 2022 Plan Update* under “Hydrogen and Mobile Fuel Cell Technologies & Infrastructure” and “Assessment and Technical Support of Advanced Technologies and Information Dissemination.” South Coast AQMD supports the development, demonstration and commercialization of zero and near-zero emission vehicles and strives to educate public and private organizations regarding the benefits and characteristics of these vehicles.

**Resource Impacts**

South Coast AQMD’s support of the CaFCP for Calendar Year 2021, provided through a contract(s) with Frontier Energy, Inc., will not exceed \$40,000 from the Clean Fuels Program Fund (31).

**Attachments**

1. California Fuel Cell Partnership March 30 and October 20, 2021, Executive Board Meeting Agendas
2. California Fuel Cell Partnership Activity Updates for 2021

## CaFCP Executive Board Meeting – Teleconference

30 March 2021

10:00am – 12:00pm PT

Remote Only, **please register** here: <https://register.gotowebinar.com/register/7389616850831406608>

### AGENDA

- Antitrust statement
- Chair welcome and 2021 direction
- California ZEV Market Strategy report presentation – *Tyson Eckerle, GO Biz*
- CaFCP Program Activities
  - New member proposal
  - FCET Team and Vision document
- Priorities Status Reports
  - New organization status
  - H2 Strike Force proposal
  - Expansion proposal update and discussion
- Public Comment
- Meeting Close

#### ANTITRUST GUIDELINES

It is the express intent of the CaFCP and its Members that none of the CaFCP's activities violate or be in conflict with any federal, state or local antitrust law, rule or policy (collectively, the "antitrust laws"). Each Member will conduct its affairs in conformity with this intent. Each Member is aware that there are significant civil and criminal penalties for violating the antitrust laws. To the extent possible, the Members of the CaFCP will act in a manner substantially in compliance with the policy entitled "Antitrust Guidelines for Collaboration Among Competitors" issued by the Federal Trade Commission and the Department of Justice in April 2000 ("Antitrust Guidelines"). The Antitrust Guidelines are available for reference on the CaFCP's Member resources website. The Antitrust Guidelines will be referenced in advance of the CaFCP meetings.

## CaFCP Executive Board Meeting – Teleconference

20 October 2021

9:00am – 12:00pm PT

Remote Only, please register here: <https://register.gotowebinar.com/register/2990470835242058254>

### AGENDA – Public Board Meeting

- Antitrust Statement
- Welcome, *Chair Jerome Gregeois*
- CaFCP Program Highlights
- CaFCP Organizational Update
  - New organization development
  - Membership Committee
  - Finance Committee
  - Expansion proposal
- U.S. DOE Update, *HFCTO Director Sunita Satyapal*
- Market Activities
  - FCET Vision
  - H2 Strike Force proposal
- Formal Board decisions
  - 2022 meeting dates
  - 2022 program plan and budget
  - 2022 vice chair/2023 chair nomination
  - New member proposals
- Preparing for 2022, *Vice Chair Joe Cappello*
- Public Comment
- Meeting Close

#### ANTITRUST GUIDELINES

It is the express intent of the CaFCP and its Members that none of the CaFCP's activities violate or be in conflict with any federal, state or local antitrust law, rule or policy (collectively, the "antitrust laws"). Each Member will conduct its affairs in conformity with this intent. Each Member is aware that there are significant civil and criminal penalties for violating the antitrust laws. To the extent possible, the Members of the CaFCP will act in a manner substantially in compliance with the policy entitled "Antitrust Guidelines for Collaboration Among Competitors" issued by the Federal Trade Commission and the Department of Justice in April 2000 ("Antitrust Guidelines"). The Antitrust Guidelines are available for reference on the CaFCP's Member resources website. The Antitrust Guidelines will be referenced in advance of the CaFCP meetings.



The California Fuel Cell Partnership and its members continue to advance the market for fuel cell electric vehicles and the hydrogen infrastructure network, collaborating on ideas and actions that will create a sustainable future for zero-emission cars, trucks and buses. [The California Fuel Cell Revolution](#) continues to be a leading guide towards laying the foundations to achieve 1,000 stations to support the state’s objective of 100% light-duty ZEV sales by 2035 while the [Fuel Cell Electric Trucks: A Vision for Freight Movement in California – and Beyond](#) calls for 200 stations serving upwards of 70,000 heavy-duty trucks by 2035 to meet 2045 HD state objectives<sup>1</sup>.

## SECTOR GROUP UPDATES

**AUTOMOTIVE GROUP** | Member Lead: M McClory | Staff Lead: D Park

- Coordination with CaFCP Station Developer/Operator Workgroup;
- [CaFCP Station Map](#) Topics:
  - Map legend categories were updated to more clearly communicate the retail hydrogen fueling network. New categories are “Construction,” “Permitting” and “Proposed” changed from the original, “Development,” “Planning,” and “Proposed.”
  - “Currently Unavailable” stations removal from- and reinstatement to- the map.
  - Heavy-duty Bus and Truck stations were added, noting inaccessibility for cars.
  - Private Station Development listing and methodology ongoing at the end of 2021.
  - Station map update- implement SOSS directly onto the Station Map;
- Station confirmation:
  - OEM Best Practices station confirmation process developed in response to Covid19 related station confirmation bottlenecks, including CARB HyStEP staff travel restrictions.
    - Process can be used in regions outside of CA.
    - Two stations confirmed using this process in 2021.
  - Initiated investigation of a station confirmation process that removes OEMs from the station confirmation process.
- [SOSS](#) Topics:
  - SOSS data visualization activities initiated.
  - POS failure and SOSS “Offline,” ongoing work with SDOs to minimize false positive (POS failure, but “Online” SOSS signal).
  - “Refresh” and station notes data transmission to OEM applications implemented.
  - Initiated Private-funded station methodology and listing on SOSS.
  - Developed a SOSS QR code sticker and distributed to SDOs for hydrogen dispensers.
  - Initiated discussion of proposal to remove H35 from the SOSS main page; Outcome – H35 will continue to be listed on the SOSS main page when still available at a station.
- Station Development Tracking Topics

<sup>1</sup> Members can access these publications and related slide decks and other materials on the CaFCP website’s [Resources](#) page



- Initiated proposal for tracking Private Station Development with GoBiz, as it does with publicly funded station developments (multiple new privately-funded stations).
- Facilitated communication of Northeast US hydrogen station development progress to OEM members.
- Station Buyer's Guide - Developed and posted on CaFCP website. OEM group and CaFCP staff developing a proposal of how the document may be further leveraged for greater progress.
- Hydrogen Supply and Distribution updates:
  - CaFCP staff worked with OEMs to provide FCEV drivers accurate messaging regarding supply and distribution of hydrogen during major disruptions.
  - Continue to post [alerts on SQSS](#)/station map regarding network issues, e.g. 2021 summer notices regarding high ambient temperature and station recharge challenges.
  - Back to back alerts posted regarding hydrogen supply chain- demand v. wholesale availability, Covid related supply chain disruptions, Sacramento distribution facility outage, Hurricane Ida disruption, demand vs. wholesale availability. –
  - CaFCP tracking of driver calls to be shared with OEM and SDOs.
- Hydrogen Network Health:
  - Guidance provided to CaFCP staff regarding methodology (metrics, identifying network issues and identifying solutions);
- California Regulatory Proceedings tracking:
  - CEC 2021 Transportation Investment Plan
  - CARB Clean Miles Standard
- CARB Draft 2020 Mobile Source Strategy
- Economic Stimulus
  - US DOE Earthshot CaFCP comment letter developed
- Attracting new OEM manufacturers
  - Initiated joint OEM/SDO discussions of how to attract new entrants to the marketplace.

#### GOVERNMENT GROUP | Member Lead: G Vacin | Staff Lead: B Xiong

- The Station Confirmation Group continued to meet bi-weekly to discuss next stations to complete commissioning. Please refer to [Go-Biz SmartSheet](#).
- The group continues to review and discuss stations that could potentially be removed from the [CaFCP Station Map](#) dependent on if they meet the new process of station removal. None were removed during this time period.
- 10 stations opened & moved to Open-retail in 2021: Aliso Viejo, Berkeley, Campbell–E. Hamilton, Concord, Costa Mesa–Harbor Blvd., Costa Mesa–Bristol St., Placentia, Sherman Oaks, Studio City, Sunnyvale
- 5 stations open but are Currently Unavailable: Riverside, Berkeley, San Francisco–Harrison Street, Mountain View, Ontario

#### STATION DEVELOPER/OPERATOR GROUP | Member Lead: A Harris | Staff Lead: D Park

- Hydrogen Supply and Distribution updates:
  - CaFCP staff worked with OEMs and SDOs to provide FCEV drivers accurate messaging regarding supply and distribution of hydrogen during major disruptions.

- Continue to post [alerts on SOSS](#)/station map regarding network issues, e.g. 2021 summer notices regarding high ambient temperature and station recharge challenges.
- Back to back alerts posted regarding hydrogen supply chain- demand v. wholesale availability, Covid related supply chain disruptions, Sacramento distribution facility outage, Hurricane Ida disruption, demand vs. wholesale availability.
- CaFCP tracking of driver calls to be shared with OEM and SDOs.
- Station Map topics
  - Listing of CEC 19-602 NOPA stations on Station Map.
  - Map legend categories were updated to more clearly communicate the retail hydrogen fueling network. New categories are “Construction,” “Permitting” and “Proposed” changed from the original, “Development,” “Planning,” and “Proposed.”
  - “Currently Unavailable” stations removal from- and reinstatement to- the map.
  - Heavy-duty Bus and Truck stations were added, noting inaccessibility for cars.
  - Private Station Development listing and methodology ongoing at the end of 2021.
  - Station map update- implement SOSS directly onto the Station Map;
- Codes and Standards:
  - CSA HGV 4.2; Harmonize requirements for hose standard.
- Frozen Nozzle
  - Outreach to customers how to cope with frozen nozzle.
- Station confirmation:
  - OEM Best Practices station confirmation process developed in response to Covid19 related station confirmation bottlenecks, including CARB HyStEP staff travel restrictions.
- Shell HyConnect wireless communication interface discussion.
- [SOSS](#) Topics:
  - SOSS automated notification for data error offered to SDO as a service.
  - SOSS data visualization activities initiated.
  - POS failure and SOSS “Offline,” ongoing work with SDOs to minimize false positive (POS failure, but “Online” SOSS signal).
  - “Refresh” and station notes data transmission to OEM applications implemented.
  - Initiated Private-funded station methodology and listing on SOSS.
  - Developed a SOSS QR code sticker and distributed to SDOs for hydrogen dispensers.
  - SOSS messaging guidelines
  - Initiated discussion of proposal to remove H35 from the SOSS main page; Outcome – H35 will continue to be listed on the SOSS main page when still available at a station.
  - Override station status feature added.
- Station Buyer’s Guide - Developed and posted on the CaFCP website.
  - Document is designed to communicate to potential station developers that these are the items that should be considered; provides a methodology for OEMs to step back from station confirmation.
- Hydrogen Strikeforce Jobs Survey SDO feedback solicited and subsequently, survey distributed.
- Hydrogen Network Health:
  - Guidance provided to CaFCP staff regarding methodology (chain of information, metrics, identifying network issues and identifying solutions).

- California Regulatory Proceedings tracking:
  - CEC 2021 Transportation Investment Plan
  - CARB Clean Miles Standard
  - CARB Draft 2020 Mobile Source Strategy
- Economic Stimulus
  - US DOE Earthshot CaFCP comment letter developed
- Attracting new OEM manufacturers
  - Initiated joint OEM/SDO discussions of how to attract new entrants to the marketplace.
  - Established recurring monthly CaFCP SDO group meeting for second Wednesday of each month

#### **MHD GROUP (FCET & FCEB) | Member Lead: Shell/Toyota | Staff Lead: N Bouwkamp**

- Completed creation and publication of *"Fuel Cell Electric Trucks: A Vision for Freight Movement in California—and Beyond"*, which provides decision-makers with a vision for developing sustainable markets for the HD class 8 truck sector by 2035
  - Hard copies of the document have been distributed to members and stakeholders, including ACT Expo and a number of legislative truck outreach events. Additional copies available upon request.
  - Staff presented the Vision through webinars and targeted stakeholder group presentations
  - Initiated the development of a subsequent roadmap document for FCETs
- Staff continue to track, engage members & provide input to CARB's Advanced Clean Fleet regulatory development process and CEC's EnergIIZE (MD/HD ZEV fueling funding) process
- Monthly meeting to provide updates, regulatory process tracking and discuss HD related topics
- Supporting NREL CRADA project to develop publicly available high flow fueling protocol for HD H35 FCEVs (including management of industry contributions and facilitation of industry engagement)
- Supporting CHBC Transit SAG and collaboration with CHBC on topic of FCEBs
  - Initiated the organization of a transit board decision maker targeted FCEB Workshop at SunLine
- Participation in CalSTA process to provide direction to state to meet requirements of SB 671 related to ZET fueling infrastructure coordination/direction
- Participation in FCHEA's MD/HD Workgroup activities

#### **PROJECT TEAMS**

#### **SAFETY CODES & STANDARDS | Member Leads: R. Early, S. Mathison | Staff Lead: J Hamilton**

- ASTM D03.14 Subcommittee on Hydrogen and Fuel Cells: (Chair)
  - 2021 D03 committee week meeting in Anaheim, CA December 6-9, in person and remote
    - Workshop on in-line hydrogen fuel analyzers held December 9th; six presentations from both industry and National Labs.
  - Coordination of sampling work with SINTEF done in CA (September 2021) for ASTM D7650 (particulate sampling) and ASTM D7606 (gaseous sampling) and ISO 19880-9 Sampling for Fuel Quality Analysis (ISO/TC 197/WG 33) via the MetroHyVe2 project (<https://www.sintef.no/projectweb/metrohyve-2/>). The ASTM documents will most likely be harmonized with the ISO document.

- Inter Laboratory Studies (ILS) on FTIR and Cavity Ring Down Spectroscopy are in process of adding more labs to run the protocols; updates to the corresponding documents will occur upon completion (ASTM D7653 and ASTM D7941/D7941M, respectively)
- Other documents in revision:
  - D7675-2015 Test Method for Determination of Total Hydrocarbons in Hydrogen by FID-Based Total Hydrocarbon (THC) Analyzer
  - D7892-2015 Test Method for Determination of Total Organic Halides, Total Non-Methane Hydrocarbons, and Formaldehyde in Hydrogen Fuel by Gas Chromatography/Mass Spectrometry
  - D7651-2017 Test Method for Gravimetric Measurement of Particulate Concentration of H2 Fuel
    - All three of these documents have ILS in process
    - CGA Jennifer continues to work with CGA (Rob Early) via the mutual membership and on committees. Below is the status of relevant CGA documents:

| Standard  | Current edition                          | Status   |
|---|--|--|
| CGA G-5, <i>Hydrogen</i>  | 8 <sup>th</sup> (2017)                   | Deadline to submit proposed changes for next edition is 7/7/2022.<br><a href="https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-019">https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-019</a>   |
| CGA G-5.3, <i>Commodity specification for hydrogen</i>  | 7 <sup>th</sup> (2017)                   | Deadline to submit proposed changes for next edition is 6/4/2022.<br><a href="https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-013">https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-013</a>   |
| CGA G-5.4, <i>Standard for hydrogen piping systems at user locations</i>  | 6 <sup>th</sup> (2019)                   | Deadline to submit proposed changes for next edition is 12/22/2024.<br><a href="https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=24-54">https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=24-54</a>   |
| CGA G-5.5, <i>Hydrogen vent systems</i>   | 3 <sup>rd</sup> (2014)                   | The 5 <sup>th</sup> edition has been published and can be found at <a href="https://portal.cganet.com/Publication/Details.aspx?id=G-5.5">https://portal.cganet.com/Publication/Details.aspx?id=G-5.5</a><br>Deadline to submit proposed changes for next edition is 03/04/2026.<br><a href="https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=26-3">https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=26-3</a> |
|   |  | Heat radiation testing at Chart Industries in New Prague, MN date (spring 2021) is to be determined.   |
| CGA G-5.6, <i>Hydrogen pipeline systems</i>   | 1 <sup>st</sup> (2005 – reaffirmed 2013) | Deadline to submit proposed changes for next edition is 8/1/2022.<br><a href="https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=19-018">https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=19-018</a>   |
| CGA H-1, <i>Service conditions for portable, reversible metal hydride systems</i>   | 2 <sup>nd</sup> (2011)                   | Deadline to submit proposed changes for next edition is 2/3/2022.<br><a href="https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-033">https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-033</a>   |
| CGA H-2, <i>Guideline for classification and labeling of hydrogen storage systems with hydrogen absorbed in reversible metal hydrides</i> | 2 <sup>nd</sup> (2018)                   | Deadline to submit proposed changes for next edition is 6/4/2022.<br><a href="https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-012">https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-012</a>   |

|  |  |   |
|--|--|---|
| CGA H-3, <i>Standard for cryogenic hydrogen storage</i>  | 3 <sup>rd</sup> (2019)                   | Deadline to submit proposed changes for next edition is 12/1/2023.<br><a href="https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=23-036">https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=23-036</a>         |
| CGA H-4, <i>Terminology associated with hydrogen fuel technologies</i>   | 3 <sup>rd</sup> (2020)                   | Deadline to submit proposed changes for next edition is 12/1/2024.<br><a href="https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=24-59">https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=24-59</a>           |
| ANSI/CGA H-5, <i>Standard for bulk hydrogen supply systems</i>   | 3 <sup>rd</sup> (2020)                   | The deadline to submit proposed changes for the next edition is 2/26/2024.<br><a href="https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=24-010">https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=24-010</a> |
| CGA H-10, <i>Combustion safety for steam reformer operation</i>  | 2 <sup>nd</sup> (2018)                   | Deadline to submit proposed changes for next edition is 12/1/2023.<br><a href="https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=23-038">https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=23-038</a>         |
| CGA H-11, <i>Safe start-up and shutdown practices for steam reformers</i>  | 2 <sup>nd</sup> (2020)                   | Deadline to submit proposed changes for next edition is 8/11/2025.<br><a href="https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=25-30">https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=25-30</a>           |
| CGA H-12, <i>Mechanical integrity of syngas outlet systems</i>   | 1 <sup>st</sup> (2016)                   | Deadline to submit proposed changes for next edition is 3/1/2022.<br><a href="https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=21-016">https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=21-016</a>          |
| CGA H-13, <i>Hydrogen pressure swing adsorber (PSA) mechanical integrity requirements</i>  | 1 <sup>st</sup> (2017)                   | Deadline to submit proposed changes for next edition is 8/1/2022.<br><a href="https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=22-027">https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=22-027</a>          |
| CGA H-14, <i>HYCO plant gas leak detection and response practices</i>  | 1 <sup>st</sup> (2018)                   | Deadline to submit proposed changes for next edition is 12/8/2023.  |
| CGA H-15, <i>Safe catalyst handling in HYCO plants</i>   | 1 <sup>st</sup> (2020)                   | Deadline to submit proposed changes for next edition is 9/1/2025.<br><a href="https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=25-59">https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=25-59</a>            |
| CGA H-XXX (TBD), <i>Small scale hydrogen production and delivery</i>   | New publication not released yet         | Task force is creating first draft that will then go to the CGA membership for review.  |
| CGA P-28, <i>OSHA process safety management and EPA risk management plan guidance document for bulk liquid hydrogen supply systems</i>                   | 4 <sup>th</sup> (2014)                   | The draft of the 5 <sup>th</sup> edition is in staff review before going to Standards Council for final review.   |
| CGA PS-31, <i>Position statement on cleanliness for proton exchange membranes hydrogen piping / components</i>   | 1 <sup>st</sup> (2007 – reaffirmed 2019) | Deadline to submit proposed changes for next edition is 6/12/2025.<br><a href="https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=25-16">https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=25-16</a>           |
| CGA PS-33, <i>Position statement on the use of LPG or propane tanks as compressed hydrogen storage buffers</i>   | 1 <sup>st</sup> (2008 – reaffirmed 2020) | Deadline to submit proposed changes for next edition is 12/10/2026.<br><a href="https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=25-41">https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=25-41</a>          |
| CGA PS-46, <i>Position statement on roofs over hydrogen storage systems</i>  | 1 <sup>st</sup> (2017)                   | Deadline to submit proposed changes for next edition is 3/6/2023.<br><a href="https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=23-012">https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=23-012</a>          |
| CGA P-48, <i>Position statement on clarification of existing hydrogen setback distances and development of new hydrogen setback distances in NFPA 55</i> | 1 <sup>st</sup> (2016)                   | Deadline to submit proposed changes for next edition is 2/12/2021.<br><a href="https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=21-062">https://portal.cganet.com/Publication/Workspac e/Outline.aspx?work_id=21-062</a>         |

- **CSA Group:** Jennifer is the Chair of the CSA Hydrogen Transportation Technical Committee. Jennifer is also Bill Elrick's voting member for the Transportation Strategic Steering Committee; a member of the Fuel Cells TC, a member of the B51/NGV2/HGV2 Harmonization Combined Task Force, on the Transportation Executive Synchronization Committee, and an active member on the Technical Sub Committees for a number of the documents listed below.

**CSA Group 2021 U.S. Committee meetings - virtual only**

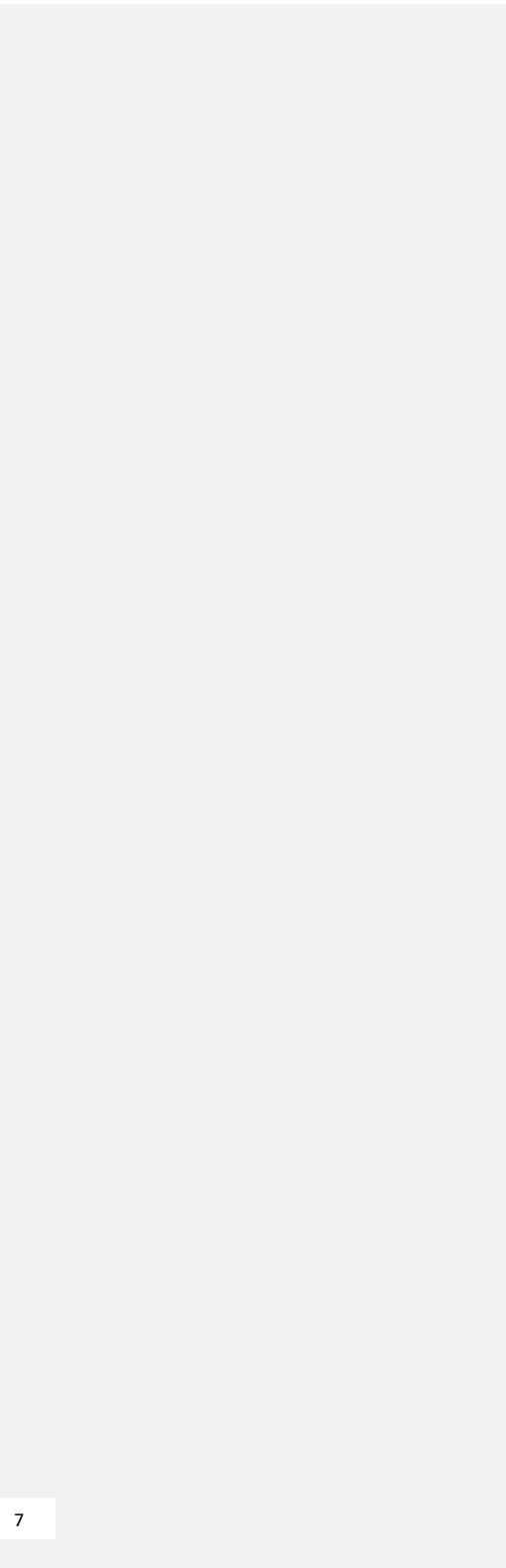
- Hydrogen Transportation Technical Committee meeting, October 6<sup>th</sup>.
- Transportation Strategic Steering Committee, November 15<sup>th</sup>.
- Fuel Cell TC, November 17<sup>th</sup>

**Active Projects**

| Active / Recently Published Projects |   |   |
|--------------------------------------|---|---|
| TSC                                  | Designation/Title   | Status  |
| HGV 4.3                              | HGV 4.3, Test methods for hydrogen fueling parameter evaluation         | This project is a revision of an existing standard, and will include content related to MC formula. The Technical Committee Ballot closed 12/4/2021. The ANSI final steps are being completed and the document is being prepped to publish.   |
| HGV 4.2                              | HGV 4.2, Hoses for dispensing compressed gaseous hydrogen               | This project is a revision of an existing standard, and will update to align with current hose technology, and remove requirements for on-board vehicle hoses (content will be transferred to HGV 3.1). The Technical Committee Ballot closed with a negative vote. A Recirculation Ballot of the Technical Committee is closing on 1/8/2022.                             |
| HGV 5                                | HGV 5.2, Compact hydrogen fueling systems                               | This project is to develop a NEW standard for Compact Hydrogen Fueling Systems (HGV 5.2). The TSC completed content development. The draft is available for public review (closing January 18, 2022). Click here to access: <a href="https://publicreview.csa.ca/Home/Details/4410">https://publicreview.csa.ca/Home/Details/4410</a>                                     |
| HGV 3                                | HGV 3.1, Onboard vehicle components for hydrogen gas vehicles           | This project is a revision of an existing standard for technology updates, as well as inclusion of the on-board vehicle hose requirements (transferred from HGV 4.2). The draft is available for public review (closing January 6, 2022). Click here to access: <a href="https://publicreview.csa.ca/Home/Details/4400">https://publicreview.csa.ca/Home/Details/4400</a> |
| HGV 2                                | HGV 2, Compressed hydrogen gas vehicle fuel containers                  | This project is a revision of an existing standard. A kickoff meeting was held in December 2021. Content development meetings are starting in January 2022.   |
| HGV 4.1                              | HGV 4.5, Priority and sequencing equipment for hydrogen vehicle fueling | This project is to develop a standard to REINSTATE an updated edition of a Priority and Sequencing standard. A seed document draft has been prepared and a kickoff meeting with the HGV 4.1 TSC is being scheduled for early 2022.  |
| C22.2 No. 22734                      | Hydrogen generators using water electrolysis                            | The CSA technical subcommittee continues to work on a binational adoption of ISO 22734. Contact Mark Duda ( <a href="mailto:mark.duda@csagroup.org">mark.duda@csagroup.org</a> ) with questions or for additional information.  |

**IFC/CFC:**

- 2020 NFPA 2 enforceable July 1, 2021
- CA in the 2021 code adoption cycle for 2021 IFC, for 2022 Ca Fire Code that is law January 1, 2023



- IFC is now working on the 2026 version
  - Fire code action committee submitted proposal for hydrogen mobile fueling without limits on amount of fuel.
- ISO/TC 197: (U.S. TAG member)
  - 2021 Plenary held online from Korea; Jennifer did not attend due to conflict with ASTM meetings and timing of sessions. Notes from US TAG Chair, Glenn Scheffler:
    - **WG 5** – Land Vehicle Reconnection Devices Refueling –Joint meetings with SAE to discuss issue of certain H35 high-flow nozzles and H70 receptacles.
    - **WG 15**- Cylinders and tubes for stationary storage – discussion for stationary cylinders around leakage, and expressed desire to address fittings; WG convenor, John Eihusen addressing the issue with WG 15 so as to avoid duplication.
    - **WG 23**: ISO 19880-6, Fittings -work on clarification of document scope
    - **WG 24**: re-instated to work on the NWIP for (heavy duty) high flow with three sub tasks: design, communications, and protocols (proposed documents 19885-1, -2, -3).
    - **WG 27** – Hydrogen Quality-Discussion on revising ISO 14687 for each grade of hydrogen fuel
    - **WG 28**: Hydrogen Quality Control- ISO 19880-8 Working to align with the latest ISO 14687; amendment passed the FDIS ballot; publication coming soon
    - **New WG 29**- ISO/TR 15916:2015-Basic considerations for the safety of hydrogen systems: is revisiting hydrogen liquid as well as the material tables. An exact date is not yet determined
    - **WG 33**: Sampling- to work on hydrogen sampling document, ISO 19880-9, using ISO 19880-1, Annex K as a 'seed' document. Also, likely to harmonize with ASTM D7650 and D7606.
- NFPA 2: (Technical Committee Member)
  - NFPA 2 2020 adopted by Office of the State Fire Marshal during California Intervening Code Cycle, per August meetings; will be enforceable July 1, 2021
  - 2023 version in revision cycle
    - Second draft meetings scheduled virtually for February 28-March 4, 2022.
  - Work ongoing for liquid hydrogen setback distances and inputs via a smaller task force within the Storage Task Group; modifications to the original setback table proposals underway.
- SAE International: (Fuel Cell Standards Council, Interface and Safety Task Force member):
  - SAE J2600 team working with ISO WG 5 to address issues with H35HF nozzles and H70 receptacles; also working to resolve conflicting requirements with the pull forces for breakaways and receptacles between various documents (CSA, SAE, ISO).
  - SAE J2990-1 Gaseous Hydrogen and Fuel Cell Vehicle First and Second Responder Recommended Practice- in revision and being harmonized with SAE J2990 and ISO docs.

| <b>Task Force</b>   | <b>Document</b> | <b>Title</b>  | <b>Date</b> | <b>Status</b>   |
|---------------------|-----------------|---|-------------|---|
| <b>Interface</b>    | J2600_201510    | Compressed Hydrogen Surface Vehicle Fueling Connection Devices  | 21-Oct-15   | Being revised in conjunction with ISO 17268             |
| <b>Interface</b>    | J2601_202005    | Fueling Protocols for Light Duty Gaseous Hydrogen Surface Vehicles  | 29-May-20   | Being revised   |
| <b>Interface</b>    | J2601/2_201409  | Fueling Protocol for Gaseous Hydrogen Powered Heavy Duty Vehicles   | 24-Sep-14   | Needs affirmation ballot of existing content            |
| <b>Interface</b>    | J2601/3_201306  | Fueling Protocol for Gaseous Hydrogen Powered Industrial Trucks   | 12-Jun-13   | Ballot passed. Comment reconciliation process underway. |
| <b>Interface</b>    | TIR J2601/4     | Ambient Temperature Refueling   |             | Being developed   |
| <b>Interface</b>    | J2719_202003    | Hydrogen Fuel Quality for Fuel Cell Vehicles  | 18-Mar-20   | Revised   |
| <b>Interface</b>    | J2799_201912    | Hydrogen Surface Vehicle to Station Communications Hardware and Software  | 13-Dec-19   | Revised   |
| <b>Interface</b>    | TIR J3219       | Hydrogen Fuel Quality Screening Test of Chemicals for Fuel Cell Vehicle   |             | Ballot passed. Comment reconciliation process underway. |
| <b>Safety</b>       | J1766_201401    | Recommended Practice for Electric, Fuel Cell and Hybrid Electric Vehicle Crash Integrity Testing  | 10-Jan-14   | Revised - Action required                               |
| <b>Safety</b>       | J2578_201408    | Recommended Practice for General Fuel Cell Vehicle Safety   | 26-Aug-14   | Revised - Action required                               |
| <b>Safety</b>       | J2579_201806    | Standard for Fuel Systems in Fuel Cell and Other Hydrogen Vehicles  | 15-Jun-18   | Revised   |
| <b>Safety</b>       | J2594_201611    | Recommended Practice to Design for Recycling Proton Exchange Membrane (PEM) Fuel Cell Systems   | 15-Nov-16   | Reaffirmed  |
| <b>Safety</b>       | J2990/1_201606  | Gaseous Hydrogen and Fuel Cell Vehicle First and Second Responder Recommended Practice  | 3-Jun-16    | Issued  |
| <b>Safety</b>       | J3089_201810    | Characterization of On-Board Vehicular Hydrogen Sensors   | 43382       | Issued  |
| <b>Fuel Economy</b> | TIR J3202       | Recommended Practice for Measuring and Simulating Fuel Consumption and Range of Heavy Duty Fuel Cell Hybrid Road Vehicles Fueled by Compressed Gaseous Hydrogen |             | Being developed   |
| <b>Fuel Economy</b> | J2572_201410    | Recommended Practice for Measuring Fuel Consumption and Range of Fuel Cell and Hybrid Fuel Cell Vehicles Fuelled by Compressed Gaseous Hydrogen                 | 16-Oct-14   | Needs affirmation ballot of existing content            |



|                    |              |  |           |            |
|--------------------|--------------|--|-----------|------------|
| <b>Performance</b> | J2615_201110 | Testing Performance of Fuel Cell Systems for Automotive Applications                                       | 20-Oct-11 | Stabilized |
| <b>Performance</b> | J2616_201108 | Testing Performance of the Fuel Processor Subsystem of an Automotive Fuel Cell System                      | 12-Aug-11 | Stabilized |
| <b>Performance</b> | J2617_201108 | Recommended Practice for Testing Performance of PEM Fuel Cell Stack Sub-system for Automotive Applications | 12-Aug-11 | Stabilized |
| <b>Safety</b>      | J2574_201109 | Fuel Cell Vehicle Terminology  | 6-Sep-11  | Stabilized |
| <b>Safety</b>      | J2760_201106 | Pressure Terminology Used in Fuel Cells and Other Hydrogen Vehicle Applications                            | 1-Jun-11  | Stabilized |

- FCHEA
  - **Hydrogen Codes Task Force:** Jennifer is chair, Spencer Quong is vice-chair – asking HCTF members to send any concerns regarding the Public Comments which will be discussed and voted upon at the upcoming NFPA 2 Second Draft Meeting.
  - Regulatory Matrix (as of December, 2021): <https://static1.squarespace.com/static/53ab1fee4b0bef0179a1563/t/61dc747bfdc5342366009af1/1641837692251/FCHEA+Regulatory+Matrix+Markup+December+31+2021.pdf>

#### ORGANIZATIONAL AND MEMBERSHIP ACTIVITIES | Staff Lead: B Elrick

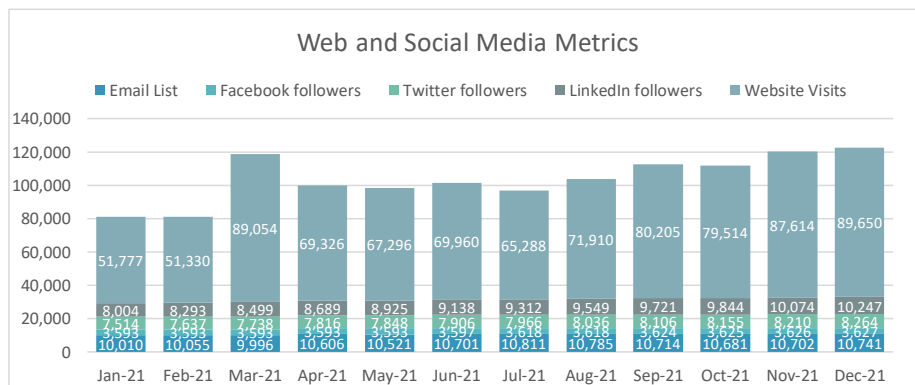
- In 2021 CaFCP approved 10 new members: BayoTech, Faurecia, Hyzon Motors and Air Water America as Champion-Full members, and Choshu Industry Corp., Element Markets, Nikkiso Clean Energy, Marathon Petroleum Logistics, WEH Technologies, and Woodside Energy as Associate members.
- The Membership Committee refined membership criteria guidelines to reinforce the developing new organization’s mission and objectives, as well as continued work to develop streamlined membership and approval processes.
- In preparation for accelerated 2022 activities and an expanded organization incoming Chair Joe Cappello interviewed Champion members to identify priorities and needs going forward.
- The Leadership Team and Bylaws Committee developed draft bylaws, operating protocols and conflict of interest documents based on board and steering team guidance for the expanded organization. These documents are being completed for board review in early 2022 and anticipation of formal launch of the new Hydrogen and Fuel Cell Partnership organization during the spring 2022 board meeting.

|   |   |   |
|---|---|---|
| <b>Vision</b>   | Hydrogen and fuel cells play a crucial role in enabling communities to transition to a robust, 100% decarbonized transportation and energy systems. |   |
| <b>Mission</b>  | To establish a thriving hydrogen and fuel cell electric vehicle market  |   |
| <b>Objectives:</b>  |   |   |
| <b>Driving Market Success</b>   | <b>Win Hearts and Minds</b>   | <b>Be the Trusted Expert Resource</b>   |
| Establish the market conditions to build an expanding and robust hydrogen fuel cell transportation market | Demonstrate, build support and win over Customers' and Decision Makers' to the value and benefit of hydrogen and fuel cells                         | Bring together thought leaders and experts to share all aspects of transforming our transportation systems.<br><br>Produce and distribute high-quality data and tools to help inform policy and stakeholder investment decisions. |

#### OUTREACH/EDUCATION | Member Lead: TBD | Staff Lead: K Malone/ Juan Contreras

- Staff worked with a various entities representing a variety of perspectives across the globe that are looking for insights into the California market and policies. Examples:
  - Assisted Japanese agencies NEDO & JETRO with their North American west coast H2 conference
  - Recent launch of U.S.-based Japanese Hydrogen Forum
  - Presentation before German companies interested in the California market

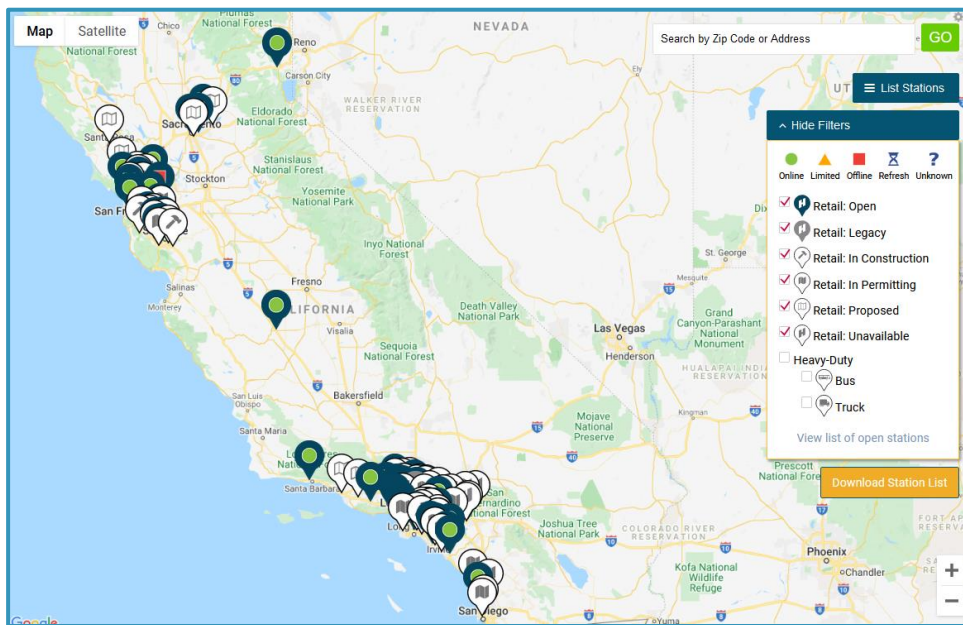
- Discussions with Austrian consulate regarding business delegation, Canadian and Albertan government representatives, and others.
- Discussions and interactions with regional organizations increased
- in anticipation of CaFCP's evolution into a national nonprofit, including organizations and individuals in the Pacific Northwest, Texas, Northeast and other areas.
- CaFCP partnered with, sponsored, assisted, attended and presented at a number of hydrogen conferences and online briefings to ensure CaFCP members were represented, including H2 View, Green Transportation Summit (GTSE), Reuters, Solar Power International (recently renamed RE+), Mission Hydrogen, 2nd American Hydrogen Forum, S&P Global Platts and World Hydrogen Congress, Center for Strategic and International Studies, etc.
- Hosted tours of the Energy Observer in Long Beach and San Francisco. Organized online briefing with the Energy Observer staff.
- News media conversations and interactions increased with interviews, conversations (voice, email, Twitter messaging, LinkedIn messaging, etc.), provision of information to reporters and editors, and mentions of CaFCP regarding data we post on the website. News media included H2 View (regular contact, including pitching stories), Forbes (Alan Ohnsman, David Blehman), Spectrum News SoCal, Capitol Morning Report (legislative), Times of San Diego, etc.
  - Most media attention was the result of the publication of the truck vision document and the distribution of the release via Cision/PRNewswire and an identical blogpost via the CaFCP mailing list (~10,000).
    - Similarly, CaFCP issued a news release and blog post when the CARB self-sufficiency study was released.
- Worked with Hydrogen Forward to support a variety of op-eds they wrote and published.



**SOSS | MEMBER LEAD: S REZVANI | STAFF LEAD: B XIONG**

- 10 stations added to SOSS in 2021: Aliso Viejo, Berkeley, Campbell – E. Hamilton, Concord, Costa Mesa – Harbor Blvd., Costa Mesa – Bristol St., Placentia, Sherman Oaks, Studio City, Sunnyvale
- SOSS Messaging Guidelines were developed and implemented
- SOSS Data Visualization project underway

- H2 supply and distribution note continues to be updated to alert customers of ongoing H2 supply constraints. The note also alerts customers that some stations may have limited performance or go offline due to high ambient temperatures, mechanical problems or other issues.
  - Back-to-back alerts posted regarding hydrogen supply chain- demand v. wholesale availability, Covid related supply chain disruptions, Sacramento distribution facility outage, Hurricane Ida disruption, retail demand vs. wholesale availability.
- Completed internal notifications feature to alert staff & members when a station reaches low inventory
- A recent Google update disabled the “View in map” for all stations. A fix has been applied
- The SOSS Team has been added to the new Member Resources
- Drupal has been updated to Drupal 7.82. Planned and began coding for SOSS Drupal 9 upgrade.
- Weekly SOSS reports sent out to station developers and operators for review. Added Refresh to reports.
- Quarterly availability reports are sent to all station developers and operators participating in the LCFS HRI crediting program.
- Updated the CaFCP Station Map to include SOSS data (real-time operational status)
- Added ability for station developers & operators to override their status through SOSS. Overrides are tracked and sent to the CARB LCFS team if the station participates in the HRI crediting program.
- Added code to prevent “Inventory” from falling below 0 kg.
- Updated SOSS reporting tables and graphs
- Updated email and SMS notifications to be more concise and to allow users to see the main information on the first line.
- Added ability for SOSS clients to receive Refresh values and inventory values.
- Added ability for station developers and operators to get notified automatically when their stations stop transmitting data and go into Unknown.
- Updated SOSS documentation and uploaded to Member Resources
  - SOSS override for station developers
  - SOSS REST documentation v1.4
  - SOSS Database Requirements Specifications v2.3
  - SOSS Hardware Software Requirements Rev4.1
- SOSS data is currently sent to 8 different organizations (clients) with data sent to both test and production servers: MyLook, Inc., SiriusXM, Shell, Toyota, NREL, Hyundai, Honda, FirstElement Fuel
- Total SOSS accounts to date: 7,776



1 CaFCP.org/stationmap was updated to include SOSS data and distinguish more clearly between stations that are open and those in development or otherwise not available for light-duty fueling.

**GOVERNMENT AFFAIRS** | Member Lead: | Staff Lead: K Malone

- The Hydrogen Village and Capitol Lobby was again postponed due to COVID, but a new date was identified for April 6, 2022. The event is intended to showcase vehicles, technologies and activities related to hydrogen and fuel cells, bringing together hydrogen stakeholders.
- Hosted the California Hydrogen Policy Series with participation and co-sponsorship from California Hydrogen Coalition, California Hydrogen Business Council and others.
- Staff continue to have formal and informal contact with a variety of legislators and legislative staff.
  - Briefed Long Beach City Council Member Cindy Allen who represents the Port of Long Beach. CaFCP co-hosted the Energy Observer with her when it docked in Long Beach. Her chief of staff, Connor Lock, was briefed by CaFCP seven years ago while an intern for a U.S. Representative. His wife drives a generation Mirai and has been supportive through posts on Instagram.
  - Briefings included the district staff of Assembly Members Kamlarger (now senator and a candidate to replace Congresswoman Karen Bass), Rivas, Reyes, Rubio, Garcia, Friedman and State Senators Roth, Newman and Hertzberg. Staff also participated in a briefing of State Senator Durazo at the Cal State LA station.
  - Briefed State Senator Josh Newman (D-Fullerton), a fuel cell car driver, about SOSS and received his input regarding proposed modifications.
  - Met with Sacramento City Council Member and Sacramento Metro AQMD board chair Eric Guerra. He is also staff to State Senator Connie Leyva (D-Chino).
  - Staff supported two outreach events at State Capitol with California Hydrogen Coalition, including serving as spokesperson at press conference.
  - Staff supported legislative tour of the Shell Ontario hydrogen station.


- Staff continue to consult with colleagues of various California, regional and national associations to ensure coordination of messaging and complementary activities in legislative education and outreach.
  - Worked Western Governors Association for their EV Road Map activities led by Oregon Governor Brown.
- Engaged with a number of public affairs and non-governmental organizations that are supportive of or interested in learning more about hydrogen and fuel cells, some for the first time. These groups included Hydrogen Forward, the Clean Hydrogen Future Coalition, The California Council For Environmental And Economic Balance (CCEEB), the California Foundation on the Energy and the Environment (CFEE), the Los Angeles Area Chamber of Commerce, Climate Resolve, MOVE LA, and the Clean Air Task Force. CaFCP continues to participate in their activities, provide input and seek areas of common interest for working together.
- Engaged with a variety of local jurisdictions, including Shasta Regional Transportation Authority (briefing for board members), City of Elk Grove (truck plaza application), City of West Sacramento, City of Palm Springs (sustainability coordinator), in addition to members, City of San Francisco and City of Lancaster.



**EVENTS/ACTIVITIES | Staff Lead: J Contreras**

**EVENTS**    **\*\*due to the COVID-19 several of the events below have been UPDATED or POSTPONED\*\***



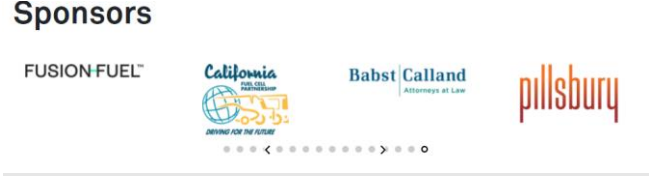
**Q1 2021**    **\*\*DUE TO THE COVID-19 SEVERAL OF THE EVENTS BELOW HAVE BEEN UPDATED OR POSTPONED\*\***

|  |   |
|--|---|
| 01/12/21   | Renewable Hydrogen Programs (K. Malone) ( <a href="#">Link</a> )  |
| 01/13/21   | California Hydrogen Policy Series Briefing 3: An ongoing conversation about hydrogen and the Golden State (CaFCP Organized) (Bloomberg did not approve of us posting the video) |
| 01/14/21   | Clean Air Conversation #1 – Alternatives to diesel generators (Sponsor) ( <a href="#">Link</a> )  |
| 01/15/21   | USEA Virtual Press Briefing: Green Hydrogen – The New Utility Frontier ( K.Malone) ( <a href="#">Link</a> )   |
| 1/15/21  | Spectrum News SoCal Interview with K. Malone  |
| 01/19/21   | Hydrogen and Workforce Development (K. Malone, J. Contreras) ( <a href="#">Link</a> )   |
| 01/21/21   | CARB's Project 800: Zero- Emission Truck Forum (N. Bouwkamp, K. Malone) ( <a href="#">Link</a> )  |
| 01/22/21   | ZEV State Policy Discussion Happening this Week (K. Malone) ( <a href="#">Link</a> )  |
| 01/26/21   | Leveraging Public Private Partnerships (K. Malone, N. Bouwkamp) ( <a href="#">Link</a> )  |
| 01/27/21   | Road Map to a U.S. Hydrogen Economy Northeast Region Launch (CaFCP promoted the event through social media channels) ( <a href="#">Link</a> )                                   |
| 01/27/21   | Renewable Gas Porfolio/Procurement Standards State Leadership (CaFCP promoted the event through social media channels) ( <a href="#">Link</a> )                                 |
| <p style="text-align: center;">Endorsing Orgs:</p>  |   |
| 01/27/21   | 2021 2 <sup>nd</sup> Edition Global Hydrogen Industrial Virtual Summit (B. Elrick) ( <a href="#">Link</a> )   |

|          |  |
|----------|--|
| 01/28/21 | Modeling and Simulation of Fuel Cells and Electrolyzers (CaFCP promoted the event through social media channels) ( <a href="#">Link</a> )  |
| 02/2/21  | Foothill Transit's Zero- Emission Journey (N. Bouwkamp) ( <a href="#">Link</a> )   |
| 02/9/21  | Mobility Pioneer will Showcase the Greatest Innovations in Mobility for 2021 (B. Elrick) ( <a href="#">Link</a> )  |
| 2/16/21  | Secure Funding from California Proposition 1B Goods Movement Emission Reduction Program (CaFCP promoted the event through our social media channels) ( <a href="#">Link</a> )    |
| 2/17/21  | ZEV Market Development Strategy: Ready to Go! (CaFCP promoted event through social media) ( <a href="#">Link</a> )   |
| 03/03/21 | CERAWeek 2021 (B. Elrick, J. Contreras) ( <a href="#">Link</a> )   |
|          |   |
| 03/17/21 | 2020 TRANSform Conference and Expo ( <a href="#">Link</a> ) <b>POSTPONED TILL NOV. 8, 2021</b>   |
| 03/18/21 | New Opportunities to Convert Biomass "Waste" to Renewable Methane and Green Hydrogen (CaFCP endorsers of the event ) ( <a href="#">Link</a> )                                    |
|          | <p>Endorsing Orgs:</p>    |
| 03/18/21 | Upcoming Solicitation Regarding Pilot test and Demonstration of Hydrogen Blending into Existing California Natural Gas System (N. Bouwkamp and D. Park) ( <a href="#">Link</a> ) |
| 03/23/21 | CONNECTING GREEN HYDROGEN APAC 2021 ( <a href="#">Link</a> ) <b>POSTPONED TILL JULY 19, 2021</b>   |
| 03/23/21 | Pan - Asia ESG Conference 2021 - Focus on Carbon Neutrality (B. Elrick) ( <a href="#">Link</a> )   |
| 03/30/21 | Public Workshop on the Fiscal Year 2021-22 Funding Plan for Clean Transportation Incentives (D. Park and N. Bouwkmap) ( <a href="#">Link</a> )                                   |
| 03/31/21 | 2021 World Hydrogen Fuelcells (B. Elrick) ( <a href="#">Link</a> )   |

|          |   |
|----------|---|
| 03/31/21 | <p><b>NAS - Assessment of Technologies for Improving Fuel Economy of Light-Duty Vehicles–2025-2035 Report Release Webinar (K. Malone) (Link)</b></p>  |
| 04/01/21 | <p>WHA (WHA INTERNATIONAL, INC.) Get Hydrogen Safety Training (CaFCP promoted the event through our social media channels) (Link)</p>   |
| 04/12/21 | <p>Pre-Solicitation Workshop for the CEC Recovery and Reinvestment Initiative (D. Park and N. Bouwkamp) (Link)</p>  |
| 04/13/21 | <p>California to Unveil \$50 Million Initiative to Accelerate Charging and Refueling for Zero-Emission Trucks and Buses (K. Malone) (Link)</p>  |
| 04/15/21 | <p>Bay Area EV Acceleration Plan Public Comment Period &amp; Webinar (K. Malone and J. Contreras) (Link)</p>  |
| 04/16/21 | <p>Hydrogen Stations Webinar: Update on Network Development Status in California - April 16, 2021 (CaFCP organizer) (Link)</p>  |
| 04/20/21 | <p>2<sup>nd</sup> Virtual Transportation, Air Quality, and Healthy Symposium (Sponsor) (Link)</p>                             |
| 04/21/21 | <p>Maritime Hydrogen Projects Showcase (CaFCP promoted event through social media channels) (Link)</p>  |



|          |  |
|----------|--|
| 04/27/21 | <p>Energy Observer Long Beach Delegation (K. Malone, J. Contreras)</p>   |
| 04/29/21 | <p>H2 Talks: Hydrogen's Surprising Role in the Future of Energy (CaFCP promoted on events page) (<a href="#">Link</a>)</p>   |
| 04/29/21 | <p>CEC- Clean Transportation Program Investment Plan Advisory Committee Meeting (Tech Team) (<a href="#">Link</a>)</p>   |
| 04/29/21 | <p>Safety of Water Electrolysis (CaFCP promoted through our social media channels) (<a href="#">Link</a>)</p>  |
| 05/05/21 | <p>The Energy Observer Visits California: A Maritime Perspective on the Global Hydrogen Revolution (CaFCP Organized webinar (<a href="#">Link</a>)). CaFCP hosted delegations visited the Energy Observer (B. Elrick, J. Hamilton, J. Contreras)</p>  |
| 05/06/21 | <p>S&amp;P Global Platts – 2<sup>nd</sup> Annual H2 Markets Americas Virtual Conference (Sponsor, B. Elrick) (<a href="#">Link</a>)</p> <p><b>Sponsors</b></p>    |
| 5/10/21  | <p>Shell Torrance 10<sup>th</sup> Anniversary (K. Malone and D. Park)</p>  |

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05/12/21

*Harnessing Renewable Hydrogen for Long Term Energy Storage (Endorsing Sponsors) ([Link](#))*

Endorsing Orgs:



05/19/21

*Innovations in Hydrogen Rail: Project Showcase (K.Malone) ([Link](#))*

5/19/21

*Setting the Standard – Compressed Gas Association (CGA) Role in the Hydrogen Revolution (J. Hamilton) ([Link](#))*

**Panelist: Jennifer Hamilton, CaFCP**

Jennifer Hamilton is Program Manager – Safety, Education, Codes & Standards at the California Fuel Cell Partnership (CaFCP). She has been with CaFCP since 2006, and has worked in hydrogen for 15 years. Jennifer actively participates with and supports the development of national and international safety, codes and standards. She also leads hydrogen education and outreach to the emergency response and permitting official communities.



Jennifer, along with the rest of the CaFCP staff, works with members to grow the hydrogen market in California and beyond. She holds a BS from California State University, Chico and an MS from the University of California at Davis.



5/21/21

*Reuters Events – Seize Market Share in the Hydrogen Economy – (Sponsors) ([Link](#))*



|            |   |
|------------|---|
| 6/2/21     | <p>Medium- and Heavy-Duty Zero-Emission Vehicle Fueling Infrastructure Forum (N. Bouwkamp) (<a href="#">Link</a>)</p>  |
| 06/10/21   | <p>CARB - Public Workshop Series to Commence Development of the 2022 Scoping Plan Update to Achieve Carbon Neutrality by 2045 (Tech Team) (<a href="#">Link</a>)</p>                                    |
| 06/09/21   | <p>Seoul Forum 2021 (B. Elrick) (<a href="#">Link</a>)</p>    |
| 6/7-/11/21 | <p>DOE Hydrogen Program 2021 AMR (B. Elrick, N. Bouwkamp, J. Hamilton) (<a href="#">Link</a>)</p>   |
| 6/16/21    | <p>Mission Hydrogen – Green Hydrogen for the Transport Sector – an EU and a German Perspective (Sponsors) (<a href="#">Link</a>)</p>  |
| 6/17/21    | <p>CHBC Hydrogen Policy Briefing Series   Hydrogen 101 – Facts vs Myths (CaFCP to promote through our social media channels) (<a href="#">Link</a>)</p>   |
| 6/23/21    | <p>Mission Hydrogen - A life under pressure - X- STORE type 4 high-pressure storage technology (Sponsors)</p>   |
| 6/24/21    | <p>9th WHTC   f-cell + HFC - Empowering Hydrogen Innovation (B. Elrick, N. Bouwkamp) (<a href="#">Link</a>)</p>   |



## WHTC - Hydrogen and the Transportation Sector #2

Rail, bus, FCEV commercialization approaches

11:05 AM - 01:05 PM

June 23, 2021



**Alan Kneisz**  
Global Business Development Director, Cummins



**Nico Bouwkamp**  
Technical Program Manager, California Fuel Cell Partnership



**Omar Herrera**  
Senior Program Manager, The University of British Columbia



**William (Bill) Elrick**  
Executive Director, California Fuel Cell Partnership

6/24/21

*Cooltest in L.A. 2021 (Sponsors) ([Link](#))*



6/29/21

*CHFC: Hydrogen 101: Clean Hydrogen Projects & Policy (K. Malone)*

6/30/21

*CW Clean Cities: It Pays to Decarbonize (K. Malone)*

6/30/21

*DOE – Hydrogen and Fuel Cell Technologies Office: H2IQ: What’s New with HFTO (Tech Team)*

6/30/21

*CARB – Work Group Meeting to Discuss the Clean Vehicle Rebate Project (Tech Team)*

6/30/21

*DOE - Hydrogen and Fuel Cell Technologies Office: H2IQ: What's New with HFTO? (Tech Team)*

6/30/21

*CARB- Work Group Meeting to Discuss the Clean Vehicle Rebate Project (Tech Team)*

7/1/21

*US DOE Hydrogen Shot Initiative by Dr. Sunita Satyapal (CaFCP Staff)*

7/15/21

*CHBC Briefing – The Business Case for Light Duty Hydrogen Stations (N. Bouwkamp and K. Malone)*

7/21/21

*DOE Webinar – H2IQ Hour: How Are DOE’s Applied Energy Labs Moving the Needle on Hydrogen? (N. Bouwkamp and K. Malone)*

7/21/21

*AICHe Academy – Global Hydrogen Safety Codes and Standards (Speaker: J. Hamilton)*



7/21/21

*SCAQMD – Secure Funding for California Combustion Freight & Marine Projects (K. Malone, N. Bouwkamp and D. Park)*


7/21/21

*Infocast Virtual Master Class: Green Hydrogen Business & Investment Models: 2021 (Speaker J. Hamilton)*


**INSTRUCTORS**

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Contributing Instructors




Jason Goodhand, MBA, B.E.Sc.  
Global Business Lead –  
Energy Storage  
DNV ENERGY SYSTEMS  
CANADA INC.



Omar J. Guerra  
Research Engineer  
NREL



Sheila Harvey  
Partner,  
Energy Department  
PILLSBURY



Jennifer Hamilton  
Program Manager: Safety,  
Education, Codes and Standards  
CAFCP (CALIFORNIA FUEL  
CALL PARTNERSHIP)

7/23/21

*MOVE LA Climate Series: Emerging Hydrogen and Renewable Gas Technologies (CaFCP sponsors) (K. Malone)*

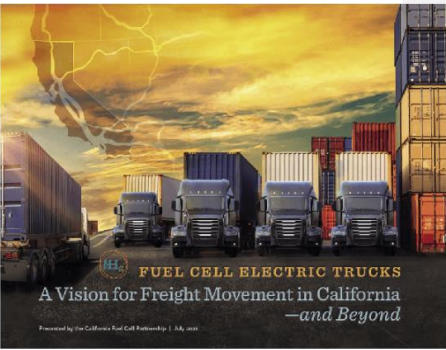


7/27/21

*Legislative Outreach Event with Senator Archuleta (J. Contreras, K. Malone and B. Elrick)*







7/28/21

[Session 1 - IEPR Commissioner Workshop on Hydrogen to Support California's Clean Energy Transition \(D. Park and CaFCP Staff\)](#)

|         |   |
|---------|---|
| 7/28/21 | CEC - Session 2 - IEPR Commissioner Workshop on Hydrogen to Support California's Clean Energy Transition (D. Park and CaFCP Staff)  |
| 7/29/21 | Global Mass Transit's Virtual Conference (N. Bouwkamp and K. Malone)  |
| 8/3/21  | CaFCP Webinar: Hydrogen Station Network Update (B. Xiong, D. Park, K. Malone and J. Contreras)  |
| 8/11/21 | Webinar: Californian Energy Commission Business Meeting (Tech Team)   |
| 8/12/21 | Mitsubishi Power - A Change in Power Webinar - Hydrogen: Creating a Pathway to Decarbonization in the WECC (K. Malone)  |
| 8/12/21 | <p>CaFCP Webinar: CA Hydrogen Policies Series - Zero-emission heavy-duty trucking in California (Speakers: N. Bouwkamp and Toyota)</p>  |
| 8/13/21 | <p>Senator Durazo Tour (K. Malone and CSULA)</p>   |
| 8/13/21 | <p>Senator Gipson Tour (D. Park, Toyota and Shell)</p>   |
| 8/17/21 | 2021 CGA Young & Emerging Professionals Summit Week 3: Hydrogen (Speaker: J. Hamilton)  |




|                |   |
|----------------|---|
| <p>8/18/21</p> | <p><i>Green Transportation Summit and Expo (Speaker N. Bouwkamp) ( K. Malone)</i></p>   |
| <p>8/26/21</p> | <p><i>Zero- C Hydrogen in a Circular Carbon Economy (K. Malone)</i></p>   |
| <p>8/30/21</p> | <p><a href="#"><u>CHBC at ACT Expo for the Hydrogen – It Really Does Work Today! Workshop (N. Bouwkamp)</u></a></p>   |
| <p>8/31/21</p> | <p><a href="#"><u>California Hydrogen Policies Series - Achieving California’s ZEV Transition: hydrogen and fuel cell vehicle targets (Moderator: B. Elrick, Speakers CARB, Toyota and First Element Fuel) (CaFCP Staff)</u></a></p>  |
| <p>8/31/21</p> | <p><i>CaFCP and CHC Legislative Outreach Event (J. Contreras &amp; K.Malone)</i></p>   |
| <p>9/1/21</p>  | <p><i>DOE – The Hydrogen Shot Summit (CaFCP Staff)</i></p>  |
| <p>9/2/21</p>  | <p><i>ACT Expo Advanced Clean Transportation Expo (N. Bouwkamp)</i></p>   |
| <p>9/2/21</p>  | <p><a href="#"><u>CARB Webinar - Public Workshop on Draft Regulatory Language and Updated Cost Assumptions for the Advanced Clean Fleets Regulation (D. Park and Tech Team)</u></a></p>   |
| <p>9/2/21</p>  | <p><i>CARB Webinar- Draft Cap-and-Trade Auction Proceeds Fourth Investment (D. Park and Tech Team)</i></p>  |
| <p>9/6/21</p>  | <p><i>City of Lancaster MOU with SGH2 &amp; Iwatani (K. Malone)</i></p>  <p>Historic Signing: Iwatani, SG H2 &amp; City of Lancaster to launch closed-loop green hydrogen transportation ecosystem</p> <p>SG H2 ENERGY<br/>PUBLISHING A CLEAN ENERGY FUTURE. TODAY.</p> |

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| 9/8/21    | CARB Webinar: 2022 Scoping Plan Update – Short Lived Climate Pollutants Workshop (D. Park)   |
| 9/10/21   | <p>Pacific Fuels &amp; Convenience Summit (J. Contreras, K. Malone, D. Park)</p>   |
| 9/17/21   | 2021 International Zero Emission Bus Conference (N. Bouwkamp and K. Malone)  |
| 9/22/21   | Accelerating Clean Hydrogen: State of the U.S. Industry and Opportunities for New York (K. Malone)   |
| 9/22/21   | DOE Earthshots Webinar: Finance and Markets Pre-Summit (CaFCP staff)   |
| 9/23/21   | <a href="#">DOE Earthshots Webinar: Long Duration Storage Shot Summit (CaFCP staff)</a>  |
| 9/29/21   | <a href="#">DOE - September H2IQ Hour: Market Segmentation of Medium- and Heavy-Duty Vehicles (N. Bouwkamp and K. Malone)</a>  |
| 10/7-8/21 | <p><a href="#">Mission Hydrogen - Hydrogen Online Conference (HOC) 2021 (Speaker: B. Elrick) (virtual exhibit: J. Contreras and K. Malone)</a></p>  |

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| 10/8/21  | <p><i>CaFCP Policy Series Webinar: 2021 Annual Evaluation of Fuel Cell Electric Vehicle Deployment and Hydrogen Fuel Station Network Development (Speaker: A. Martinez Moderator: B. Elrick)</i></p> |    |
| 10/14/21 | <p><a href="#"><i>SoCal Gas Webinar: Materials - Based Hydrogen Storage for Heavy Duty Vehicles (CaFCP staff)</i></a></p>  |  |
| 10/14/21 | <p>Plug Symposium 2021: Here Comes Green Hydrogen (Tech Team)</p>  |  |
| 10/14/21 | <p><i>MoveLA Webinar: Emerging Technology in Passenger Transit: Planes, Trains, Buses and Ships (K. Malone) (CaFCP Sponsors)</i></p>   |  |
| 10/14/21 | <p>West Sacramento Visit by Senator Pan (B. Elrick, J. Contreras, Iwatani and CHC)</p>   |   |
| 10/19/21 | <p><i>H2View: North American Hydrogen Summit (Speaker: B. Elrick) (K. Malone) 10/28/21</i></p>   |  |
| 10/28/21 | <p><a href="#"><i>Energy Futures Initiative Webinar: The Potential for Clean Hydrogen in the Carolinas (K. Malone)</i></a></p>   |  |



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| 10/28/21 | <p><i>CleanStart - What's New With Alternative Fuels? (Speaker: J. Hamilton) 11/16/21</i></p>             |
| 10/29/21 | <p><a href="#"><u>CEC Webinar: Staff Pre-Solicitation Workshop for Zero-Emission Vehicles and Zero-Emission Vehicle-Related Manufacturing (D. Park and Tech Team)</u></a></p>              |
| 11/3/21  | <p><i>Innovation Norway Webinar: Nordic Dialogue on Decarbonizing Maritime Vessels (K. Malone)</i></p>   |
| 11/4/21  | <p><a href="#"><u>SoCalGas: Decarbonizing Steel Production with Green Hydrogen (Tech Team)</u></a></p>   |
| 11/4/21  | <p><a href="#"><u>The New Jersey Clean Cities Coalition and Energy Vision present: "Decarbonizing Gas in New Jersey", a virtual workshop highlighting RNG &amp; H2 (K. Malone)</u></a></p> |
| 11/9/21  | <p><a href="#"><u>Discussion on the role of hydrogen in the implementation of climate protection policies in NYC. (K. Malone)</u></a></p>  |
| 11/9/21  | <p><a href="#"><u>GTI Tech Talk Webinar Meeting the demand for low-carbon hydrogen resources (N. Bouwkamp)</u></a></p>   |
| 11/9/21  | <p><a href="#"><u>SAE Webinar: Toyota Hydrogen Fuel Cell for Heavy Duty Applications (N. Bouwkamp, J Contreras)</u></a></p>  |
| 11/10/21 | <p><a href="#"><u>Green Connections 2021 by Swedish American Chamber of Commerce San Diego (K. Malone)</u></a></p>   |
| 11/16/21 | <p><i>5th Annual California Germany Bilateral Energy Conference (K. Malone)</i></p>  |
| 11/16/21 | <p><a href="#"><u>ODOE to Hold Virtual Workshop on Renewable Hydrogen (K. Malone)</u></a></p>  |
| 11/16/21 | <p><i>Center for Strategic and International Studies - Building Blocks for a Hydrogen Economy (Speaker: B. Elrick)</i></p>   |

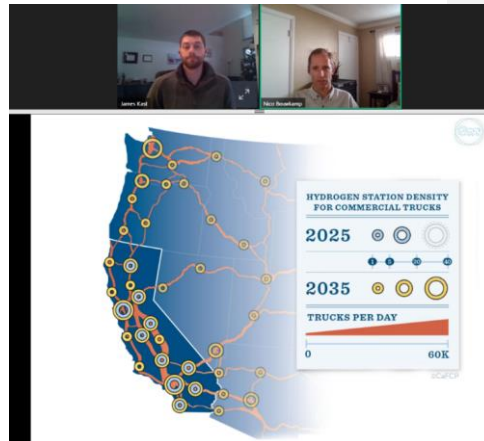
11/18/21

[CalState L.A. - Urban Sustainability Symposium \(Speaker: N Bouwkamp\)](#)



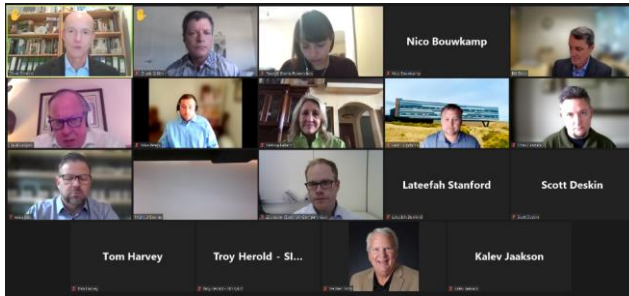
11/30/21

[CaFCP FCET Truck Vision Webinar for CTA and CFCA Members \(Speaker: N. Bouwkamp and Toyota\) \(CaFCP Staff\)](#)






12/1/21

[Reuters Event: Hydrogen North America \(sponsors\) \(Speakers: B. Elrick\)](#)



12/1/21

[Cummins Grand Opening in West Sacramento \(B. Elrick and J. Contreras\)](#)

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| 12/2/21 | <p><a href="#"><u>CHBC Briefing: The Interplay between Electricity, Hydrogen and Natural Gas - The Opportunity to Combat Renewable Energy Curtailment (CaFCP Staff)</u></a></p>  |
| 12/2/21 | <p><b>NEDO/JETRO SESSION 1: Building Hydrogen Corridors in the Pacific West for a Carbon Neutral Future</b><br/> (Moderator: B. Elrick Speakers: Iwatani, AC Transit, First Element Fuel and HTEC)</p>  |
| 12/3/21 | <p><a href="#"><u>32nd Annual Clean Air Awards (K. Malone)</u></a></p>   |
| 12/7/21 | <p><a href="#"><u>Center for Hydrogen Safety - Ventilation Considerations for Hydrogen Safety (J. Hamilton)</u></a></p>  |
| 12/7/21 | <p><b>Hyundai Xcient Tour – SCAQMD (K. Malone)</b></p>   |
| 12/9/21 | <p><b>Cummins - Ahead of the Curve with Cummins Rail (K. Malone)</b></p>   |
| 12/9/21 | <p><a href="#"><u>Global Mass Transit - Clean Buses in Canada (K. Malone and N. Bouwkamp)</u></a></p>  |

12/13/21

[EPRI - Scaling Up U.S. Hydrogen: A 360 View](#)

12/16/21

[CHBC Webinar - Hydrogen's Role in the Transportation Sector – The path from 200 to 1000 LD stations in California Confirmation \(Speaker: B. Elrick\)](#)

12/16/21

Hyundai Xcient Tour – (B. Elrick, N. Bouwkamp and J. Contreras)



BOARD MEETING DATE: March 4, 2022

AGENDA NO. 7

**PROPOSAL:** Transfer Funds Between Major Objects and Execute Purchase Orders for AB 617 Implementation

**SYNOPSIS:** In May and June 2021, the Board recognized up to \$21,880,000 for implementation of the AB 617 program. In November 2021, the Board authorized appropriations up to \$2,555,420 into the FY 2021-22 and/or FY 2022-23 Budget. Based on an assessment of the existing AB 617 program priorities and resources, there is a need to reallocate funds and realign expenditures. These actions are to transfer funds between Major Objects and execute a purchase order not to exceed \$200,000 for equipment to implement the AB 617 Community Air Monitoring Plans.

**COMMITTEE:** Administrative, February 11, 2022; Recommended for Approval

**RECOMMENDED ACTIONS:**

1. Transfer funds up to \$200,000 from Science & Technology Advancement's FY 2021-22 and/or FY 2022-23 Budget, Services and Supplies Major Object into Science & Technology Advancement's FY 2021-22 and/or FY 2022-23 Budget, Capital Outlays Major Object; and
2. Authorize the Procurement Manager, in accordance with South Coast AQMD's Procurement Policy and Procedure, to issue a sole source purchase order to replace two existing Xact® 625 multi-metals monitoring systems with two newer Xact® 625i multi-metals monitoring systems and associated equipment from SailBri Cooper, Inc. (SailBri) for an amount not to exceed \$200,000.

Wayne Nastri  
Executive Officer

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**Background**

In January, June and December 2018, the Board recognized revenue from CARB for AB 617 expenditures and approved adding new positions and funding allocations for

contracts, equipment purchases (capital outlays), and other services and supplies for initial AB 617 work. South Coast AQMD's portion of the statewide funding for the most recent allocation of the AB 617 program implementation funds is \$21,880,000. In May 2021, the Board recognized revenue of \$19,324,580 and in June 2021, the Board recognized the remaining \$2,555,420. In November 2021, the Board authorized appropriations up to \$2,555,420 into the FY 2021-22 and/or FY 2022-23 Budget. Part of these funds have and will continue to be used to implement the Community Air Monitoring Plans (CAMPs) in AB 617 communities.

Sources of air toxic metals, including fugitive emissions from metal processing facilities, re-suspended road dust associated with brake wear, and dust emissions from deserts and dried lakebeds has been identified as one of the major air quality priorities in the CAMPs of multiple AB 617 communities. Air toxic metals such as arsenic, cadmium, lead, manganese, nickel, and selenium are particle species that can deposit on surfaces and repeatedly entrain into the air as fugitive emissions, increasing the risk of exposure. To address these concerns staff has been pursuing continuous, real-time air monitoring for elements and metals, and evaluated the Xact® 625 multi-metals monitoring system manufactured by SailBri in 2018. Following this evaluation, staff purchased these two demonstration units, which have been used for several special monitoring projects and for multi-metal monitoring in AB 617 and environmental justice communities. The manufacturer has now discontinued this model and replaced it with the newer Xact® 625i multi-metals monitoring system that offers better operation and service, enhanced measurement capabilities, and improved detection limits for the measurement of a wide list of metal pollutants. Consequently, several parts for the Xact® 625 model are now obsolete. Based on an assessment of the existing AB 617 program priorities and resources, there is a need to replace the two existing Xact® 625 multi-metals monitoring systems with two newer Xact® 625i multi-metals monitoring systems and associated equipment from SailBri.

The cost of two newer Xact® 625i systems is \$200,000, which includes a \$108,000 credit for returning the two existing Xact® 625 units currently owned by South Coast AQMD. The proposed upgrade, which also includes other parts and components, is necessary to enhance measurement capabilities and improve detection capability for measurement of air toxic metal pollutants.

### **Proposal**

This action is to transfer funds up to \$200,000 from Science & Technology Advancement's FY 2021-22 and/or FY 2022-23 Budget, Services and Supplies Major Object into Science & Technology Advancement's FY 2021-22 and/or FY 2022-23 Budget, Capital Outlays Major Object. This action is also to authorize the Procurement Manager, in accordance with South Coast AQMD's Procurement Policy and Procedure, to issue a sole source purchase order to replace two existing Xact® 625

multi-metals monitoring systems with two newer Xact® 625i multi-metals monitoring systems and associated equipment from SailBri for an amount not to exceed \$200,000.

**Sole Source Justification**

Section VIII.B.2 of the South Coast AQMD’s Procurement Policy and Procedures identifies provisions under which sole source awards can be made. The requests for sole source awards are made under provision VIII.B.2.c.(1), the desired services are available from only the sole source based on the unique experience and capabilities of the proposed contractor or contractor team; and (2) the project involves the use of proprietary technology. SailBri is currently the only manufacturer of a continuous multi-metals monitoring system that has been successfully evaluated by South Coast AQMD to demonstrate the capability for long-term, unattended, continuous measurement of multi-metals community air monitoring.

Also, the Xact® multi-metals monitoring systems sold by SailBri is the only multi-metals monitoring system that offers an Automated Data Analysis Plotting Toolset (ADAPT) package to manage and analyze the measurements of over 40 different metals in ambient particles in real-time through a number of relevant graphical tools. The ADAPT package includes the hardware for on-site meteorological measurement and intuitive software which is accessed in the field or remotely through the on-board computer. The software platform generates multiple graphical reports in near real-time over user-selected time periods to deliver insights on the temporal and directional variability trends of the measured metals. This enables ADAPT to provide improved directionality estimation of metal sources impacting the monitoring site.

Lastly, the Xact® 625i multi-metals monitoring system is the only multi-metals monitor with demonstrated ability to provide near-real time measurements of air toxic metals on a mobile platform, which may be required in some of the AB 617 communities.

**Benefits to South Coast AQMD**

The proposed upgrade is necessary to enhance measurement capabilities and improve detection capability for measurement of air toxic metal pollutants in AB 617 communities. This action will help support South Coast AQMD efforts to fulfill the legislative directives of AB 617, which will result in benefits to environmental justice communities and to the entire region.

**Resource Impacts**

Funding from CARB will provide sufficient resources to replace the multi-metals monitoring systems for AB 617 implementation.

**Attachment**

Table 1 - Proposed Sole Source Purchase Order for AB 617 Program

**Table 1**  
**Proposed Sole Source Purchase Order for AB 617 Program**

| <b>Capital Outlay Major Object</b>  | <b>Account Number</b> | <b>Qty</b> | <b>Funding Source</b> | <b>Total Estimated Expenditure*</b> |
|---|-----------------------|------------|-----------------------|-------------------------------------|
| Upgrade Xact® 625 Multi-Metals Monitoring Systems to Xact® 625i Multi-Metals Monitoring Systems | 77000                 | 2          | AB 617                | \$200,000                           |

\*This includes a \$108,000 credit for returning the two existing Xact® 625 units currently owned by South Coast AQMD



[↑ Back to Agenda](#)

BOARD MEETING DATE: March 4, 2022

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 18, 2022; 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:gp

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**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.

On 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. No additional updates are recommended this year.

The County of Los Angeles has provided excellent treasury management services since inception of South Coast AQMD. These services include providing banking services, processing electronic payments to South Coast AQMD, and the investment of South Coast AQMD's cash balances. Staff is recommending that 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 South Coast AQMD funds, or to sell or exchange securities so purchased.

### **Resource Impacts**

Costs associated with South Coast AQMD treasury management operations are included in the FY 2021-22 Budget and will be included in the FY 2022-23 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 a 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 Chief Financial Officer.* The 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 Chief Financial Officer is responsible for preparation of cash flow forecasts for South Coast AQMD funds as described below. The 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 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 Chief Financial Officer as appropriate.
3. Provide comments to the South Coast AQMD 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 Chief Financial Officer determines that the cash flow forecast can be met, the Treasurer, at the request of the 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 at least two 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 two NRSRO.

The South Coast AQMD will not purchase negotiable certificates of deposit of a savings association or credit union as Special Purpose Investments if a 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 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 \$500 million.
  - iii. Has debt other than commercial paper, if any, that is rated in a rating category of “A”, or 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 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 two NRSRO.

Floating rate medium term notes may be used if interest resets at least quarterly.

Maximum maturities for medium term maturity corporate securities are 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 at least two 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. Floating Rate Securities.

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 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.

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 %<br/>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 %<br/>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,<br>regardless of security type | 5%                                |
| Securities of any State of California or California local agency                                       | 5%                                |
| Any one Repurchase Agreement or other collateralized<br>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 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 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 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 5, 2021~~ March 4, 2022

**RESOLUTION NO. 22-\_\_\_\_\_**

A Resolution of the South Coast Air Quality Management District Governing Board delegating authority to the Treasurer of the County of the Los Angeles to invest and reinvest funds of the South Coast Air Quality Management District.

WHEREAS, the Governing Board of the South Coast Air Quality Management District desires to reaffirm the appointment of the Treasurer of the County of Los Angeles as Treasurer of the South Coast Air Quality Management District; and

WHEREAS, the Governing Board of the South Coast Air Quality Management District pursuant to Section 40527 of the Health and Safety Code Section has authority to appoint a Treasurer; and

WHEREAS, the Governing Board of the South Coast Air Quality Management District pursuant to Section 53607 of the Government Code is required to annually renew the delegation of authority to its Treasurer to invest or to reinvest funds, or sell or exchange securities of the District.

THEREFORE, BE IT RESOLVED that the Governing Board of the South Coast Air Quality Management District hereby delegates to the Treasurer of the County of Los Angeles the authority to invest or reinvest funds of the South Coast Air Quality Management District.

AYES:

NOES:

ABSENT:

DATE: \_\_\_\_\_

\_\_\_\_\_  
Clerk of the Boards

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BOARD MEETING DATE: March 4, 2022

AGENDA NO. 9

**PROPOSAL:** Authorize Purchase of Maintenance and Support Services for Servers and Storage Devices

**SYNOPSIS:** The servers and storage devices are used by enterprise-level software applications that currently support the Clean Air Support System for all South Coast AQMD core activities. Maintenance support for these systems will expire on April 30, 2022. This action is to obtain approval for the sole source purchase of hardware and software maintenance and support services for servers and storage devices from Hewlett Packard Enterprise Company for one year, in an amount not to exceed \$130,000. Funds for these purchases are included in Information Management's FY 2021-22 Budget.

**COMMITTEE:** Administrative, February 11, 2022; Recommended for Approval

**RECOMMENDED ACTION:**

Authorize the Procurement Manager to purchase one year of maintenance and support services for South Coast AQMD servers and storage devices from Hewlett Packard Enterprise Company at a cost not to exceed \$130,000.

Wayne Natri  
Executive Officer

RMM:MH:LG:ir

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**Background**

South Coast AQMD uses Hewlett Packard Enterprise Company (HP) servers and storage devices running Windows Server and Linux operating systems. The HP servers support several production applications such as the Clean Air Support System (CLASS), Permit Processing, Finance, Compliance, NSR, Emission Fee Billing, Notice of Violations, Facility Permits, ERS Interim Reports, Subscription Services, Web Servers, PeopleSoft Financial and HCM database, OnBase document management system, Legal system, AQMP Modeling and Telemetry system. Hardware and software maintenance



and support services are required to ensure the continued operation of these programs with minimum interruption. Maintenance and support services for these servers expires on April 30, 2022.

In 2006, the Board approved release of an RFQ to select a vendor capable of providing the most cost-effective hardware and software maintenance and support services for servers. Only one vendor, HP, the company that is currently supporting the agency's servers, submitted a bid. HP is the sole manufacturer and provider of the hardware and software, and the only source for maintenance support licensing agreements. HP also provides South Coast AQMD with substantial discounts through cooperative agreements.

**Sole Source Justification**

Section VIII.B.2 of the Procurement Policy and Procedure identifies circumstances under which a sole source purchase award may be justified. This request for a sole source award is made under provision VIII.B.2.c(2) and (3). The project involves the use of proprietary technology, and the contractor has ownership of key assets required for project performance. HP is the sole provider of this hardware and software and therefore, the only source for its maintenance and support licensing agreements.

**Proposal**

This action is to purchase one year of maintenance and support services for server hardware and software from HP at a cost not to exceed \$130,000.

**Resource Impacts**

Sufficient funds are included in the FY 2021-22 Budget.

BOARD MEETING DATE: March 4, 2022

AGENDA NO. 10

**PROPOSAL:** Transfer and Appropriate Funds from Interest Earned from Special Revenue Funds to General Fund and Transfer Funds to Information Management's Budget to Support South Coast AQMD Operations, and Close Special Revenue Fund

**SYNOPSIS:** Information Management (IM) provides a wide range of information technology systems and services in support of South Coast AQMD operations to achieve the agency mission, goals, and objectives. Many components of the agency's critical information technology infrastructure are aging and in need of upgrade and/or replacement to maintain staff effectiveness and improve efficiency. The funding would be used to support critical projects in the areas of cybersecurity, and critical system upgrades and support. This action is to transfer \$2,529,500 from four Special Revenue Funds to the General Fund, transfer funds to Information Management's Budget and close the El Monte Park Settlement Fund (57).

**COMMITTEE:** Administrative, February 11, 2022; Recommended for Approval

**RECOMMENDED ACTIONS:**

1. Transfer interest earned of \$2,529,500 from the following funds to the General Fund:
  - a. AES Settlement Projects Fund (35), \$26,000;
  - b. Health Effects Research Fund (48), \$220,000;
  - c. El Monte Park Project Settlement Fund (57), \$5,800; and
  - d. BP ARCO Settlement Projects Fund (46), \$2,277,700.
2. Appropriate \$2,529,500 from the General Fund Undesignated (Unassigned) Fund Balance to Information Management's FY 2021-22 and/or FY 2022-23 Budget for Services & Supplies and/or Capital Outlays Major Objects for the following projects:
  - a. \$190,000 for services and supplies related to cybersecurity;
  - b. \$500,500 for services and supplies related to critical system upgrades; and
  - c. \$1,839,000 for capital outlays related to critical system upgrades.

3. Close the El Monte Park Project Settlement Fund (57) and transfer any residual interest to the General Fund.

Wayne Natri  
Executive Officer

RMM:MH:XC:dc

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## **Background**

Information Management (IM) provides a wide range of information management systems and services in support of all South Coast AQMD operations to achieve the South Coast AQMD mission, goals and objectives. Many components of the critical Information Technology (IT) infrastructure are aging and in need of upgrade and/or replacement to maintain staff effectiveness and improve efficiency. This request includes projects to address cybersecurity enhancements and critical system upgrades and support for many of South Coast AQMD's critical IT infrastructure components, along with projects to replace outdated software applications. Many of these projects are recommended action items from the IT Review which was completed in FY 2018-19 and the Cybersecurity Assessment completed in FY 2021-22. The remaining additions are the results of the need to support all IT efforts within South Coast AQMD on both enterprise- and departmental-wide levels. These projects are required to support increased workload related to AB 617 implementation, evolution in regulatory programs over the decades, and teleworking due to COVID-19. As confirmed in the recently completed IT Review, much of the proposed system replacements are overdue compared to best practices for scheduled replacement. This proposal seeks to proactively plan for system replacements that will be architected according to industry best practices to ensure their future viability with a minimum shelf life of 15 years without the need for another major overhaul. Ignoring planned replacements could result in hectic spur-of-the-moment actions due to system failures or obsolescence which will ultimately be more costly.

## Cybersecurity

The cybersecurity solutions will enable South Coast AQMD to align with industry cybersecurity frameworks and best practices to ensure the availability, integrity and confidentiality of information systems and data. These items are necessary to mitigate the risks associated with cyberthreats, and protect the information, people, and reputation of South Coast AQMD. Inaction could risk a cybersecurity breach which would significantly impact the operation of South Coast AQMD, with potential loss of data, damage to our reputation, legal liability, and increased costs to recover from a breach. A cybersecurity assessment completed during FY 2021-22 includes recommendations to mitigate the impacts of cyberthreats.

## Critical System Upgrades and Support

The replacement and/or upgrade of many of South Coast AQMD's critical IT infrastructure components are necessary to ensure continuity of business operations for

South Coast AQMD. Over the past several years, especially during the pandemic, there has been a dramatic increase in demand for IT related projects. IT infrastructure is relied on as critical components to support the daily operations of the agency.

#### Services and Supplies Request for Critical System Upgrade and Support

South Coast AQMD has been very successful in deploying multiple systems which are critical for supporting the agency's mission of achieving Clean Air standards, enhancing public education and equitable treatment of all communities and operating efficiently and transparently. Many of these mission-critical systems require 24/7 uptime and require frequent enhancement and support to ensure their continued operation as well as to be responsive to feedback from the public.

Several of the projects requested for funding in this category are necessary to ensure the continued operations of the IT infrastructure that supports a wide range of business functions. Inaction will result in IT infrastructure failures, business function disruption, data loss, and costly unplanned system replacements.

The Website Content Management System and Intranet SharePoint both serve as the central point to facilitate communication with both the public and staff, respectively. These systems are operating using outdated versions that are no longer supported by the vendor. It is essential to upgrade these systems to the latest version to continue receiving security and functional enhancements. Inaction could expose South Coast AQMD's main websites, including the homepage, to risk of potential downtime due to cybersecurity threats or failure due to unsupported software.

The Web Application .Net infrastructure migration item is necessary to replace the framework of existing custom web applications that will soon be obsolete. This framework serves as the backbone of the entire suite of South Coast AQMD applications including Online Application Filing, FIND, Online Payment, Rule 1403, Rule 1180 monitoring, and other programs. Inaction could result in potential disruption of critical business functions due to software obsolescence.

The Cloud Based System Development Support solution will allow IM to adopt an automated cloud-based development and deployment methodology for software development. This industry best practice will greatly shorten the development, testing and deployment cycles of web applications, which will ultimately result in enhanced staff efficiency while improving project completion time. It is estimated this will help to increase IM's capacity to handle new application testing and deployment by 30 percent.

#### Capital Outlay Request for Critical System Upgrades and Support

A set of critical enterprise-wide IT systems also require immediate action to address obsolete support, degraded functionality and/or to add critical enhancements to effectively serve the IT needs of South Coast AQMD.

- Mass Email and Notification System Replacement  
California Senate Bill (SB) 1502 was approved in June 2018 and allows air districts to modernize notification methods for permitting, rulemaking, and fee

rules and allows electronic mail (email) public notices in lieu of mail for any person who requests noticing by email. With increased reliance on electronic notifications for South Coast AQMD public notifications, information sharing, and alerts/advisories, the agency's mass email system is not capable of handling current requirements. The existing system is cumbersome, and it is difficult to manage database lists and share across departments. The current system also cannot handle non-English language characters which poses challenges for outreach. The proposed cloud-based system will be able to greatly improve the mass email capabilities. Inaction could result in failure to send required emails and notices, and unplanned replacement at greater cost. An updated system will enable staff to work more efficiently to send mass emails while managing South Coast AQMD databases for more effective outreach, as well as communicating in the spectrum of languages spoken/read in our region.

- CLASS System Migration (Compliance, Finance, and Ingres Database)  
The Clean Air Support System (CLASS system) is a suite of legacy software applications developed over 20 years ago to handle South Coast AQMD's core business functions including permitting, New Source Review (NSR), compliance and accounts receivable. An overhaul of the entire system, including the database will implement an industry best practice architecture that will enable paperless permit processing, better integration of compliance with Geographical Information System (GIS), field automation and seamless integration with Finance.

Moving to a GIS-integrated system will improve inspections by allowing staff to assess a facility, area, or complaint locations remotely, with significant efficiency gains. This will have important applications in AB 617 communities, by assisting community members' identification of facilities/sites of concern, aiding in data searches and reporting, and allowing enhanced transparency for the public. The project will enable the electronic submittal of all compliance forms and reports directly into the CLASS system. For example, South Coast AQMD receives hundreds of breakdown reports from refineries and other major sources in hard copy form, and those lengthy reports must be retrieved from the mail, evaluated for completeness and accuracy, and manually scanned into the system for assignment. Last year approximately 600 breakdown reports were received. Review of these reports can take up to 30 minutes each to process, the proposed upgrade could immediately save 300 hours of staff time per year.

The proposed upgrade would also significantly improve the accuracy of data maintained for the Title V Compliance Monitoring Program, which is currently input manually from handwritten forms. This would help facilitate meeting federal reporting deadlines by eliminating the need for data entry and by transmitting daily system updates directly from CLASS to the U.S. EPA database. In addition, this project will increase staff efficiency through improved workflow, tracking and decision support. Inspectors will be able to submit all reports directly into the system, and supervisors and managers will be able track the status of investigations and violation reports, as well as provide digital

approvals, in real time. Similarly, the project will increase accuracy of reports on compliance activities, whether routine periodic reports or responses to ad-hoc high-priority queries and reduce response times by maintaining all data in one place and obviating the need for duplicative searches across multiple platforms. All calculations and data reports will also be automated, reducing the time spent preparing reports and reducing the potential for errors. Compliance reports and data (such as for public complaints) could become available in near-real time, removing the current, often 24-hour delay for CLASS to be updated. Having key permitting, inspection and violation data that is searchable will reduce hundreds of hours of staff time for an individual rule development effort. The new proposed system will be more agile to adapt to future rule changes.

Staff are currently working to streamline permitting opportunities with the current infrastructure as part of the “Workflow” project. Opportunities have been identified for moving to paperless processing for incoming applications and for final processing, permit issuance and archiving to avoid handling incoming paper applications and printing paper permits for distribution by mail. Enhancements to allow for electronic submittals can improve the ability for applicants to provide complete applications and reduce the need for follow-up requests for additional information which causes delays in permit processing that can last days or weeks. In addition, increased teleworking by permit processing engineers has required supervising and administrative staff to divert resources from their normal duties to scan and print in the office to transfer application information and archive permit application documentation. Improvements to electronic processing could reduce the time spent on these manual paper-based steps by at least 80 percent and would allow staff to redirect resources to support other permit processing and supervisory duties.

At the core of many rule development projects is the evaluation of existing equipment to establish an emissions baseline. In the initial phase of rule development projects, staff manually review each permit extracting specific information such as unit size, emission limitations, unit age, and other equipment details. Depending on the number of units associated with a rule development, this process can take hundreds of hours. Upgrading the permit database to allow for key parameters to be electronically extracted will save staff hundreds of hours for many rule development processes.

The current CLASS system also would be facing a potentially major overhaul to accommodate anticipated significant amendments to Regulation XIII – New Source Review, as well as significant workload associated with the RECLAIM sunset. Without upgrades to CLASS, use of manual procedures affecting staff resources would result. Upgrades to the CLASS system would help facilitate reporting of aggregate application, emission, and other facility related information that is requested as part of public records requests that requires significant staff resources and be useful for planning and rule development purposes. With proper updates, the data could be refined to the point where direct access through F.I.N.D. or integration with the Pending Application Status

Dashboard would greatly improve transparency and assist with community relations linked to AB 617 efforts.

Updates to CLASS will assist in identifying and documenting the basis for emissions calculations for permit applications and provide better tracking of standardized emissions calculation methodologies. This would result in decreased times to evaluate, track, and process permits. Anticipated changes to NSR rules will necessitate updates to the program as well.

The proposed database migration will save over \$150,000 in annual database license costs. The proposed new user centered designs could bring a 25 percent increase in efficiency compared to the traditional client/server system. Inaction could mean the current client server applications built on 20 plus year old technology will not be supported by subsequent versions of Windows and South Coast AQMD will lose its core permitting, compliance and accounts receivable applications.

- Business Intelligence Ad-Hoc Reporting System Upgrade  
Business Intelligence system allows staff to perform ad-hoc reporting. The existing system version is no longer supported by the vendor and has reached its limit for maximum number of user licenses. There has been a dramatic increase for access to the ad-hoc reporting system to support rule making, compliance actions, permitting and finance. An upgrade to the latest version and increased user access will increase efficiency across all divisions by allowing staff to generate reports on as-needed basis, reducing their reliance on IM resources to generate reports. With the proposed new license upgrade, there will be a 100 percent increase in use of self-service business intelligence data. Based on a Catalyst Media's Better Buys technology research study, self-service Business Intelligence data will help to increase speed of decision making by up to 500 percent, resulting in reports being generated in minutes rather than hours.
- PeopleSoft Finance and Human Capital Management Upgrade  
The PeopleSoft system serves as the South Coast AQMD's Enterprise Resource Planning (ERP) and was last upgraded in 2016 (Human Resources and Payroll) and 2018 (Finance). An upgrade is necessary to ensure the agency continues to receive needed legislative, functional and security updates to stay in compliance with Federal and State regulations. Inaction will eventually make it impossible to update the agency's Payroll and Financial systems and risk incurring liabilities and penalties.
- WAIRE Web Portal Enhancements  
This funding is necessary to complete the development of the Warehouse Actions and Investments to Reduce Emissions (WAIRE) Web Portal to ensure compliance of Rule 2305.

## **Proposal**

### Cybersecurity

The list of recommended cybersecurity projects in the amount of \$190,000 for the first phase of these improvements are indicated below. These are all ongoing annual costs.

| <b>Description</b>                                     | <b>Amount</b>    | <b>One time</b> | <b>Ongoing</b> |
|--|------------------|-----------------|----------------|
| Patch Management Solution                              | \$15,000         |                 | X              |
| Change Management Solution                             | \$75,000         |                 | X              |
| South Coast AQMD users Cybersecurity Awareness Program | \$40,000         |                 | X              |
| Virus Scan Support Increase                            | \$60,000         |                 | X              |
| <b>Total</b>   | <b>\$190,000</b> |                 |                |

Additional projects for approximately \$410,000 may be requested in subsequent future budgets.

### Critical System Upgrades and Support

#### Services and Supplies Request for Critical System Upgrade and Support

Critical System Upgrade and Support projects in Services and Supplies include the following with estimated total cost of \$500,500. Most of these are one-time expenses.

| <b>Description</b>   | <b>Amount</b>    | <b>One time</b> | <b>Ongoing</b> |
|--|------------------|-----------------|----------------|
| Server Upgrades  | \$150,000        | X               |                |
| Website Content Management System (Sitefinity) Upgrade <sup>1</sup>              | \$100,000        | X               |                |
| Backup Tape Reader   | \$4,500          | X               |                |
| Cloud Based Offsite Backup Storage   | \$15,000         |                 | X              |
| Peoplesoft Server Upgrade and Quarterly Patching <sup>1</sup>                    | \$31,000         | X               |                |
| Intranet (Airnet) Upgrade from SharePoint 2010 to SharePoint Online <sup>1</sup> | \$80,000         | X               |                |
| Web Application .Net Infrastructure Migration <sup>1</sup>                       | \$80,000         | X               |                |
| Cloud Based System Development Support <sup>1</sup>                              | \$40,000         |                 | X              |
| <b>Total</b>   | <b>\$500,500</b> |                 |                |



Capital Outlay Request for Critical System Upgrades and Support

Critical System Upgrade and Support projects in Capital Outlays include the following with estimated total cost of \$1,839,000. These are all one-time expenses.

| Description  | Amount      | One time | Ongoing |
|--|-------------|----------|---------|
| Mass Email and Notification System Replacement <sup>1</sup>          | \$24,000    | X        |         |
| Migrate CLASS Compliance to Web Based Application <sup>1</sup>       | \$250,000   | X        |         |
| Migration of CLASS Finance to Web Based Application <sup>1</sup>     | \$250,000   | X        |         |
| Migration of CLASS Ingres Database to SQL Server <sup>1</sup>        | \$750,000   | X        |         |
| Business Intelligence Ad-Hoc Reporting System Upgrade <sup>1</sup>   | \$150,000   | X        |         |
| PeopleSoft Finance and Human Capital Management Upgrade <sup>1</sup> | \$200,000   | X        |         |
| WAIRE Web Portal Enhancements <sup>1</sup>                           | \$215,000   | X        |         |
| Total  | \$1,839,000 |          |         |

**Resource Impacts**

To support critical operational needs, staff recommends using interest earned and/or the remaining balances in some special revenue funds (which are also interest earned). Staff recommends transferring \$2,529,500 from four Special Revenue Funds (AES Capital Settlement Projects Fund (35), \$26,000; Health Effects Research Fund (48), \$220,000; El Monte Park Project Settlement Fund (57), \$5,800; and BP ARCO Settlement Projects Fund (46), \$2,277,700) to the General Fund and closing the El Monte Park Project Settlement Fund (57). These funds would be appropriated to Information Management’s FY 2021-22 and/or FY 2022-23 Budget. \$190,000 of these funds would be used for services and supplies related to cybersecurity, \$500,500 would be used for services and supplies related to critical system upgrades, and \$1,839,000 would be used for capital outlays related to critical system upgrades.

Sufficient funds are available to transfer \$2,529,500 from the interest in four Special Revenue Funds (AES Capital Settlement Projects Fund, Health Effects Research Fund, El Monte Park Project Settlement Fund, and BP ARCO Settlement Projects Fund) to the General Fund Undesignated (Unassigned) Fund Balance, and then transfer to Information Management’s budget.

AES Settlement Projects Fund

This fund was established in fiscal year 2001 for the purpose of accounting for the one-time penalty settlement with AES Corporation for air pollution violations. There is approximately \$26,000 of available interest earnings remaining.

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<sup>1</sup> Project work may be completed through System Development, Maintenance and Support Services Contracts

BP ARCO Settlement Projects Fund

This fund was established in fiscal year 2005 to account for the \$25 million civil penalties received in 2005 as part of the settlement with BP ARCO for air pollution violations. There is approximately \$3,848,693 of available interest earnings remaining.

Health Effects Research Fund

The Health Effects Research Fund was established in fiscal year 2008 to receive 20 percent of all penalty/settlement monies in excess of \$4 million recognized annually in South Coast AQMD's General Fund beginning in fiscal year 2009, subject to annual Board approval. There is approximately \$4,267,562 remaining of which \$222,380 is interest earnings.

EL Monte Park Project Settlement Fund

This fund was established in fiscal year 2011 for the purpose of accounting for the \$1.1 million received from Gregg Industries bankruptcy estate as part of a settlement agreement to finance the construction of park improvements in the City of El Monte. The project and all of funds have been paid to El Monte. The fund has interest earnings of \$5,814 remaining and this fund will be closed out. Any residual interest will be transferred to the General Fund.

Sufficient funding will be available in Information Management's FY 2021-22 and/or FY 2022-23 Budget upon approval of the transfer and appropriation of \$2,529,500 from the General Fund Undesignated (Unassigned) Fund Balance.

BOARD MEETING DATE: March 4, 2022

AGENDA NO. 11

PROPOSAL: Special Meeting of Health Effects of Air Pollution Foundation

SYNOPSIS: This item is to ratify and approve the appointments of Board Member Michael Cacciotti and Vice Chair Vanessa Delgado as Directors of the Health Effects of Air Pollution Foundation and to adopt a Resolution to reduce the number of Directors of the Foundation from four to three.

COMMITTEE: No Committee Review

RECOMMENDED ACTIONS:

1. Ratify the appointment of Board Member Michael Cacciotti as a Foundation Director effective January 13, 2021;
2. Approve the appointment of Vice Chair Vanessa Delgado as a Foundation Director effective immediately; and
3. Adopt the attached Resolution reducing the number of fixed Directors of the Foundation from four (4) to three (3) effective immediately.

Wayne Nastri  
Executive Officer

BTG: RFL

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**Background**

In February 2003, the South Coast AQMD Board established 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. In 2004, the Board changed the Foundation's name to the Brain and Lung Tumor and Air Pollution Foundation and expanded the Foundation's mission to support research related to the effects of air pollution on brain tumors and lung cancer. In 2017, the Board changed the Foundation's name to the Health Effects of Air Pollution Foundation and further 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 contribution of almost \$12.5 million and has funded studies with leading medical and public health researchers in Southern California.

The Directors of the Foundation serve at the pleasure of the South Coast AQMD Board. The Chair of the Board recommends individuals for Board approval to be Directors of the Foundation. The Foundation's bylaws require that the Foundation have four Directors, but this number may be changed from time to time within the limits specified in the bylaws by a resolution adopted by the Board.

In February 2021, former Board Chair Dr. William Burke recommended Board Member Michael Cacciotti as a Foundation Director to replace former Board Member Judy Mitchell. Current Board Chair Ben Benoit concurs with this recommendation.

The terms of Dr. William Burke and Dr. Clark Parker expired, and Chair Benoit has recommended Board Vice Chair Vanessa Delgado as a Foundation Director.

### **Proposal**

This action is to ratify the appointment of Board Member Michael Cacciotti as Foundation Director, with his term effective retroactively to January 13, 2021. This action is to also approve the appointment of Vice Chair Vanessa Delgado as Foundation Director effective immediately. To ensure the efficient performance of the duties of the Foundation's Directors in carrying out the purposes of the Foundation, this action is to also adopt the attached Resolution reducing the number of fixed Directors of the Foundation from four (4) to three (3), effective immediately. With the actions taken herein, the Foundation will have three Directors, namely, Chair Ben Benoit, Vice Chair Vanessa Delgado and Board Member Cacciotti.

### **Resource Impacts**

None.

### **Attachments**

Resolution

**RESOLUTION NO. 22-\_\_\_\_\_**

**A Resolution of the South Coast Air Quality Management District Governing Board  
Reducing the Number of Fixed Directors of the Health Effects of Air Pollution Foundation**

**WHEREAS**, the Governing Board of the South Air Quality Management District established the Health Effects of Air Pollution Foundation (Foundation) to support research projects regarding the incidence, detection, and causes and cures of various health conditions that may be caused or aggravated by air pollution;

**WHEREAS**, Article 3.1(A) of the Amended and Restated Bylaws of the Foundation (“Bylaws”) states that the authorized number of Directors of the Foundation shall be not less than three (3) nor more than nine (9); and

**WHEREAS**, Article 3.1(B) of the Bylaws states that the exact number of Directors shall be fixed at four (4) and may from time to time, within the limits specified in the Bylaws, be changed by a resolution adopted by the South Coast AQMD Governing Board; and

**WHEREAS**, the reduction in the fixed number of Foundation Directors from four (4) to three (3) will ensure efficient performance of the duties of the Board of Directors in carrying out the purposes of the Foundation; and

**NOW, THEREFORE, BE IT RESOLVED**, that the South Coast AQMD Governing Board, during a special meeting assembled on March 4, 2022, does hereby reduce the fixed number of Foundation Directors to three (3) effective immediately.

Dated: \_\_\_\_\_

\_\_\_\_\_  
Faye Thomas, Clerk of the Boards

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BOARD MEETING DATE: March 4, 2022

AGENDA NO. 12

REPORT: Legislative, Public Affairs and Media Report

SYNOPSIS: This report highlights the January 2022 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

LTO:DS:DM:bel:lam:ar

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## **BACKGROUND**

This report summarizes the activities of the Legislative, Public Affairs and Media Office for January. The report includes Major Events, Community Events/Public Meetings, Environmental Justice Update, AB 617, 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)**

Each year, staff engage in holding and sponsoring several major events throughout South Coast AQMD's four-county jurisdiction to promote, educate, and provide important information to the public regarding reducing air pollution, protecting public health, and improving air quality and the economy.

### Martin Luther King (MLK) Jr. Day of Service 2022

The 9<sup>th</sup> Annual Dr. Martin Luther King, Jr. Day of Service event was hosted virtually on January 15. There were approximately 225 attendees via Zoom, Facebook, and YouTube. The event was attended by South Coast AQMD Board Members, elected officials, and members of the public.

### **COMMUNITY EVENTS/PUBLIC MEETINGS**

Each year, staff engage with thousands of residents and stakeholders, 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 to 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.

Staff attended and/or provided information and updates at the following January events and meetings:

#### San Bernardino County Transportation Authority

On January 6, staff participated in and provided updates to the San Bernardino County Transportation Authority City Manager Technical Advisory Committee on the Dr. Martin Luther King, Jr. Day of Service event and Check Before you Burn Program.

#### Santa Ana Chamber of Commerce

On January 11, staff participated virtually and provided agency updates to the Santa Ana Chamber of Commerce Government Affairs Committee on the Dr. Martin Luther King Jr. Day of Service event and Check Before You Burn Program.

#### South Pasadena Chamber of Commerce

On January 12, staff participated virtually and provided updates to the South Pasadena Chamber of Commerce on the Dr. Martin Luther King Jr. Day Service event and importance of the Check Before You Burn Program.

#### Big Bear Valley Chamber of Commerce

On January 13, staff participated virtually and provided updates to the Big Bear Valley Chamber of Commerce Government Affairs Committee on VW mitigation funds and the upcoming Carl Moyer program.

### Harbor Association of Industry and Commerce (HAIC)

On January 13, staff participated virtually in the HAIC Government Affairs Committee. Updates were shared regarding the Marine Ports Committee agenda and Community Consultation meeting on approaches to reducing emissions from marine port operations.

### San Fernando Valley Council of Governments

On January 12, staff participated virtually and provided updates to the San Fernando Valley Council of Governments Board on the Check Before You Burn Program and deployment of electric trucks under the Joint Electric Truck Scaling Initiative.

## **ENVIRONMENTAL JUSTICE UPDATE**

The following are key environmental justice (EJ) related activities in which staff participated during January. These events and meetings involve communities affected disproportionately from adverse air quality impacts.

### Environmental Justice Advisory Group (EJAG) Meeting

On January 28, EJAG held a virtual quarterly meeting. The group appointed a member to serve on an Advisory Council for the 2022 Air Quality Management Plan. Staff also presented on Proposed Rule 2306 - Indirect Source Rule for New Intermodal Facilities. A letter signed by three community organizations and local elected officials regarding odor issues at rendering facilities was brought to the attention of the Advisory Group. A future special EJAG meeting will be convened to have a full discussion on odor complaints related to rendering facilities.

## **AB 617 UPDATE**

The following are key AB 617 related activities in which staff participated during January. These events, workshops, and meetings involve AB 617 communities to support the Community Steering Committees (CSCs), Community Air Monitoring Plans (CAMPs), and Community Emissions Reduction Plans (CERPs).

### South Los Angeles CSC Meeting

On January 13, approximately 50 attendees participated virtually in the CSC meeting. Discussions were focused on air quality priorities for oil and gas facilities and mobile sources.

### Southeast Los Angeles CSC Meeting

On January 20, approximately 45 attendees participated virtually in the CSC meeting. Agenda topics included a CERP implementation update on general industrial facilities, a recap of how to file a complaint and an introduction to the JETSI program.



Truck Incentives Workshop

On January 26, approximately 75 participants attended the second of three workshops for AB 617 communities, to guide the development of a Truck Incentive Project Plan. The next meeting is scheduled for March 2022.

Eastern Coachella Valley CSC Meeting

On January 27, approximately 45 attendees participated virtually in the CSC meeting. Agenda topics included home air filtration systems and highlights on the implementation of the CERP and CAMP. Members also shared updates from the Budget, Monitoring, and Outreach Working Teams.

**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.

Whittier College

On January 13, staff virtually presented an overview on South Coast AQMD and air quality issues to an Environmental Studies class of 25 students. Staff also shared information on the Air Quality Sensor Performance Evaluation Center, Facility Information Detail, internships and the types of careers offered at South Coast AQMD.

**COMMUNICATION CENTER STATISTICS**

The Communication Center handles calls on South Coast AQMD’s main line, 1-800-CUT-SMOG®, the Spanish line, and after-hours calls to those lines. Total calls received in the month of January:

|   |       |
|---|-------|
| Calls to South Coast AQMD’s Main Line and 1-800-CUT-SMOG® | 2,304 |
| Calls to South Coast AQMD’s Spanish-language Line         | 45    |
| Total Calls   | 2,349 |

## **PUBLIC INFORMATION CENTER STATISTICS**

The Public Information Center (PIC) handles phone calls for general information. The PIC did not take walk-in requests in January because of the COVID pandemic. Email advisories provided information on upcoming meetings and events, program announcements and alerts on time-sensitive issues. Information for the month of January is summarized below:

|                           |     |
|---------------------------|-----|
| Calls Received by the PIC | 7   |
| Calls to Automated System | 222 |
| Total Calls               | 229 |

|                       |        |
|-----------------------|--------|
| Email Advisories Sent | 47,102 |
|-----------------------|--------|

## **SMALL 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 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 virtual on-site consultation, as summarized below for January.

- Provided permit application assistance to 220 companies; and
- Processed 74 Air Quality Permit Checklists.

Types of businesses assisted:

|                    |                          |                   |
|--------------------|--------------------------|-------------------|
| Architecture Firms | Engineering Firms        | Restaurants       |
| Auto Body Shops    | Gas Stations             | Retail Operations |
| Construction Firms | Manufacturing Facilities | Warehouses        |
| Dry Cleaners       | Offices                  |                   |

## **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 listed below:

|                          |     |
|--------------------------|-----|
| Major Media Interactions | 199 |
| Press Releases           | 20  |
| News Carousel            | 1   |

## Major Media Topics:

- **Draft Heavy-Duty NOx Rule:** Inside EPA inquired about documents provided at a January 18 meeting with the White House Office of Information & Regulatory Affairs. Meeting presentations were provided.
- **2021 Executive Orders Regarding Crematoriums:** Time requested dates of 2021 Executive Orders regarding cremations in Los Angeles County. Written responses were provided.
- **AB 617:** CalMatters submitted a list of questions regarding AB 617. Written responses were provided to initial inquiries and additional follow-ups in progress.
- **MATES V:** CalMatters inquired if data from the MATES V Data Visualization Tool was available in a spreadsheet. The requested information was provided.
- **Port Pollution:** Forbes requested information on port pollution increases, specifically whether we had any statistics to share from the final quarter of 2021. Reporter was referred to CARB.
- **Hyperion:** LA Times inquired about violations that were issued to the Hyperion Water Reclamation Facility in connection with the July 11-12, 2021, sewage spill into the Santa Monica Bay. Responses in progress.
- **Rendering Plant Odors:** LA TACO and KPCC inquired about odors from Rendering Plants in Vernon. Responses were provided.
- **Gun Ranges:** The San Francisco Chronicle submitted follow-up questions regarding investigation of the On Target Gun Range in Laguna Niguel. Responses in progress.
- **Indirect Source Rule:** Staff participated in an interview with the Desert Sun on the implementation of the Warehouse Indirect Source Rule and impacts on new warehouses proposed in the Coachella Valley.
- **Agency Digital Technology:** Staff participated in an interview with Interface Magazine on the agency's technology, use of cloud, data, and cybersecurity.
- **Ethylene Oxide Emissions:** Capital & Main requested information on facilities that emit ethylene Oxide. Response in progress.
- **Replace Your Ride:** Spectrum News 1 requested information on the Replace Your Ride program. Waiting on additional information from reporter.
- **All American Asphalt:** Pitches were sent to local media outlets regarding an NOV issued to All American Asphalt, resulting in print and broadcast coverage. Epoch Times and OC Register sent additional follow-up questions. Responses were provided.
- **Martin Luther King, Jr. Day of Service 2022:** Pitches were sent to local media outlets regarding South Coast AQMD's Martin Luther King, Jr. event, resulting in print and broadcast coverage. LA Sentinel requested additional information, which was provided.
- **Windblown Dust Advisory:** Pitches were sent to local media outlets informing them of two windblown dust advisories, resulting in extensive print and broadcast coverage.

- **Check Before You Burn:** Five No-Burn Days were called during January. Pitches were sent to local media outlets for each. This resulted in extensive coverage from local tv, radio, and print outlets throughout the month. Staff participated in an interview with OC Register for additional information.
- **Carson Odors:** Grist requested raw data pertaining to the investigation and whether any companies were investigated. Fence line monitoring data was provided

#### News Releases:

- **No-Burn Days - Mandatory Wood-Burning Ban In-Effect For Residents Of The South Coast Air Basin (English and Spanish):** Five No-Burn Days were issued on January 4, 7, 13-14 and 31.
- **South Coast AQMD Issues Windblown Dust Advisory for the entire South Coast AQMD jurisdiction - January 21 and 27, 2022 (English and Spanish):** Informed residents of two Windblown Dust Advisories.
- **South Coast AQMD to host 9th Annual Dr. Martin Luther King Jr. Day of Service Event - January 14, 2022 (English and Spanish):** Informed residents about the annual Dr. Martin Luther King Jr. Day of Service.
- **Notice of Violation Issued to All American Asphalt in Irvine for Causing a Public Nuisance - January 14, 2022 (English and Spanish):** Informed residents about NOV issued to All American Asphalt.
- **Notice of Violation Issued to Animal Rendering Plant in Vernon, Calif., for Odors Impacting Surrounding Community - January 20, 2022 (English and Spanish):** Informed residents about NOV issued to Vernon rendering plant.

#### Social Media Notable posts:

- **No Burn Day Extension (1/13):** 3,382 Twitter Impressions
- **Windblown Dust Advisory (1/21):** 33,705 Twitter Impressions

## **OUTREACH TO COMMUNITY GROUPS AND FEDERAL, STATE, AND LOCAL GOVERNMENTS**

Outreach was conducted personally and virtually in January utilizing web-based and other technologies to communicate with elected officials or staff from the following cities:

|               |                      |                       |
|---------------|----------------------|-----------------------|
| Alhambra      | Hemet                | Montclair             |
| Anaheim       | Hermosa Beach        | Monterey Park         |
| Arcadia       | Hidden Hills         | Newport Beach         |
| Avalon        | Highland             | Palos Verdes Estates  |
| Azusa         | Huntington Beach     | Pasadena              |
| Baldwin Park  | Industry             | Placentia             |
| Big Bear Lake | Inglewood            | Pomona                |
| Bradbury      | Irvine               | Rancho Palos Verdes   |
| Brea          | Irwindale            | Redondo Beach         |
| Buena Park    | La Cañada Flintridge | Rolling Hills         |
| Calabasas     | La Habra             | Rolling Hills Estates |
| Carson        | La Puente            | Rosemead              |
| Claremont     | La Verne             | San Dimas             |
| Colton        | Laguna Niguel        | San Gabriel           |
| Covina        | Lake Forest          | San Marino            |
| Diamond Bar   | Lawndale             | Santa Ana             |
| Duarte        | Lomita               | Seal Beach            |
| El Monte      | Long Beach           | South El Monte        |
| El Segundo    | Los Angeles          | South Pasadena        |
| Fullerton     | Malibu               | Torrance              |
| Garden Grove  | Manhattan Beach      | Walnut                |
| Gardena       | Mission Viejo        | West Covina           |
| Hawthorne     | Monrovia             | Yorba Linda           |

Communication conducted in January with elected officials and/or staff from the following state and federal offices:

- U.S. Senator Alex Padilla
- U.S. Representative Tony Cárdenas
- U.S. Representative Judy Chu
- U.S. Representative Lou Correa
- U.S. Representative Grace Napolitano
- Senator Bob Archuleta
- Senator Steven Bradford
- Senator Anthony Portantino
- Senator Susan Rubio
- Assembly Member Lisa Calderon
- Assembly Member Laura Friedman
- Assembly Member Mike Gipson
- Assembly Member Chris Holden
- Assembly Member Suzette Martinez Valladares

Staff represented South Coast AQMD in January and/or provided updates or a presentation to the following governmental agencies and business organizations:

Beach Cities Health District  
Big Bear Chamber of Commerce  
Los Angeles Board of Harbor Commissioners  
California Department of Transportation  
California High Speed Railroad  
California Natural Resources Agency  
Clean Power Alliance  
Energy Coalition  
Foothill Gold Line Construction Authority  
Foothill Transit  
Gateway Cities Council of Governments  
Industry Business Council, Los Angeles  
Inland Valley Development Agency  
Irwindale Chamber of Commerce  
LA Metro  
Las Virgenes-Malibu Council of Governments  
League of California Cities, Los Angeles County Division  
Los Angeles County Board of Supervisors  
Los Angeles County Department of Planning  
Los Angeles County Department of Water and Power  
Los Angeles County Sanitation District  
Los Angeles Department of Public Health  
Metropolitan Water District of Southern California  
Mountain Transit  
Newport Beach Chamber of Commerce  
Omnitrans  
Ontario International Airport  
Orange County Board of Supervisors  
Orange County Business Council  
Orange County Transportation Authority  
Riverside County Board of Supervisors  
Riverside County Department of Public Health  
Riverside Transit Agency  
San Bernardino Chamber of Commerce  
San Bernardino County Board of Supervisors  
San Bernardino County Transportation Authority  
San Bernardino International Airport Authority  
San Gabriel & Lower Los Angeles Rivers and Mountains Conservancy  
San Gabriel Mountains Community Collaborative  
San Gabriel Valley Council of Governments

San Gabriel Valley Economic Partnership  
San Gabriel Valley Mosquito & Vector Control District  
Santa Ana Chamber of Commerce  
South Bay Cities Council of Governments  
SCAG  
Southern California Edison  
Southern California Gas Company  
Sunline Transit Agency  
Sunshine Canyon Landfill Community Advisory Committee  
Valley Industry Commerce Association  
Westside Cities Council of Government

In January, staff represented South Coast AQMD and/or provided updates or a presentation to the following community and educational groups and organizations:

Active San Gabriel Valley  
Asian Pacific Islanders Forward Movement  
Bassett Unified School District  
California State University, Fullerton  
California State University, San Bernardino  
Clean Air Coalition of North Whittier and Hacienda Heights  
Hacienda La Puente Unified School District  
League of Women Voters, West San Gabriel Valley Chapter  
Pasadena City College  
Pasadena Neighborhood Connections  
Santa Ana College  
Taking Responsibility and Control, La Puente  
Trust for Public Land, Los Angeles  
University of Redlands  
Wildlands Conservancy  
Visual Artists Guild, San Gabriel Valley  
Whitter College

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BOARD MEETING DATE: March 4, 2022

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, 2022.

COMMITTEE: No Committee Review

RECOMMENDED ACTION:  
Receive and file.

Cynthia Verdugo-Peralta  
Hearing Board Chair

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The following summaries are attached: **January 2022 Hearing Board Cases and Rules From Which Variances and Orders for Abatement Were Requested in 2022**. An index of South Coast AQMD Rules is also attached.

There were no appeals filed during the period of January 1 to January 31, 2022.



## Report of January 2022 Hearing Board Cases

| Case Name and Case No.<br>(South Coast AQMD Attorney)                                      | Rules  | Reason for Petition/Hearing  | South Coast AQMD<br>Position/Hearing Board<br>Action | Type and Length of Variance<br>or Order  | Excess Emissions            |
|--|--|--|--|--|-----------------------------|
| 1. Demenno/Kerdoon dba World Oil Recycling<br>Case No. 5753-6<br>(Consent Calendar)        | 203(b)<br>2004(f)(1)<br>3002(c)(1)           | Petitioner's natural gas line running to the facility would be shut off and rerouted or facility would be unable to operate an afterburner, used as a pollution control device during the natural gas line work.             | Not Opposed/ Granted                                 | SV granted for a period of five (5) days between 1/15/22 and 2/15/22.  | VOC: 2.546 lbs/total        |
| 2. Lunday-Thagard Company dba World Oil Refining<br>Case No. 2033-34<br>(Consent Calendar) | 203(b)<br>2004(f)(1)<br>3002(c)(1)           | Petitioner had to shutdown incinerator C97, for maintenance of internal inspections and to allow SoCal Gas to perform maintenance of natural gas line supplying facility.  | Not Opposed/Granted                                  | SV granted for one week between 2/25/22 and 3/4/22.  | VOC:2.546 lbs/total         |
| 3. Northrop Grumman Systems Corporation<br>Case No. 3534-16<br>(J. Lee)                    | 203(b)<br>1469.1<br>2004(f)(1)<br>3002(c)(1) | Status Report/ MFCD/ EXT 09/01/21 Hearing Condition met. Booth D82 HEPA retrofit project to be completed by 05/16/22. Permit to Construct issued, Permits to Operate issued. Next Status Report/MFCD scheduled for 04/27/22. | Not Opposed/Granted                                  | MFCD/EXT granted commencing 1/13/22 and continuing through 5/16/22.  | Chromium:<br>0.00017/lb/day |
| 4. South Coast AQMD vs. Mission Foods<br>Case No. 5400-4<br>(K. Manwaring)                 | 202(c)<br>203(b)<br>1147<br>1153.1           | Parties requested modification to conditions and final compliance date of 05/31/22, to allow respondent time to pursue alternative path to compliance.   | Stipulated/Modified                                  | Mod. O/A issued commencing 1/27/22 and continuing through 5/31/22. The Hearing Board shall retain jurisdiction over this matter until 6/30/22. | N/A                         |

| Case Name and Case No.<br>(South Coast AQMD Attorney)  | Rules  | Reason for Petition/Hearing   | South Coast AQMD<br>Position/Hearing Board<br>Action | Type and Length of Variance<br>or Order  | Excess Emissions |
|--|--|---|--|--|------------------|
| 5. South Coast AQMD vs.<br>Southern California Edison,<br>Pebble Beach Generating<br>Station<br>Case No. 1262-115<br>(M. Reichert) | 1470(c)(4)(A)  | Both parties requested a Stipulated O/A so that operation of equipment could be done with appropriate conditions, including monitoring, recordkeeping, reporting with a feasible compliance plan to be developed, approved and implemented as soon as possible. | Stipulated/Issued                                    | O/A issued commencing 1/4/22 and continuing through 1/4/24. The Hearing Board shall retain jurisdiction over this matter until 1/4/24. | N/A              |
| 6. The Newark Group, Inc., dba<br>Greif, Inc.<br>Case No. 6219-1<br>(J. Lee)   | 203(b)<br>2004(f)(1)<br>2012, App A,<br>Ch 2. A.16<br>3002(c)(1)   | Petitioner requested a SV to address an inability to complete certain engine source tests; RECLAIM RATA/CEMS recertification on the NOx CEMS and annual ammonia source testing, due to delays with third party service company.                                 | Not Opposed/Granted                                  | SV granted commencing 1/6/22 and continuing through 3/31/22.   | None             |
| 7. Torrance Refining Company<br>LLC<br>Case No. 6060-13<br>(E. Chavez)   | 203(b)<br>2004(f)(1)<br>2011(c)(2)(A)<br>2011(c)(3)(A)<br>2011(e)(1)<br>2011(k)<br>2011, App A,<br>Ch 2-A, Att C<br>2012(c)(2)(A)<br>2012(c)(3)(A)<br>2012(g)(1)<br>2012(m)<br>2012, App. A,<br>Ch2-A, Att C<br>3002(c)(1) | Petitioner needs to temporarily shutdown Reformer Heater 4F-1 and disconnect CEMS from heater to allow safe worker access to install new CEMS, SCR and stack. Installation of a new SCR system with associated ammonia tank is also needed.                     | Not Opposed/Granted                                  | SV & AOC granted commencing 1/5/22 and continuing through 4/4/22.  | None             |

**Acronyms**

AOC: Alternative Operating Condition  
CEMS: Continuous Emissions Monitoring  
EV: Emergency Variance  
EXT: Extension

MFCD: Modification Final Compliance Date  
Mod: Modification  
N/A: Not Applicable  
NOx: Oxides of Nitrogen  
O/A: Order for Abatement

RATA: Relative Accuracy Test Audit  
SCR: Selective Catalytic Reduction  
SV: Short Variance  
TBD: To Be Determined  
VOC: Volatile Organic Compound

**Rules from which Variances and Orders for Abatement were Requested in 2022**

| Rules                        | Jan | Feb | Mar | April | May | June | July | Aug | Sept | Oct | Nov | Dec | Total Actions |
|------------------------------|-----|-----|-----|-------|-----|------|------|-----|------|-----|-----|-----|---------------|
| 202(c)                       | 1   |     |     |       |     |      |      |     |      |     |     |     | 1             |
| 203(b)                       | 6   |     |     |       |     |      |      |     |      |     |     |     | 6             |
| 1147                         | 1   |     |     |       |     |      |      |     |      |     |     |     | 1             |
| 1153.1                       | 1   |     |     |       |     |      |      |     |      |     |     |     | 1             |
| 1469.1(d)                    | 1   |     |     |       |     |      |      |     |      |     |     |     | 1             |
| 1470(c)(4)A)                 | 1   |     |     |       |     |      |      |     |      |     |     | \   | 1             |
| 2004(f)(1)                   | 5   |     |     |       |     |      |      |     |      |     |     |     | 5             |
| 2011(c)(2)(A)                | 1   |     |     |       |     |      |      |     |      |     |     |     | 1             |
| 2011(c)(3)(A)                | 1   |     |     |       |     |      |      |     |      |     |     |     | 1             |
| 2011(e)(1)                   | 1   |     |     |       |     |      |      |     |      |     |     |     | 1             |
| 2011(k)                      | 1   |     |     |       |     |      |      |     |      |     |     |     | 1             |
| 2011, APP. A, Ch 2-A, Att. C | 1   |     |     |       |     |      |      |     |      |     |     |     | 1             |
| 2012(c)(2)(A)                | 1   |     |     |       |     |      |      |     |      |     |     |     | 1             |
| 2012(c)(3)(A)                | 1   |     |     |       |     |      |      |     |      |     |     |     | 1             |
| 2012(g)(1)                   | 1   |     |     |       |     |      |      |     |      |     |     |     | 1             |
| 2012(m)                      | 1   |     |     |       |     |      |      |     |      |     |     |     | 1             |
| 2012, APP.. A, Ch 2. A.16    | 1   |     |     |       |     |      |      |     |      |     |     |     | 1             |
| 2012, APP. A, Ch 2-A, Att. C | 1   |     |     |       |     |      |      |     |      |     |     |     | 1             |
| 3002(c)(1)                   | 5   |     |     |       |     |      |      |     |      |     |     |     | 5             |

**SOUTH COAST AQMD RULES AND REGULATIONS INDEX  
2022 HEARING BOARD CASES AS OF JANUARY 31, 2022**

**REGULATION II – PERMITS**

Rule 202      Temporary Permit Operate  
Rule 203      Permit to Operate

**REGULATION XI - TOXICS AND OTHER NON-CRITERIA POLLUTANTS**

Rule 1147      NOx Reductions from Miscellaneous Sources  
Rule 1153.1    Emissions of Oxides of Nitrogen from Commercial Food Ovens

**REGULATION XIV - TOXICS AND OTHER NON-CRITERIA POLLUTANTS**

Rule 1469.1    Spraying Operations Using Coatings Containing Chromium  
Rule 1470      Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines

**REGULATION XX – REGIONAL CLEAN AIR INCENTIVES MARKET (RECLAIM)**

Rule 2004      Requirements  
Rule 2011      Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions  
Rule 2012      Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions

**REGULATION XXX – TITLE V PERMITS**

Rule 3002      Requirements

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BOARD MEETING DATE: March 4, 2022

AGENDA NO. 14

REPORT: Civil Filings and Civil Penalties Report

SYNOPSIS: This report summarizes monthly penalties and legal actions filed by the General Counsel's Office from January 1 through January 31, 2022. An Index of South Coast AQMD Rules is attached with the penalty report.

COMMITTEE: Stationary Source, February 18, 2022, Reviewed

RECOMMENDED ACTION:  
Receive and file.

Bayron T. Gilchrist  
General Counsel

BTG:ew

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There are no Civil Filings for January 2022.

**Attachments**

January 2022 Penalty Report

Index of South Coast AQMD Rules and Regulations

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
General Counsel's Office**

**Settlement Penalty Report (01/01/2022 - 01/31/2022)**

**Total Penalties**

Civil Settlement:     \$175,308.00  
MSPAP Settlement:     \$12,750.00  
Hearing Board Settlement:     \$10,000.00

**Total Cash Settlements:     \$198,058.00**

**Fiscal Year through 01/31/2022 Cash Total:     \$2,466,592.35**

| <b>Fac ID</b>                                       | <b>Company Name</b>                   | <b>Rule Number</b>                                | <b>Settled Date</b> | <b>Init</b> | <b>Notice Nbrs</b>     | <b>Total Settlement</b> |
|---|---------------------------------------|---|---------------------|-------------|------------------------|-------------------------|
| <b>Civil</b>  |                                       |   |                     |             |                        |                         |
| 800088  | 3M COMPANY                            | 1155, 2004, 3002(c)(1)                            | 01/13/2022          | DH          | P66058, P66065, P66071 | \$30,000.00             |
| 187522  | ACE ROOFING SYSTEMS                   | 1403, 40 CFR 61.145                               | 01/20/2022          | NS          | P66710                 | \$25,000.00             |
| 73339   | MID VALLEY ANODIZING                  | 203   | 01/13/2022          | DH          | P66438                 | \$9,000.00              |
| 143050  | OLD MASTERS                           | 1113(C)(1)  | 01/13/2022          | JL          | P69061                 | \$15,808.00             |
| 7427  | OWENS-BROCKWAY GLASS<br>CONTAINER INC | 2004, 2011(c)(3)(A),<br>2012(c)(3)(A), 3002(c)(1) | 01/13/2022          | BT          | P66921, P66931, P66937 | \$92,000.00             |
| 173108  | SILVER CREEK INDUSTRIES, INC          | 3002  | 01/14/2022          | VT          | P69108                 | \$1,000.00              |
| 62617   | WILLARD MARINE INC                    | 3003, 3004  | 01/05/2022          | VT          | P68906                 | \$2,500.00              |
| <b>Total Civil Settlements: \$175,308.00</b>        |                                       |   |                     |             |                        |                         |
| <b>Hearing Board</b>                                |                                       |   |                     |             |                        |                         |
| 104234  | SCAQMD v. Mission Foods               | 202, 203(b), 1153.1, 1303                         | 01/20/2022          | KCM         | 5400-4                 | \$10,000.00             |
| <b>Total Hearing Board Settlements: \$10,000.00</b> |                                       |   |                     |             |                        |                         |

| Fac ID                                      | Company Name                 | Rule Number                 | Settled Date | Init | Notice Nbrs            | Total Settlement |
|---|------------------------------|-----------------------------|--------------|------|------------------------|------------------|
| <b>MSPAP</b>                                |                              |                             |              |      |                        |                  |
| 176130                                      | A AND B LONG BEACH INC       | 461(c)(3)(Q)                | 01/12/2022   | GC   | P67695                 | \$300.00         |
| 176237                                      | ATLANTIC RETAIL, INC         | 461(c)(3)(Q)                | 01/12/2022   | GC   | P67696                 | \$300.00         |
| 189580                                      | BROCO RANKIN                 | 203(a)                      | 01/12/2022   | GC   | P69363                 | \$800.00         |
| 180458                                      | GRAND PETRO, INC.            | 203(b)                      | 01/12/2022   | GC   | P69609                 | \$800.00         |
| 129728                                      | NEW LIFE SERVICE CO. INC.    | 1151                        | 01/12/2022   | TCF  | P65897                 | \$500.00         |
| 182054                                      | R. J. AUTO BODY & DETAIL     | 109, 1151(e)(1), 1171(c)(1) | 01/12/2022   | TCF  | P68616                 | \$2,400.00       |
| 175834                                      | RICHARD MAINTENANCE          | 461                         | 01/20/2022   | TCF  | P66387, P66391, P68137 | \$1,400.00       |
| 190939                                      | SHOLES, LUTILLER B TR        | 1403                        | 01/12/2022   | TCF  | P69747                 | \$250.00         |
| 159348                                      | TOP GUN PAINT AND BODY       | 1151, 1171                  | 01/20/2022   | TCF  | P65394                 | \$2,000.00       |
| 165287                                      | VICKERS CONSTRUCTION COMPANY | 1403                        | 01/12/2022   | TCF  | P69736                 | \$800.00         |
| 176325                                      | WAYNE PERRY, INC             | 221, 1166                   | 01/20/2022   | TCF  | P70408                 | \$3,200.00       |
| <b>Total MSPAP Settlements: \$12,750.00</b> |                              |                             |              |      |                        |                  |

**SOUTH COAST AQMD RULES AND REGULATIONS INDEX**  
**JANUARY 2022 PENALTY REPORT**

**REGULATION I - GENERAL PROVISIONS**

Rule 109            Recordkeeping for Volatile Organic Compound Emissions

**REGULATION II - PERMITS**

Rule 202            Temporary Permit to Operate  
Rule 203            Permit to Operate  
Rule 221            Plans

**REGULATION IV - PROHIBITIONS**

Rule 461            Gasoline Transfer and Dispensing

**REGULATION XI - SOURCE SPECIFIC STANDARDS**

Rule 1113            Architectural Coatings  
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 1155            Particulate Matter Control Devices  
Rule 1166            Volatile Organic Compound Emissions from Decontamination of Soil  
Rule 1171            Solvent Cleaning Operations

**REGULATION XIII - NEW SOURCE REVIEW**

Rule 1303            Requirements

**REGULATION XIV - TOXICS**

Rule 1403            Asbestos Emissions from Demolition/Renovation Activities

**REGULATION XX    REGIONAL CLEAN AIR INCENTIVES MARKET (RECLAIM)**

Rule 2004            Requirements  
Rule 2011            Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions  
Rule 2012            Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions



**REGULATION XXX - TITLE V PERMITS**

Rule 3002 Requirements for Title V Permits

Rule 3003 Applications

Rule 3004 Permit Types and Content

**CODE OF FEDERAL REGULATIONS**

40 CFR 61.145 Standard for Demolition and Renovation

BOARD MEETING DATE: March 4, 2022

AGENDA NO. 15

REPORT: FY 2021-22 Contract Activity

SYNOPSIS: This report lists the number of contracts let during the first six months of FY 2021-22, 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:gp

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### **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, and 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 related 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 2021-22) was \$119,140,487.65, with 140 contracts and contract modifications totaling \$117,098,869.83 (98 percent) approved by the Board and 166 contracts and contract modifications totaling \$2,041,617.82 (2 percent) approved by the Executive Officer. This does not include modifications for termination with partial or no work completed. Table 1 is a summary of the 323 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)**

| <b>Contract Category</b> | <b>Number</b> | <b>Amount</b>           |
|--------------------------|---------------|-------------------------|
| NEW AWARDS               | 143           | \$111,400,817.99        |
| OTHER                    | 30            | \$947,100.50            |
| SPONSORSHIPS             | 11            | \$136,500.00            |
| MODIFICATIONS            | 122           | \$6,656,069.16          |
| TERMINATIONS             | 17            | -\$2,097,456.18         |
| <b>Total</b>             | <b>323</b>    | <b>\$117,043,031.47</b> |

Of the total value for New Awards of \$111,400,817.99, \$62,694,999.00 (56 percent) was awarded through the competitive process. As shown in Table 2, contracts totaling \$2,041,617.82 were approved by the Executive Officer.

**Table 2: Contracts Approved by Executive Officer**

| <b>Contract Description</b>  | <b>Contract Amount</b> |
|--|------------------------|
| Board Member Assistant contracts and contract modifications, as approved by the Administrative Committee       | <b>\$881,108.96</b>    |
| Technical consulting   | <b>\$448,659.92</b>    |
| Contract modifications for extensions of time or additional budgeted services from previously approved vendors | <b>\$437,337.33</b>    |
| Sponsorships in advanced technologies and community and business outreach                                      | <b>\$136,500.00</b>    |
| Miscellaneous services including software licenses and event services  | <b>\$72,020.07</b>     |
| Air monitoring licenses  | <b>\$65,991.54</b>     |
| <b>Total</b>   | <b>\$2,041,617.82</b>  |

## Attachment

Contract Activity Report for the period July 1, 2021 through December 31, 2021

**South Coast AQMD**  
**Contract Activity Report**  
**July 1, 2021 - December 31, 2021**

| DEPT ID                             | DEPT NAME                        | CONTRACT NUMBER | FUND CODE | DESCRIPTION  | VENDOR NAME                           | CONTRACT AMOUNT | FOOT NOTE |
|-------------------------------------|----------------------------------|-----------------|-----------|--|---------------------------------------|-----------------|-----------|
| <b>I. NEW AWARDS</b>                |                                  |                 |           |  |                                       |                 |           |
| <b>Competitive - Board Approved</b> |                                  |                 |           |  |                                       |                 |           |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C20296          | 31        | DEPLOY ZERO EMISSION ELECTRIC DELIVERY TRUCKS          | DAIMLER TRUCKS NORTH AMERICA LLC      | \$4,010,000.00  |           |
| 26                                  | PLANNING RULE DEV & AREA SOURCES | C20307          | 35        | COACHELLA VALLEY REGIONAL PM10 STREET SWEEPING PROGRAM | COACHELLA VALLEY ASSOC OF GOVERNMENTS | \$220,000.00    |           |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C20318          | 77        | REPLACEMENT OF 7 OFF-ROAD EQUIPMENT                    | ECOLOGY RECYCLING SERVICES, LLC       | \$233,398.00    |           |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C21029          | 81        | PROP 1B TRUCK REPLACEMENT PROGRAM                      | I-SARANG USA INC                      | \$100,000.00    |           |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C21041          | 77        | REPLACEMENT OF 1 ON-ROAD EQUIPMENT                     | NERY ALVAREZ                          | \$100,000.00    |           |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C21085          | 77        | REPOWER 2 MAIN ENGINES-OPERATION ONLY                  | TORONADO SPORTFISHING                 | \$0.00          | 1         |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C21177          | 77        | CONSTRUCT & OPERATE 1 NEW BATTERY CHARGING STATION     | RALPHS GROCERY COMPANY                | \$2,647,050.00  |           |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C21200          | 77        | REPLACEMENT OF 5 OFF-ROAD EQUIPMENT                    | TUDOR RANCH INC                       | \$372,315.00    |           |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C21208          | 77        | REPOWER OF 1 OFF-ROAD CARGO HANDLING EQUIPMENT         | FENIX MARINE SERVICES LTD             | \$295,435.00    |           |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C21210          | 32        | REPLACEMENT OF 1 DUAL-ENGINE OFF-ROAD EQUIPMENT        | TGI EQUIPMENT CORPORATION             | \$135,333.00    |           |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C21217          | 77        | REPLACEMENT OF 4 OFF-ROAD CARGO HANDLING EQUIPMENT     | TOTAL TERMINALS INTERNATIONAL, LLC    | \$2,528,855.00  |           |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C21218          | 77        | REPOWER 4 OFF-ROAD CARGO HANDLING EQUIPMENT            | UNITED TERMINAL LEASING LLC           | \$1,064,389.00  |           |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C21228          | 77        | REPLACEMENT OF 1 OFF-ROAD EQUIPMENT                    | PACIFIC AGGREGATES INC                | \$74,586.00     |           |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C21241          | 77        | REPLACEMENT OF 3 OFF-ROAD EQUIPMENT                    | MARTIN VARGAS                         | \$261,850.00    |           |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C21243          | 77        | REPLACEMENT OF 3 OFF-ROAD EQUIPMENT                    | JUNIOR ENTERPRISES, LLC               | \$220,829.00    |           |

**South Coast AQMD  
Contract Activity Report  
July 1, 2021 - December 31, 2021**

| <b>DEPT ID</b> | <b>DEPT NAME</b>                    | <b>CONTRACT NUMBER</b> | <b>FUND CODE</b> | <b>DESCRIPTION</b>  | <b>VENDOR NAME</b>              | <b>CONTRACT AMOUNT</b> | <b>FOOT NOTE</b> |
|----------------|-------------------------------------|------------------------|------------------|---|---------------------------------|------------------------|------------------|
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21246                 | 32               | 2-FOR-1 REPLACEMENT OF 2 OFF-ROAD ENGINES WITH 1 OFF-ROAD ENGINE ANDREPLACEMENT OF 2 OFF-ROAD ENGINES WITH 2 OFF-ROAD ENGINES | NATIONAL PAVING COMPANY, INC.   | \$124,999.00           |                  |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21257                 | 27               | 2-FOR-1 REPLACEMENT OF OFF-ROAD EQUIPMENT   | FASTRACK RENTALS, INC.          | \$289,730.00           |                  |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21258                 | 32               | REPLACEMENT OF 1 OFF-ROAD EQUIPMENT   | MICHAEL DE HOOG DAIRY, LP       | \$183,928.00           |                  |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21261                 | 77               | REPLACEMENT 2 OFF-ROAD EQUIPMENT  | RANCHO POLO LLC                 | \$236,748.00           |                  |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21264                 | 77               | CONSTRUCT & OPERATE 1 NEW BATTERY CHARGING STATION  | OMNITRANS                       | \$336,218.00           |                  |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21267                 | 27               | REPOWER OF 2 MAIN ENGINES ON 1 VESSEL   | MJ SPORT FISHING LLC            | \$236,800.00           |                  |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21270                 | 77               | REPLACEMENT OF 3 OFF-ROAD EQUIPMENT   | JOSE LUIS TORRES MEDINA         | \$373,696.00           |                  |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21271                 | 32               | 2-FOR-1 REPLACEMENT OF 1 OFF-ROAD EQUIPMENT AND REPLACEMENT OF 3 OFF-ROAD EQUIPMENT   | EMERALD ACRES LLC               | \$3,475,000.00         |                  |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21274                 | 32               | REPLACEMENT OF 2 OFF-ROAD EQUIPMENT   | ORGANIC DEPOT LLC               | \$2,321,913.00         |                  |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21275                 | 27,32            | REPLACEMENT OF 2 OFF-ROAD ENGINES WITH 1 OFF-ROAD EQUIPMENT   | GALLEANO ENTERPRISES INC        | \$55,560.00            |                  |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21276                 | 77               | REPOWER 3 MAIN ENGINES ON 1 MARINE VESSEL   | GROUNDTACKLE HOLDINGS, LLC      | \$370,646.00           |                  |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21279                 | 77               | REPLACEMENT OF 2 OFF-ROAD EQUIPMENT   | LA QUINTA DATE GROWERS, L.P.    | \$305,888.00           |                  |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21284                 | 79               | REPLACEMENT OF 1 ON-ROAD DRAYAGE TRUCK  | ARETE LOGISTICS CORP            | \$85,000.00            |                  |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21289                 | 77               | REPOWER 3 MAIN ENGINES OF 1 MARINE VESSEL   | SO CAL SHIP SERVICES            | \$364,593.00           |                  |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21290                 | 77               | REPLACEMENT OF 16 OFF-ROAD EQUIPMENT  | EPC LANDSCAPING, LLC            | \$1,865,568.00         |                  |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21291                 | 27               | REPOWER 3 MAIN ENGINES OF 2 MARINE VESSELS  | SOUTHWEST MARINE RESOURCES, LLC | \$349,477.00           |                  |

**South Coast AQMD  
Contract Activity Report  
July 1, 2021 - December 31, 2021**

| <b>DEPT ID</b> | <b>DEPT NAME</b>                 | <b>CONTRACT NUMBER</b> | <b>FUND CODE</b> | <b>DESCRIPTION</b>   | <b>VENDOR NAME</b>                  | <b>CONTRACT AMOUNT</b> | <b>FOOT NOTE</b> |
|----------------|----------------------------------|------------------------|------------------|--|-------------------------------------|------------------------|------------------|
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21292                 | 32               | REPLACEMENT OF 1 OFF-ROAD EQUIPMENT                              | CANYON PACIFIC EQUIPMENT, LLC       | \$277,692.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21295                 | 77               | REPLACEMENT OF 2 OFF-ROAD EQUIPMENT                              | BRITO RANCHES LP                    | \$260,521.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21296                 | 77               | REPLACEMENT OF 2 OFF-ROAD EQUIPMENT                              | LONG LIFE FARMS INC.                | \$246,502.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21297                 | 77               | REPLACEMENT OF 2 OFF-ROAD EQUIPMENT                              | JAMIE V SANCHEZ                     | \$149,551.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21300                 | 77               | REPLACEMENT OF 4 OFF-ROAD EQUIPMENT                              | HADLEY DATE GARDENS, INC            | \$281,408.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21301                 | 77               | REPOWER 1 MAIN ENGINE ON 1 MARINE VESSEL                         | AUGELLO ENTERPRISES LLC             | \$264,800.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21304                 | 77               | REPOWER 2 MAIN ENGINES OF A MARINE VESSEL                        | CAYWIND ENTERPRISES, INC            | \$141,630.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21305                 | 32               | REPOWER OF 2 OFF-ROAD EQUIPMENT                                  | P. RILEY ENTERPRISES, INC.          | \$316,184.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21307                 | 32               | REPLACEMENT 2 OFF-ROAD EQUIPMENT                                 | TINA MCMINN EQUIPMENT RENTALS, INC. | \$3,098,928.00         |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21308                 | 32               | REPLACEMENT OF 1 AND REPOWER 1 OFF-ROAD EQUIPMENT                | TONY R CRISALLI, INC                | \$336,926.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21309                 | 77               | REPOWER 1 MAIN ENGINE AND 2 AUXILIARY ENGINES OF A MARINE VESSEL | F/V PAC HORIZON, INC                | \$339,200.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21311                 | 77               | REPOWER 1 MAIN ENGINE OF A MARINE VESSEL                         | MICHAEL A NEIL                      | \$116,000.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21314                 | 79               | REPLACEMENT OF 1 DRAYAGE TRUCK                                   | JASON KWON                          | \$85,000.00            |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21315                 | 79               | REPLACEMENT OF 1 ON-ROAD DRAYAGE TRUCK                           | HYEONG CHEOL JEON                   | \$85,000.00            |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21318                 | 79               | REPLACEMENT OF 1 ON-ROAD DRAYAGE TRUCK                           | MORTIMER & WALLACE, INC.            | \$85,000.00            |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21319                 | 27               | REPOWER 1 MAIN ENGINE OF A MARINE VESSEL                         | BURTON RAPPOPORT                    | \$149,600.00           |                  |

**South Coast AQMD  
Contract Activity Report  
July 1, 2021 - December 31, 2021**

| <b>DEPT ID</b> | <b>DEPT NAME</b>                 | <b>CONTRACT NUMBER</b> | <b>FUND CODE</b> | <b>DESCRIPTION</b>   | <b>VENDOR NAME</b>                    | <b>CONTRACT AMOUNT</b> | <b>FOOT NOTE</b> |
|----------------|----------------------------------|------------------------|------------------|--|---------------------------------------|------------------------|------------------|
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21320                 | 79               | REPLACEMENT OF 1 ON-ROAD DRAYAGE TRUCK                             | PUNG SEOB ON                          | \$85,000.00            |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21323                 | 79               | REPLACEMENT OF 17 ON-ROAD DRAYAGE TRUCKS                           | USA WASTE OF CALIFORNIA INC           | \$775,000.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21324                 | 32               | REPLACEMENT OF 1 OFF-ROAD EQUIPMENT                                | CLARK & SONS, INC.                    | \$531,762.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21328                 | 77               | REPOWER 2 MAIN ENGINES OF A MARINE VESSEL                          | US WATER TAXI, INC.                   | \$190,400.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21337                 | 79               | REPLACEMENT OF 2 ON-ROAD DRAYAGE TRUCKS                            | NGL LOGISTICS LLC                     | \$170,000.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21341                 | 27               | REPOWER 2 MAIN ENGINES AND 2 AUXILIARY ENGINES OF A MARINE VESSEL  | MADRUGADOR INC                        | \$400,880.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21343                 | 79               | REPLACEMENT OF 1 DRAYAGE TRUCK                                     | ALLEN CHUL HYON                       | \$85,000.00            |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21346                 | 79               | REPLACEMENT OF 1 ON-ROAD WASTE HAULER                              | KING BUSINESS SERVICES INC            | \$73,094.00            |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21348                 | 79               | REPLACEMENT OF 4 ON-ROAD WASTE HAULERS                             | UNIVERSAL WASTE SYSTEMS, INC.         | \$323,032.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21349                 | 27,32            | REPOWER 2 MAIN ENGINES OF A MARINE VESSEL                          | AVALON MOORING & DIVING SERVICE, INC. | \$154,238.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21350                 | 79               | REPLACEMENT OF 3 ON-ROAD DRAYAGE TRUCKS                            | PACIFIC GREEN TRUCKING INC            | \$255,000.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21353                 | 32,77            | CONSTRUCTION AND OPERATION OF 2 NEW RENEWABLE GAS FILLING STATIONS | UNITED PARCEL SERVICE, INC            | \$3,775,987.00         |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21356                 | 79               | REPLACEMENT OF 4 ON-ROAD DRAYAGE TRUCKS                            | PREMIUM TRANSPORTATION SERVICES, INC. | \$340,000.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21361                 | 77               | REPLACEMENT OF 3 OFF-ROAD EQUIPMENT                                | LARSEN LAND AND CATTLE CO LLC         | \$438,881.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21363                 | 77               | REPOWER 1 MAIN ENGINE OF A MARINE VESSEL                           | VICTORY SPORTFISHING CO, INC.         | \$150,400.00           |                  |
| 27             | INFORMATION MANAGEMENT           | C21380                 | 01               | CYBERSECURITY ASSESSMENT   | SECURANCE LLC                         | \$71,796.00            |                  |

**South Coast AQMD  
Contract Activity Report  
July 1, 2021 - December 31, 2021**

| <b>DEPT ID</b> | <b>DEPT NAME</b>                 | <b>CONTRACT NUMBER</b> | <b>FUND CODE</b> | <b>DESCRIPTION</b>  | <b>VENDOR NAME</b>                      | <b>CONTRACT AMOUNT</b> | <b>FOOT NOTE</b> |
|----------------|----------------------------------|------------------------|------------------|---|---|------------------------|------------------|
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21381                 | 77               | REPOWER 2 MAIN ENGINES OF A MARINE VESSEL   | FIGHTING IRISH DANA POINT LLC           | \$684,558.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21383                 | 81               | PROP 1B TRUCK REPLACEMENT PROGRAM   | ALLIED BROS TRANSPORT INC               | \$100,000.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21384                 | 81               | PROP 1B TRUCK REPLACEMENT PROGRAM   | HUMBERTO PALOMINO                       | \$100,000.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21387                 |                  | REPOWER OFF-ROAD EQUIPMENT-OPERATION ONLY   | PEED EQUIPMENT COMPANY                  | \$0.00                 | 1                |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C21389                 | 32               | CONSTRUCTION AND OPERATION OF 1 NEW RENEWABLE NATURAL GAS FILLING STATION             | ARROW SERVICES INC                      | \$100,000.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22028                 | 32               | CONSTRUCTION AND OPERATION OF 1 NEW RENEWABLE NATURAL GAS FILLING STATION             | ANAHEIM UNION HIGH SCHOOL DISTRICT      | \$482,150.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22030                 | 32,77            | TECHNICAL ASSISTANCE, IMPLEMENTATION, AND OUTREACH SUPPORT FOR THE CARL MOYER PROGRAM | CORA CONSULTING GROUP LLC               | \$130,000.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22034                 | 32,77            | TECHNICAL ASSISTANCE, IMPLEMENTATION AND OUTREACH SUPPORT FOR THE CARL MOYER PROGRAM  | TETRA TECH INC                          | \$210,000.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22038                 | 79               | REPLACEMENT OF 5 ON-ROAD CLASS 8 TRUCKS   | LOS ANGELES COUNTY SANITATION DISTRICTS | \$1,000,000.00         |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22039                 | 32/77            | REPLACEMENT OF 4 ON-ROAD EQUIPMENT  | USA WASTE OF CALIFORNIA INC             | \$162,053.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22045                 | 80               | REPOWER 2 MAIN ENGINES OF MARINE VESSEL   | JDF VENTURES LLC                        | \$112,968.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22046                 | 80               | REPOWER 2 MAIN ENGINES OF MARINE VESSEL   | OC OCEAN ADVENTURE, INC.                | \$222,400.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22047                 | 80               | REPOWER OF 1 MAIN ENGINE OF A MARINE VESSEL   | TRAVIS EDWARD VAUGHAN                   | \$149,656.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22048                 | 80               | REPOWER 2 MAIN ENGINES OF MARINE VESSEL   | REWARD SPORTFISHING INC                 | \$225,525.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22051                 | 79               | REPLACEMENT OF 1 ON-ROAD CLASS 8 WASTE HAULER   | CITY OF SANTA CRUZ                      | \$189,690.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22053                 | 80               | REPOWER 2 MAIN ENGINES OF A MARINE VESSEL   | HEIDI M PITKIN                          | \$228,508.00           |                  |



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|----------------|----------------------------------|------------------------|------------------|---|---------------------------------------|------------------------|------------------|
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22055                 | 79               | VM MITIGATION TRUCK REPLACEMENT PROGRAM               | TRI-MODAL DISTRIBUTION SERVICES INC   | \$400,000.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22056                 | 79               | REPLACEMENT OF 13 ON-ROAD CLASS 8 FREIGHT TRUCKS      | RALPHS GROCERY COMPANY                | \$2,600,000.00         |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22057                 | 79               | REPLACEMENT OF 7 ON-ROAD CLASS 8 FREIGHT TRUCKS       | SCHNEIDER NATIONAL CARRIERS INC       | \$1,400,000.00         |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22058                 | 79               | REPLACEMENT OF 2 ON-ROAD WASTE HAULERS                | WASTE CONNECTIONS OF CALIFORNIA INC   | \$400,000.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22059                 | 79               | REPLACEMENT OF 5 ON-ROAD CLASS 8 DUMP TRUCKS          | RRM PROPERTIES, LTD                   | \$1,000,000.00         |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22060                 | 79               | REPLACEMENT OF 12 ON-ROAD CLASS 8 TRUCKS              | DEPENDABLE HIGHWAY EXPRESS, INC.      | \$2,400,000.00         |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22064                 | 80               | REPLACEMENT OF 2 MAIN ENGINES OF MARINE VESSEL        | SAN CLEMENTE SPORTFISHING, INC        | \$864,000.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22080                 | 79               | REPLACEMENT OF 12 ON-ROAD CLASS 8 FREIGHT TRUCKS      | ESTES EXPRESS LINES                   | \$2,400,000.00         |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C22096                 | 31               | TECHNICAL ASSISTANCE WITH HD VEHICLE EMISSION TESTING | AEE SOLUTIONS LLC                     | \$100,000.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | G21273                 | 80               | REPLACEMENT OF CNG FUEL TANKS ON 3 SCHOOL BUSES       | LAKE ELSINORE UNIFIED SCHOOL DISTRICT | \$60,000.00            |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | G21321                 | 80               | REPLACEMENT OF 2 CNG FUEL TANKS ON SCHOOL BUSES       | DOWNEY UNIFIED SCHOOL DISTRICT        | \$40,000.00            |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | G21322                 | 80               | REPLACEMENT OF 2 CNG FUEL TANKS ON SCHOOL BUSES       | DESERT SANDS UNIFIED SCHOOL DISTRICT  | \$40,000.00            |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | G21364                 | 80               | REPLACEMENT OF 6 CNG FUEL TANKS ON SCHOOL BUSES       | CHINO VALLEY UNIFIED SCHOOL DISTRICT  | \$120,000.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | G21390                 | 80               | REPLACEMENT OF 2 CNG FUEL TANKS ON SCHOOL BUSES       | UPLAND UNIFIED SCHOOL DISTRICT        | \$40,000.00            |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | G22043                 | 80               | REPLACEMENT OF 5 CNG FUEL TANKS ON SCHOOL BUSES       | FONTANA UNIFIED SCHOOL DISTRICT       | \$100,000.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | G22092                 | 80               | REPLACEMENT OF 1 CNG TANK IN SCHOOL BUS               | ABC UNIFIED SCHOOL DISTRICT           | \$20,000.00            |                  |

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|-------------------------------------|----------------------------------|------------------------|------------------|---|---------------------------------------|------------------------|------------------|
| 44                                  | MSRC                             | ML18179                | 23               | IMPLEMENT SIGNAL COORDINATION AND TIMING IMPROVEMENTS   | CITY OF RANCHO MIRAGE                 | \$50,000.00            |                  |
| 44                                  | MSRC                             | MS16127                | 23               | IMPLEMENT TRANSIT STATION IMPROVEMENTS  | LOS ANGELES COUNTY METROPOLITAN       | \$2,500,000.00         |                  |
| 44                                  | MSRC                             | MS21010                | 23               | PROCURE/DEPLOY 1 ZERO-EMISSION ELECTRIC OVERHEAD CRANE  | MHX LLC                               | \$569,275.00           |                  |
| 44                                  | MSRC                             | MS21014                | 23               | DEPLOY 5 NEAR ZERO EMISSION TRUCKS  | GREEN FLEET SYSTEMS, LLC              | \$500,000.00           |                  |
| 44                                  | MSRC                             | MS21015                | 23               | DEPLOY UP TO 15 NEAR-ZERO EMISSIONS SEMI-TRACTORS   | PREMIUM TRANSPORTATION SERVICES, INC. | \$1,500,000.00         |                  |
| 44                                  | MSRC                             | MS21017                | 23               | PROCURE AND DEPLOY UP TO 10 ZERO-EMISSION TRUCKS AND ASSOCIATED CHARGING INFRASTRUCTURE                   | MHX LLC                               | \$1,900,000.00         |                  |
| 44                                  | MSRC                             | MS21018                | 23               | DEPLOY UP TO 23 NEAR ZERO EMISSION TRUCKS   | PAC ANCHOR TRANSPORTATION, INC.       | \$2,300,000.00         |                  |
| <b>Subtotal</b>                     |                                  |                        |                  |   |                                       | <b>\$62,694,999.00</b> |                  |
| <b>Sole Source - Board Approved</b> |                                  |                        |                  |   |                                       |                        |                  |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C20048                 | 84               | INSTALLATION AND MAINTENANCE OF AIR FILTRATION SYSTEMS AT PUBLIC SCHOOLS IN EJ COMMUNITIES IN LOS ANGELES | IQAIR NORTH AMERICA, INC.             | \$6,745,000.00         |                  |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C20169                 | 31               | DEVELOP AND DEMONSTRATE NEAR-ZERO AND ZERO-EMISSION VEHICLES AND EQUIPMENT                                | PORT OF LOS ANGELES                   | \$1,000,000.00         |                  |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C20199                 | 31               | DEVELOP A NEAR-ZERO NATURAL GAS AND PROPANE CONVERSION SYSTEM FOR ON-ROAD MEDIUM-DUTY VEHICLES            | AGILITY FUEL SOLUTIONS LLC            | \$607,825.00           |                  |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C21153                 | 17               | VOLVO SWITCH-ON PROJECT: DEVELOP AND DEPLOY 70 HEAVY-DUTY BATTERY-ELECTRIC VEHICLES                       | VOLVO GROUP NORTH AMERICA LLC         | \$21,460,000.00        |                  |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C21240                 | 83               | DEVELOP AND DEMONSTRATE CAPTURE AND CONTROL SYSTEM FOR OIL TANKERS PROJECT                                | STAX ENGINEERING INC                  | \$10,500,000.00        |                  |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C21266                 | 31               | DEVELOP MODEL FOR CONNECTED NETWORK OF MICROGRIDS   | UNIVERSITY OF CALIFORNIA - IRVINE     | \$290,000.00           |                  |
| 44                                  | SCIENCE & TECHNOLOGY ADVANCEMENT | C21277                 | 56               | STREAMLINE INCOME VERIFICATION PROCESS FOR EFMP PROGRAM   | VERI-TAX LLC                          | \$60,000.00            |                  |

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|---|-------------------------------------|------------------------|------------------|--|--------------------------------|------------------------|------------------|
| 44  | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21313                 | 17               | DEPLOYMENT OF 5 ZERO-EMISSION FUEL CELL TRANSIT BUSES  | SUNLINE TRANSIT AGENCY         | \$5,954,921.00         |                  |
| 44  | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21336                 | 31               | PARTICIPATE IN CALIFORNIA FUEL CELL PARTNERSHIP FOR CALENDAR YEAR 2021   | FRONTIER ENERGY INC            | \$70,000.00            |                  |
| 44  | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21355                 | 01               | PLANNING, ORGANIZING, AND FACILITATING SOUTH COAST AQMD'S MLK AND CESAR CHAVEZ EVENTS  | LEE ANDREWS GROUP INC          | \$450,000.00           |                  |
| 16  | ADMINISTRATIVE &<br>HUMAN RESOURCES | C21382                 | 01               | SOUTH COAST AQMD PHOTOCOPIER SERVICE AGREEMENT   | MRC SMART TECHNOLOGY SOLUTIONS | \$802,000.00           |                  |
| 44  | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21386                 | 31               | CALIFORNIA HYDROGEN HEAVY-DUTY INFRASTRUCTURE RESEARCH CONSORTIUM H2@SCALE INITIATIVE  | NATIONAL RENEWABLE ENERGY LAB  | \$25,000.00            |                  |
| 26  | PLANNING RULE DEV &<br>AREA SOURCES | C21396                 | 35               | PEFORM TECHNICAL UPGRADES, INTEGRATE DATA FROM ADDITIONAL MONITORS AND MAINTAIN PUBLIC ALERT SYSTEM TO PROVIDE AUTOMATED ALERTS FOR H2S  | SONOMA TECHNOLOGY INC          | \$29,300.00            |                  |
| 44  | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C22042                 | 75               | INSTALL AND MAINTAIN AIR FILTRATION SYSTEMS IN SCHOOLS   | IQAIR NORTH AMERICA, INC.      | \$191,093.00           |                  |
| <b>Subtotal</b>                                 |                                     |                        |                  |  |                                | <b>\$48,185,139.00</b> |                  |
| <b>Sole Source - Executive Officer Approved</b> |                                     |                        |                  |  |                                |                        |                  |
| 26  | PLANNING RULE DEV &<br>AREA SOURCES | C21369                 | 01               | ANALYSIS OF COST-PASS-THROUGH IN REFINERIES FOR PR 1109.1  | ERICH MUEHLEGGER               | \$20,000.00            |                  |
| 16  | ADMINISTRATIVE &<br>HUMAN RESOURCES | C21374                 | 01               | HUMAN RESOURCES CONSULTING   | SHAW HR CONSULTING, INC.       | \$10,000.00            |                  |
| 16  | ADMINISTRATIVE &<br>HUMAN RESOURCES | C21375                 | 01               | HEALTH INSURANCE BROKERAGE SERVICES  | ALLIANT INSURANCE SERVICES INC | \$76,000.00            |                  |
| 35  | LEGISLATIVE & PUBLIC<br>AFFAIRS     | C21392                 | 01               | ART LICENSING AGREEMENT FOR A ONE-TIME USE LICENSE TO USE TRANSFORM CULTURE AND END INEQUALITY ARTWORK FOR BRANDING SOUTH COAST AQMD'S 7TH ANNUAL ENVIRONMENTAL JUSTICE CONFERENCE | FAVIANNA RODRIGUEZ             | \$2,000.00             |                  |

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|----------------|----------------------------------|------------------------|------------------|---|---------------------------------------|------------------------|------------------|
| 26             | PLANNING RULE DEV & AREA SOURCES | C21395                 | 01               | DERIVE MASS AND SPECIFIC EMISSION FACTORS OF NOx AT DIFFERENT PROPULSION ENGINE LOADS FROM ITS PROPRIETARY REMOTE SNIFFER MEASUREMENTS AT THE GREAT BELT BRIDGE         | FLUXSENSE AB                          | \$24,960.00            |                  |
| 16             | ADMINISTRATIVE & HUMAN RESOURCES | C22029                 | 01               | WEST INLAND EMPIRE EMPLOYMENT RELATIONS CONSORTIUM MEMBERSHIP WITH PREMIUM LIEBERT LIBRARY SUBSCRIPTION   | LIEBERT CASSIDY WHITMORE              | \$4,965.00             |                  |
| 35             | LEGISLATIVE & PUBLIC AFFAIRS     | C22035                 | 01               | ART LICENSING WITH ARTIST THOMAS EVANS VIA REDOUBLE DIGITAL MARKETING FOR BRANDING OF THE SOUTH COAST AQMD 9TH ANNUAL DR. MARTIN LUTHER KING JR. DAY OF SERVICE PROGRAM | REDOUBLE DIGITAL MARKETING            | \$500.00               |                  |
| 35             | LEGISLATIVE & PUBLIC AFFAIRS     | C22037                 | 01               | DEVELOP AB 617 PROGRAM FOR SOUTH CENTRAL COMMUNITY  | PHYSICIANS FOR SOCIAL RESPONSIBILITY  | \$16,666.64            |                  |
| 35             | LEGISLATIVE & PUBLIC AFFAIRS     | C22061                 | 01               | CO-LEAD FOR THE DEVELOPMENT AND IMPLEMENTATION OF THE AB 617 PROGRAM IN SOUTH LOS ANGELES   | STRATEGIC CONCEPTS IN ORGANIZING &    | \$16,666.64            |                  |
| 26             | PLANNING RULE DEV & AREA SOURCES | C22075                 | 01               | SOCIOECONOMIC IMPACT ASSESSMENT OF PROPOSED RULE 1109.1   | KLEINHENZ ECONOMICS                   | \$5,000.00             |                  |
| 26             | PLANNING RULE DEV & AREA SOURCES | C22076                 | 01               | PEER REVIEW OF PUBLIC HEALTH BENEFITS ESTIMATION FOR PROPOSED RULE 1109.1   | INDUSTRIAL ECONOMICS INCORPORATED     | \$5,000.00             |                  |
| 35             | LEGISLATIVE & PUBLIC AFFAIRS     | C22081                 | 01               | CO-LEAD FOR THE DEVELOPMENT AND IMPLEMENTATION OF THE AB 617 PROGRAM IN SOUTH LOS ANGELES   | WATTS CLEAN AIR AND ENGERGY COMMITTEE | \$16,666.64            |                  |
| 35             | LEGISLATIVE & PUBLIC AFFAIRS     | C22087                 | 01               | FACILITATOR SERVICES FOR EAST COACHELLA VALLEY AB 617 MEETINGS  | VMA COMMUNICATIONS, INC.              | \$32,000.00            |                  |
| 35             | LEGISLATIVE & PUBLIC AFFAIRS     | C22095                 | 01               | VENUE, CATERING AND OTHER EXPENSES FOR SOUTH COAST AQMD'S 7TH ANNUAL ENVIRONMENTAL JUSTICE CONFERENCE   | ONTARIO CONVENTION CENTER             | \$36,816.07            |                  |
| 35             | LEGISLATIVE & PUBLIC AFFAIRS     | C22098                 | 01               | LICENSE AGREEMENT FOR USE AT EJ CONFERENCE  | WHOVA, INC.                           | \$2,899.00             |                  |
| 16             | ADMINISTRATIVE & HUMAN RESOURCES | C22100                 | 01               | EMPLOYEE DE-ESCALATION TRAINING   | CHUBB GLOBAL RISK ADVISORS            | \$4,940.00             |                  |

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|-----------------|----------------------------------|-----------------|-----------|---|--------------------------------------|---------------------|-----------|
| 16              | ADMINISTRATIVE & HUMAN RESOURCES | C22101          | 01        | INVESTIGATIVE SERVICES  | PUBLIC INTEREST INVESTIGATIONS INC   | \$20,000.00         |           |
| 35              | LEGISLATIVE & PUBLIC AFFAIRS     | C22102          | 01        | FACILITATION SERVICES FOR AB 617 COMMUNITY  | CASTILLO CONSULTING PARTNERS, LLC    | \$20,000.00         |           |
| 26              | PLANNING RULE DEV & AREA SOURCES | C22103          | 01        | DEVELOPMENT AND IMPLEMENTATION OF PROGRAMS ON THE HEALTH EFFECTS OF AIR POLLUTION AND CONDUCT DIFFICULT AND COMPLEX RESEARCH AND ANALYSIS OF HEALTH-RELATED AIR QUALITY PROBLEMS. | NICHOLE QUICK MD PC                  | \$90,000.00         |           |
| 35              | LEGISLATIVE & PUBLIC AFFAIRS     | C22104          | 01        | TELEPROMPTER FOR EJ CONFERENCE  | VICTORIA M. MCCULLOUGH               | \$1,700.00          |           |
| 35              | LEGISLATIVE & PUBLIC AFFAIRS     | C22105          | 01        | VENUE FOR 32ND ANNUAL CLEAN AIR AWARDS LUNCHEON   | RIVERSIDE CONVENTION CENTER          | \$13,700.00         |           |
| 26              | PLANNING RULE DEV & AREA SOURCES | C22111          | 01        | HEALTH EFFECTS SUPPORT FOR AQMP AND THE REVIEW OF THE HEAPF   | KHADEEJA ABDULLAH                    | \$13,700.00         |           |
| 26              | PLANNING RULE DEV & AREA SOURCES | C22112          | 01        | ASSIST THE EMISSION REDUCTION ESTIMATES ASSOCIATED WITH OCEANGOING VESSEL   | ENERGY AND ENVIRONMENTAL RESEARCH    | \$10,000.00         |           |
| 35              | LEGISLATIVE & PUBLIC AFFAIRS     | C22115          | 01        | 2022 MARTIN LUTHER KING EVENT VENUE   | CALIFORNIA SCIENCE CENTER FOUNDATION | \$4,000.00          |           |
| 16              | ADMINISTRATIVE & HUMAN RESOURCES | C22116          | 01        | TALKSPACE PLATFORM SERVICES   | ALLIANT INSURANCE SERVICES INC       | \$36,000.00         |           |
| 35              | LEGISLATIVE & PUBLIC AFFAIRS     | C22118          | 01        | LICENSE AGREEMENT FOR CESAR CHAVEZ ARTWORK  | CESAR CAMPOS                         | \$500.00            |           |
| 17              | CLERK OF THE BOARDS              | C22123          | 01        | PROVIDE CONSULTING SERVICES TO THE HEARING BOARD CHAIR AND/OR CLERK OF THE BOARDS   | EDWARD CAMARENA                      | \$36,000.00         |           |
| <b>Subtotal</b> |                                  |                 |           |   |                                      | <b>\$520,679.99</b> |           |

**II. OTHER**

**Board Assistant**

**Board Administrative Committee Reviewed/Executive Officer Approved**

|    |                 |        |    |  |                     |             |  |
|----|-----------------|--------|----|--|---------------------|-------------|--|
| 02 | GOVERNING BOARD | C22000 | 01 | BOARD ASSISTANT SERVICES FOR VANESSA DELGADO         | MARIA TERESA ACOSTA | \$48,000.00 |  |
| 02 | GOVERNING BOARD | C22001 | 01 | BOARD ASSISTANT SERVICES FOR VERONICA PADILLA-CAMPOS | AMY J WONG          | \$50,766.00 |  |

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|---|----------------------------------|-----------------|-----------|--|-------------------------------|---------------------|-----------|
| 02  | GOVERNING BOARD                  | C22002          | 01        | BOARD ASSISTANT SERVICES FOR MICHAEL CACCIOTTI | FRANK CARDENAS AND ASSOCIATES | \$6,360.00          |           |
| 02  | GOVERNING BOARD                  | C22003          | 01        | BOARD ASSISTANT SERVICES FOR GIDEON KRACOV     | GENEVIEVE MICHELLE AMSALEM    | \$88,638.96         |           |
| 02  | GOVERNING BOARD                  | C22004          | 01        | BOARD ASSISTANT SERVICES FOR LISA BARTLETT     | JAMES DAVID DINWIDDIE III     | \$44,734.00         |           |
| 02  | GOVERNING BOARD                  | C22005          | 01        | BOARD ASSISTANT SERVICES FOR MICHAEL CACCIOTTI | WILLIAM GLAZIER               | \$6,360.00          |           |
| 02  | GOVERNING BOARD                  | C22006          | 01        | BOARD ASSISTANT SERVICES FOR BEN BENOIT        | THOMAS ALAN GROSS             | \$12,000.00         |           |
| 02  | GOVERNING BOARD                  | C22007          | 01        | BOARD ASSISTANT SERVICES FOR JOE BUSCAINO      | JACOB LEE HAIK                | \$64,337.00         |           |
| 02  | GOVERNING BOARD                  | C22008          | 01        | BOARD ASSISTANT SERVICES FOR V. MANUEL PEREZ   | GUILLERMO GONZALEZ            | \$44,231.00         |           |
| 02  | GOVERNING BOARD                  | C22009          | 01        | BOARD ASSISTANT SERVICES FOR VANESSA DELGADO   | SANDRA HERNANDEZ              | \$33,000.00         |           |
| 02  | GOVERNING BOARD                  | C22010          | 01        | BOARD ASSISTANT SERVICES FOR CARLOS RODRIGUEZ  | HOLDER STRATEGIC ADVISORS     | \$61,823.00         |           |
| 02  | GOVERNING BOARD                  | C22011          | 01        | BOARD ASSISTANT SERVICES FOR LARRY MCCALLON    | RONALD KETCHAM                | \$45,237.00         |           |
| 02  | GOVERNING BOARD                  | C22012          | 01        | BOARD ASSISTANT SERVICES FOR MICHAEL CACCIOTTI | WILLIAM J KELLY               | \$9,642.00          |           |
| 02  | GOVERNING BOARD                  | C22013          | 01        | BOARD ASSISTANT SERVICES FOR SHEILA KUEHL      | LORAIN LUNDQUIST              | \$54,284.00         |           |
| 02  | GOVERNING BOARD                  | C22014          | 01        | BOARD ASSISTANT SERVICES FOR REX RICHARDSON    | CITY OF LONG BEACH            | \$48,252.00         |           |
| 02  | GOVERNING BOARD                  | C22015          | 01        | BOARD ASSISTANT SERVICES FOR JANICE RUTHERFORD | DEBRA S MENDELSON             | \$32,975.00         |           |
| 02  | GOVERNING BOARD                  | C22016          | 01        | BOARD ASSISTANT SERVICES FOR MICHAEL CACCIOTTI | WESLEY REUTIMANN              | \$6,000.00          |           |
| 02  | GOVERNING BOARD                  | C22017          | 01        | BOARD ASSISTANT SERVICES FOR VANESSA DELGADO   | CRISTIAN RIESGO               | \$12,000.00         |           |
| 02  | GOVERNING BOARD                  | C22018          | 01        | BOARD ASSISTANT SERVICES FOR GIDEON KRACOV     | ROSS BENJAMIN ZELEN           | \$14,400.00         |           |
| 02  | GOVERNING BOARD                  | C22019          | 01        | BOARD ASSISTANT SERVICES FOR MICHAEL CACCIOTTI | TIMOTHY PHILLIP SANDOVAL      | \$9,780.00          |           |
| 02  | GOVERNING BOARD                  | C22020          | 01        | BOARD ASSISTANT SERVICES FOR MICHAEL CACCIOTTI | SHO TAY                       | \$6,240.00          |           |
| 02  | GOVERNING BOARD                  | C22021          | 01        | BOARD ASSISTANT SERVICES FOR BEN BENOIT        | RUTHANNE TAYLOR BERGER        | \$74,000.04         |           |
| 02  | GOVERNING BOARD                  | C22022          | 01        | BOARD ASSISTANT SERVICES FOR JANICE RUTHERFORD | COUNTY OF SAN BERNARDINO      | \$34,377.00         |           |
| 02  | GOVERNING BOARD                  | C22023          | 01        | BOARD ASSISTANT SERVICES FOR BEN BENOIT        | TRICIA ALMIRON                | \$12,000.00         |           |
| 02  | GOVERNING BOARD                  | C22024          | 01        | BOARD ASSISTANT SERVICES FOR MICHAEL CACCIOTTI | BENJAMIN S WONG               | \$14,928.00         |           |
| 02  | GOVERNING BOARD                  | C22025          | 01        | BOARD ASSISTANT SERVICES FOR BEN BENOIT        | CITY OF WILDOMAR              | \$20,871.96         |           |
| 02  | GOVERNING BOARD                  | C22062          | 01        | BOARD ASSISTANT SERVICES FOR VANESSA DELGADO   | ALISA COTA                    | \$25,872.00         |           |
| <b>Subtotal</b>                           |                                  |                 |           |  |                               | <b>\$881,108.96</b> |           |
| <b>Other - Executive Officer Approved</b> |                                  |                 |           |  |                               |                     |           |
| 44  | SCIENCE & TECHNOLOGY ADVANCEMENT | C20194          | 01        | POLE-MOUNTED FACILITIES LICENSE AGREEMENT      | DEPARTMENT OF WATER & POWER   | \$40,224.00         |           |

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| DEPT ID         | DEPT NAME                        | CONTRACT NUMBER | FUND CODE | DESCRIPTION                      | VENDOR NAME                         | CONTRACT AMOUNT    | FOOT NOTE |
|-----------------|----------------------------------|-----------------|-----------|----------------------------------|-------------------------------------|--------------------|-----------|
| 44              | SCIENCE & TECHNOLOGY ADVANCEMENT | C21394          | 01        | AIR MONITORING LICENSE AGREEMENT | LOS ANGELES UNIFIED SCHOOL DISTRICT | \$13,532.52        |           |
| 44              | SCIENCE & TECHNOLOGY ADVANCEMENT | C22113          | 01        | AIR MONITORING LICENSE AGREEMENT | SOUTHERN CALIFORNIA EDISON          | \$12,235.02        |           |
| <b>Subtotal</b> |                                  |                 |           |                                  |                                     | <b>\$65,991.54</b> |           |

**III. SPONSORSHIPS**

**Sponsorship - Executive Officer Approved**

|    |                                  |        |    |  |                                      |             |  |
|----|----------------------------------|--------|----|--|--------------------------------------|-------------|--|
| 44 | SCIENCE & TECHNOLOGY ADVANCEMENT | C21357 | 01 | COSPONSOR ASILOMAR 2021 CONFERENCE TRANSPORTATION & ENERGY   | UNIVERSITY OF CALIFORNIA-DAVIS       | \$30,000.00 |  |
| 35 | LEGISLATIVE & PUBLIC AFFAIRS     | C22031 | 01 | REGALETTE'S CROWN AWARDS SCHOLARSHIP FUNDRAISER  | REGALETTES, INC.                     | \$10,000.00 |  |
| 49 | SCIENCE & TECHNOLOGY ADVANCEMENT | C22032 | 01 | COSPONSOR THE 2021 SOUTHERN CALIFORNIA CHINESE-AMERICAN ENVIRONMENTAL PROTECTION ASSOCIATION 30-YEAR ANNIVERSARY AND ANNUAL CONVENTION | SOUTHERN CALIFORNIA CHINESE-AMERICAN | \$1,500.00  |  |
| 35 | LEGISLATIVE & PUBLIC AFFAIRS     | C22033 | 01 | CITY OF LONG BEACH 10TH ANNUAL JAZZ FESTIVAL SILVER SPONSORSHIP  | CITY OF LONG BEACH                   | \$10,000.00 |  |
| 44 | SCIENCE & TECHNOLOGY ADVANCEMENT | C22044 | 01 | CO-SPONSOR THE 2021 ACT EXPO   | GLADSTEIN, NEANDROSS & ASSOCIATES    | \$50,000.00 |  |
| 44 | SCIENCE & TECHNOLOGY ADVANCEMENT | C22073 | 01 | COSPONSOR ICEPAG 2021  | UNIVERSITY OF CALIFORNIA - IRVINE    | \$7,500.00  |  |
| 35 | LEGISLATIVE & PUBLIC AFFAIRS     | C22085 | 01 | COALITION FOR CLEAN AIR OCTOBER 6, 2021, CALIFORNIA CLEAN AIR DAY BRONZE LEVEL SPONSORSHIP   | COALITION FOR CLEAN AIR              | \$10,000.00 |  |
| 35 | LEGISLATIVE & PUBLIC AFFAIRS     | C22089 | 01 | SPONSOR AAAJ-LA 38TH ANNIVERSARY VIRTUAL GALA  | ASIAN AMERICANS ADVANCING JUSTICE LA | \$1,500.00  |  |
| 35 | LEGISLATIVE & PUBLIC AFFAIRS     | C22119 | 01 | SPONSORSHIP FOR LATINA PUBLIC SERVICE ACADEMY  | THE LATINA PUBLIC SERVICE ACADEMY    | \$1,000.00  |  |
| 35 | LEGISLATIVE & PUBLIC AFFAIRS     | C22124 | 01 | SPONSORSHIP FOR 2022 FIGHT FOR AIR CLIMB   | AMERICAN LUNG ASSOCIATION            | \$10,000.00 |  |
| 26 | PLANNING RULE DEV & AREA SOURCES | C22129 | 01 | SPONSOR THE 10TH BIENNIAL MOBILE SOURCE AIR TOXICS (MSAT) WORKSHOP   | COORDINATING RESEARCH COUNCIL INC    | \$5,000.00  |  |

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| DEPT<br>ID | DEPT NAME | CONTRACT<br>NUMBER | FUND<br>CODE | DESCRIPTION | VENDOR NAME | CONTRACT<br>AMOUNT | FOOT<br>NOTE |
|------------|-----------|--------------------|--------------|-------------|-------------|--------------------|--------------|
|            |           |                    |              |             |             | Subtotal           | \$136,500.00 |



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| DEPT ID                  | DEPT NAME                        | CONTRACT NUMBER | FUND CODE | DESCRIPTION   | VENDOR NAME                             | CONTRACT AMOUNT | FOOT NOTE |
|--------------------------|----------------------------------|-----------------|-----------|---|---|-----------------|-----------|
| <b>IV. MODIFICATIONS</b> |                                  |                 |           |   |   |                 |           |
| <b>Board Approved</b>    |                                  |                 |           |   |   |                 |           |
| 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     | \$75,000.00     |           |
| 08                       | LEGAL                            | C12702          | 01        | LEGAL ADVICE FOR LAWSUITS AND ADMINISTRATIVE PROCEEDINGS  | SHUTE MIHALY & WEINBERGER LLP           | \$200,000.00    |           |
| 08                       | LEGAL                            | C14191          | 01        | PROVIDE LEGAL SERVICES CONCERNING EXIDE BANKRUPTCY PROCEEDINGS  | KTBS LAW LLP                            | \$100,000.00    |           |
| 44                       | SCIENCE & TECHNOLOGY ADVANCEMENT | C15541          | 56        | ENHANCED FLEET MODERNIZATION PROGRAM  | FOUNDATION FOR CALIF COMMUNITY COLLEGES | \$150,000.00    |           |
| 08                       | LEGAL                            | C16392          | 01        | LEGAL ADVICE AND REPRESENTATION FOR SO CAL GAS LITIGATION   | HALPERN MAY YBARRA GELBERG LLP          | \$15,000.00     |           |
| 44                       | SCIENCE & TECHNOLOGY ADVANCEMENT | C17225          | 67        | DEVELOPMENT & DEMONSTRATION OF UP TO 2 CLASS 8 BATTERY ELECTRIC DRAYAGE TRUCKS  | VOLVO TECHNOLOGY OF AMERICA LLC         | \$1,254,491.00  |           |
| 44                       | SCIENCE & TECHNOLOGY ADVANCEMENT | C17310          | 76        | BIOSOLIDS TO TRANSPORTATION FUEL-GRADE RENEWABLE NATURAL GAS (RNG) PRE-COMMERCIALIZATION OPTIMIZATION AND RESEARCH PROJECT  | KORE INFRASTRUCTURE, LLC                | \$0.00          | 4         |
| 44                       | SCIENCE & TECHNOLOGY ADVANCEMENT | C17310          | 76        | BIOSOLIDS TO TRANSPORTATION FUEL-GRADE RENEWABLE NATURAL GAS (RNG) PRE-COMMERCIALIZATION OPTIMIZATION AND RESEARCH PROJECT  | KORE INFRASTRUCTURE, LLC                | \$0.00          | 11        |
| 44                       | SCIENCE & TECHNOLOGY ADVANCEMENT | C18194          | 31        | DEVELOP AND DEMONSTRATE NEAR-ZERO EMISSION OPPOSED PISTON ENGINE  | CALSTART, INC                           | \$1,114,500.00  |           |
| 44                       | SCIENCE & TECHNOLOGY ADVANCEMENT | C18240          | 56        | PROVIDE TECHNICAL ASSISTANCE TO THE ENHANCED FLEET MODERNIZATION PROGRAM  | GREEN PARADIGM CONSULTING, INC          | \$450,000.00    |           |

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|----------------|----------------------------------|------------------------|------------------|--|---------------------------------------|------------------------|------------------|
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C19025                 | 17               | COMMERCIAL ELECTRIC LAWN & GARDEN EQUIPMENT INCENTIVE & EXCHANGE PROGRAM IN EJ AREAS                   | GENERAC POWER SYSTEMS, INC            | \$124,002.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C19025                 | 17               | COMMERCIAL ELECTRIC LAWN & GARDEN EQUIPMENT INCENTIVE & EXCHANGE PROGRAM IN EJ AREAS                   | GENERAC POWER SYSTEMS, INC            | \$59,520.83            |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C19078                 | 67               | TECHNICAL ASSISTANCE WITH ALT FUELS, EVS, CHARGING AND FUELING INFRASTRUCTURE AND RENEWABLE ENERGY     | GREEN PARADIGM CONSULTING, INC        | \$141,255.00           |                  |
| 16             | ADMINISTRATIVE & HUMAN RESOURCES | C19189                 | 01               | SECURITY GUARD SERVICES AT SOUTH COAST AQMD DIAMOND BAR HEADQUARTERS                                   | CONTACT SECURITY INC.                 | \$356,000.00           |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C19278                 | 67               | DEVELOP AND DEMONSTRATE ZE TRUCKS, FREIGHT HANDLING EQUIPMENT, EV INFRASTRUCTURE AND RENEWABLE ENERGY  | VOLVO TECHNOLOGY OF AMERICA LLC       | \$1,096,963.00         |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C19322                 | 01               | PROVIDE TECHNICAL SUPPORT FOR THE SOUTH COAST AQMD UPPER AIR METEOROLOGICAL MONITORING NETWORK         | SONOMA TECHNOLOGY INC                 | \$60,000.00            |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C20085                 | 31               | TECHNICAL ASSISTANCE FOR DEPLOYMENT AND DEMONSTRATION OF INFRASTRUCTURE AND MOBILE SOURCE APPLICATIONS | CALSTART, INC                         | \$100,000.00           |                  |
| 16             | ADMINISTRATIVE & HUMAN RESOURCES | C21088                 | 01               | EMPLOYMENT AND LABOR RELATIONS LEGAL SERVICES  | ATKINSON, ANDELSON, LOYA, RUUD & ROMO | \$25,000.00            |                  |
| 16             | ADMINISTRATIVE & HUMAN RESOURCES | C21089                 | 01               | EMPLOYEE AND LABOR RELATIONS LEGAL SERVICES  | LIEBERT CASSIDY WHITMORE              | \$75,000.00            |                  |
| 27             | INFORMATION MANAGEMENT           | C21331                 | 01               | SHORT, LONG-TERM SYSTEMS DEVELOPMENT, MAINTENANCE AND SUPPORT SERVICES                                 | AGREEYA SOLUTIONS, INC                | \$490,000.00           |                  |
| 27             | INFORMATION MANAGEMENT           | C21332                 | 01               | SHORT/LONG - TERM SYSTEMS DEVELOPMENT, MAINTENANCE AND SUPPORT SERVICES                                | PRELUDE SYSTEMS, INC.                 | \$60,500.00            |                  |
| 27             | INFORMATION MANAGEMENT           | C21333                 | 01               | SHORT AND LONG-TERM SYSTEMS DEVELOPMENT, MAINTENANCE AND SUPPORT SERVICES                              | SIERRA CYBERNETICS INC                | \$232,500.00           |                  |
| 27             | INFORMATION MANAGEMENT           | C21335                 | 01               | SHORT- LONG-TERM SYSTEMS DEVELOPMENT, MAINTENANCE AND SUPPORT SERVICES                                 | VARSUN ETECHNOLOGIES GROUP, INC       | \$39,000.00            |                  |

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|-----------------------------------|----------------------------------|-----------------|-----------|---|------------------------------------|-----------------------|-----------|
| 44                                | MSRC                             | ML18146         | 23        | PROCURE 5 LIGHT-DUTY ZEVS AND INSTALL 2 EV CHARGING STATIONS  | CITY OF SOUTH GATE                 | \$0.00                | 11        |
| <b>Subtotal</b>                   |                                  |                 |           |   |                                    | <b>\$6,218,731.83</b> |           |
| <b>Executive Officer Approved</b> |                                  |                 |           |   |                                    |                       |           |
| 44                                | SCIENCE & TECHNOLOGY ADVANCEMENT | C13261          | 32        | REPOWER 3 MAIN AND 1 AUXILIARY ENGINE ON 2 MARINE VESSELS   | MARINE TECH ENGINEERING INC.       | \$0.00                | 6         |
| 44                                | SCIENCE & TECHNOLOGY ADVANCEMENT | C14092          | 32        | REPOWER OF 4 OFF-ROAD VEHICLES  | UTILITY EQUIPMENT LLC              | \$0.00                | 6         |
| 44                                | SCIENCE & TECHNOLOGY ADVANCEMENT | C14121          | 32        | REPOWER OF TWO MAIN ENGINES OF ONE MARINE VESSEL  | SOUTHWEST MARINE RESOURCES, LLC    | \$0.00                | 6         |
| 27                                | INFORMATION MANAGEMENT           | C15468          | 01        | SHORT AND LONG-TERM SYSTEMS DEVELOPMENT, MAINTENANCE AND SUPPORT SERVICES   | VARSUN ETECHNOLOGIES GROUP, INC    | \$0.00                | 6         |
| 44                                | SCIENCE & TECHNOLOGY ADVANCEMENT | C15557          | 32        | REPOWER 2 MAIN ENGINES ON 1 MARINE VESSEL   | STEVE F SUMMERS                    | \$0.00                | 6         |
| 44                                | SCIENCE & TECHNOLOGY ADVANCEMENT | C15611          | 31        | INSTALLATION OF ONTARIO RENEWABLE HYDROGEN FUELING STATION  | ONTARIO CNG STATION INC.           | \$0.00                | 6         |
| 08                                | LEGAL                            | C16042          | 01        | PROVIDE LEGAL SERVICES IN CONNECTION WITH DEVELOPING AND IMPLEMENTING LEGAL STRATEGY FOR RECLAIM RULE   | ARNOLD & PORTER KAYE SCHOLER LLP   | \$0.00                | 6         |
| 44                                | SCIENCE & TECHNOLOGY ADVANCEMENT | C16167          | 32        | REPOWER OF 3 OFF-ROAD VEHICLES  | A & I ROCK CO., INC.               | \$0.00                | 6         |
| 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 | C17286          | 31        | IN-USE EMISSIONS TESTING & FUEL USAGE PROFILE OF ON-ROAD HEAVY-DUTY VEHICLES  | UNIVERSITY OF CALIFORNIA RIVERSIDE | \$0.00                | 6         |
| 16                                | ADMINISTRATIVE & HUMAN RESOURCES | C18085          | 01        | INSURANCE BROKERAGE SERVICES  | ALLIANT INSURANCE SERVICES INC     | \$50,980.00           |           |
| 08                                | LEGAL                            | C18114          | 01        | PROVIDE ENVIRONMENTAL LAW SERVICES  | WOODRUFF SPRADLIN & SMART          | \$100,000.00          |           |
| 44                                | SCIENCE & TECHNOLOGY ADVANCEMENT | C18129          | 31        | VERSATILE PLUG-IN AUXILIARY POWER SYSTEM DEMONSTRATION  | EPRI                               | \$0.00                | 6         |

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|----------------|----------------------------------|------------------------|------------------|---|---------------------------------------|------------------------|------------------|
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C18144                 | 68               | DEVELOP AN INTEGRATED AIR MONITORING PROGRAM, A PUBLIC WEBSITE, AND A NOTIFICATION SYSTEM FOR THE COMMUNITY OF TORRANCE | SONOMA TECHNOLOGY INC                 | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C18160                 | 33               | DEVELOP AND DEMONSTRATE ELECTRIC SCHOOL BUSES WITH VEHICLE-TO-GRID CAPABILITY   | BLUE BIRD BODY COMPANY                | \$0.00                 | 6                |
| 27             | INFORMATION MANAGEMENT           | C18247                 | 01               | SHORT AND LONG-TERM SYSTEMS DEVELOPMENT, MAINTENANCE AND SUPPORT SERVICES   | SIERRA CYBERNETICS INC                | \$0.00                 | 6                |
| 26             | PLANNING RULE DEV & AREA SOURCES | C18260                 | 27               | RULE 1111 CONSUMER REBATE PROGRAM FOR COMPLIANT NATURAL GAS-FIRED FAN-TYPE CENTRAL FURNACES                             | ELECTRIC & GAS INDUSTRIES ASSOCIATION | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C18286                 | 17               | PROVIDE LAWN AND GARDEN EQUIPMENT FOR INCENTIVE EXCHANGE PROGRAM  | PACIFIC STIHL                         | \$0.00                 | 6                |
| 08             | LEGAL                            | C18303                 | 01               | ONLINE LEGAL RESEARCH/ELECTRONIC LEGAL SERVICES   | THOMSON REUTERS - WEST PYMT CTR       | \$68,992.92            |                  |
| 08             | LEGAL                            | C18305                 | 01               | ACCESS TO ON-LINE LEGAL RESEARCH LIBRARIES AND PRINT PUBLICATIONS   | THOMSON REUTERS - WEST PYMT CTR       | \$87,588.20            |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C19026                 | 17               | SUPPLY COMMERCIAL ELECTRIC LAWN & GARDEN EQUIPMENT FOR INCENTIVE & EXCHANGE PROGRAM                                     | HUSQVARNA PROFESSIONAL PRODUCTS INC   | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C19026                 | 17               | SUPPLY COMMERCIAL ELECTRIC LAWN & GARDEN EQUIPMENT FOR INCENTIVE & EXCHANGE PROGRAM                                     | HUSQVARNA PROFESSIONAL PRODUCTS INC   | \$0.00                 | 6                |
| 16             | ADMINISTRATIVE & HUMAN RESOURCES | C19046                 | 01               | DESIGN, ENGINEERING AND BIDDING DOCUMENTS FOR REPLACEMENT OF LIEBERT AIR CONDITIONING UNITS                             | GOSS ENGINEERING, INC                 | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C19145                 | 80               | TECHNICAL ASSISTANCE AND IMPLEMENTATION FOR THE CARL MOYER PROGRAM  | GREEN PARADIGM CONSULTING, INC        | \$0.00                 | 6                |
| 08             | LEGAL                            | C19158                 | 01               | CONSULTING EXPERT ON MODIFIED HYDROFLUORIC ACID (MHF)   | PETROTECH CONSULTANTS LLC             | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C19227                 | 01               | TECHNICAL ASSISTANCE WITH ALTERNATIVE FUELS AND FUELING INFRASTRUCTURE, EMISSIONS ANALYSIS AND ON-ROAD SOURCES          | GLADSTEIN, NEANDROSS & ASSOCIATES     | \$50,000.00            |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C19290                 | 67               | DATA COLLECTION, ANALYSIS AND REPORT FOR CARB'S ZANZEFF PROJECT   | UNIVERSITY OF CALIFORNIA RIVERSIDE    | \$0.00                 | 6                |

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|----------------|----------------------------------|------------------------|------------------|---|---------------------------------------|------------------------|------------------|
| 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                       | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C19322                 | 01               | PROVIDE TECHNICAL SUPPORT FOR THE SOUTH COAST AQMD UPPER AIR METEOROLOGICAL MONITORING NETWORK  | SONOMA TECHNOLOGY INC                 | \$0.00                 | 6                |
| 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 | C19470                 | 32               | REPOWER 9 OFF-ROAD EQUIPMENT  | SUKUT CONSTRUCTION, INC.              | \$0.00                 | 11               |
| 16             | ADMINISTRATIVE & HUMAN RESOURCES | C20003                 | 01               | TREE TRIMMING AND PLANT CARE SERVICES   | GOTHIC LANDSCAPE MAINTENANCE DIVISION | \$29,750.00            |                  |
| 26             | PLANNING RULE DEV & AREA SOURCES | C20078                 | 01               | SOUTH COAST AQMD PARTNERSHIP WITH CANSAC-CEFA   | DESERT RESEARCH INSTITUTE             | \$10,000.00            |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C20119                 | 01               | DEVELOP AND VALIDATE CALIBRATION PROCEDURES FOR AQY SENSORS   | AEROQUAL INC                          | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C20137                 | 01               | LICENSE AGREEMENT AIR MONITORING STATION  | LEEWARD BAY MARINA                    | \$6,000.00             |                  |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C20193                 | 75               | INSTALLATION AND MAINTENANCE OF AIR FILTRATION SYSTEMS AT SCHOOLS   | IQAIR NORTH AMERICA, INC.             | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C20199                 | 31               | DEVELOP A NEAR-ZERO NATURAL GAS AND PROPANE CONVERSION SYSTEM FOR ON-ROAD MEDIUM-DUTY VEHICLES  | AGILITY FUEL SOLUTIONS LLC            | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C20203                 | 77               | REPLACEMENT OF 1 OFF-ROAD EQUIPMENT   | MARVO HOLSTEINS                       | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C20261                 | 32,80            | REPLACEMENT OF 4 OFF-ROAD EQUIPMENT   | GH DAIRY                              | \$0.00                 | 11               |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C20272                 | 77               | REPOWER 8 MAIN ENGINES ON 4 MARINE VESSELS  | HARBOR BREEZE CORP                    | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY ADVANCEMENT | C20281                 | 77               | REPOWER 2 MAIN ENGINES ON 1 MARINE VESSEL   | DOUGLAS E WOOLLEY                     | \$0.00                 | 6                |

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|----------------|-------------------------------------|------------------------|------------------|--|---------------------------------------|------------------------|------------------|
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C20292                 | 77               | REPOWER 2 MAIN ENGINES OF A MARINE VESSEL                                      | WYATT STAEHLING                       | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C20297                 | 77               | REPOWER 4 OFF-ROAD EQUIPMENT   | FENIX MARINE SERVICES LTD             | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C20302                 | 77,32            | REPLACEMENT OF 8 OFF-ROAD EQUIPMENT  | LUCKY FARMS, LLC                      | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21049                 | 75               | INSTALL AIR FILTRATON SYSTEMS IN SCHOOLS                                       | IQAIR NORTH AMERICA, INC.             | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21050                 | 75               | INSTALL AIR FILTRATION SYSTEMS IN SCHOOLS                                      | IQAIR NORTH AMERICA, INC.             | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21080                 | 80               | REPLACEMENT OF 7 OFF-ROAD EQUIPMENT  | C.A. RASMUSSEN, INC                   | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21081                 | 32               | REPLACEMENT OF 2 OFF-ROAD EQUIPMENT  | UNIVERSITY OF CALIFORNIA<br>RIVERSIDE | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21116                 | 81               | PROP 1B TRUCK REPLACEMENT PROGRAM  | STS LOGISTICS INC                     | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21124                 | 81               | PROP 1B TRUCK REPLACEMENT PROGRAM  | YANXIU LI                             | \$0.00                 | 6                |
| 16             | ADMINISTRATIVE &<br>HUMAN RESOURCES | C21161                 | 01               | LEGAL SERVICES FOR IMMIGRATION, DIVERSITY AND<br>LABOR & EMPLOYMENT SERVICES   | FISHER & PHILLIPS, LLP                | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21182                 | 81               | PROP 1B TRUCK REPLACEMENT PROGRAM  | AIR FAYRE CA INC.                     | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21219                 | 77               | REPLACEMENT OF 1 OFF-ROAD EQUIPMENT  | NORTH SHORE GREENHOUSES<br>INC        | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21260                 | 01               | TECHNICAL ASSISTANCE WITH INCENTIVE AND<br>RESEARCH & DEVELOPMENT PROGRAMS     | FREDRICK MINASSIAN                    | \$0.00                 | 6                |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21276                 | 77               | REPOWER 3 MAIN ENGINES ON 1 MARINE VESSEL                                      | GROUNDTACKLE HOLDINGS, LLC            | \$0.00                 | 6                |
| 04             | FINANCE                             | C21317                 | 01               | AB 2766 FEE REVENUE RECIPIENTS AUDIT FOR FISCAL<br>YEARS 2017-2018 & 2018-2019 | BCA WATSON RICE, LLP                  | \$0.00                 | 6                |
| 04             | FINANCE                             | C21317                 |                  | AB 2766 FEE REVENUE RECIPIENTS AUDIT FOR FISCAL<br>YEARS 2017-2018 & 2018-2019 | BCA WATSON RICE, LLP                  | \$0.00                 | 6                |

**South Coast AQMD  
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| <b>DEPT ID</b> | <b>DEPT NAME</b>                    | <b>CONTRACT NUMBER</b> | <b>FUND CODE</b> | <b>DESCRIPTION</b>   | <b>VENDOR NAME</b>                          | <b>CONTRACT AMOUNT</b> | <b>FOOT NOTE</b> |
|----------------|-------------------------------------|------------------------|------------------|--|---|------------------------|------------------|
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | C21337                 | 79               | REPLACEMENT OF 2 ON-ROAD DRAYAGE TRUCKS  | NGL LOGISTICS LLC                           | \$0.00                 | 11               |
| 35             | LEGISLATIVE & PUBLIC<br>AFFAIRS     | C21351                 | 01               | DR. WILLAM A. BURKE LEGACY MURAL   | GEORGE YEPES                                | \$0.00                 | 6                |
| 02             | GOVERNING BOARD                     | C22008                 | 01               | BOARD ASSISTANT SERVICES FOR V. MANUEL PEREZ   | GUILLERMO GONZALEZ                          | \$0.00                 | 11               |
| 02             | GOVERNING BOARD                     | C22018                 | 01               | BOARD ASSISTANT SERVICES FOR GIDEON KRACOV   | ROSS BENJAMIN ZELEN                         | \$34,026.21            |                  |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | G18338                 | 80               | ALTERNATIVE FUEL SCHOOL BUS REPLACEMENT<br>PROGRAM   | ANAHEIM ELEMENTARY SCHOOL<br>DISTRICT       | \$0.00                 | 11               |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | G20052                 | 80               | REPLACEMENT OF 2 CNG TANKS ON SCHOOL BUSES   | MENIFEE UNIFIED SCHOOL<br>DISTRICT          | \$0.00                 | 11               |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | G21086                 | 80               | LOWER EMISSION SCHOOL BUS TANK REPLACEMENT<br>PROGRAM  | MENIFEE UNION ELEMENTARY<br>SCHOOL DISTRICT | \$0.00                 | 11               |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | G21125                 | 80               | LOWER EMISSION SCHOOL BUS TANK REPLACEMENT<br>PROGRAM  | WHITTIER UNION HIGH SCHOOL<br>DISTRICT      | \$0.00                 | 11               |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | G21188                 | 80               | LOWER EMISSION SCHOOL BUS TANK REPLACEMENT<br>PROGRAM  | HUNTINGTON BEACH UNION<br>HIGH SCH DISTRICT | \$0.00                 | 11               |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | G21188                 | 80               | LOWER EMISSION SCHOOL BUS TANK REPLACEMENT<br>PROGRAM  | HUNTINGTON BEACH UNION<br>HIGH SCH DISTRICT | \$0.00                 | 11               |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | G21212                 | 80               | REPLACEMENT OF 2 CNG TANKS ON SCHOOL BUSES   | ALTA LOMA SCHOOL DISTRICT                   | \$0.00                 | 11               |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | G21280                 | 80               | REPLACEMENT OF 5 CNG TANKS ON SCHOOL BUSES   | GARDEN GROVE UNIFIED SCHOOL<br>DISTRICT     | \$0.00                 | 11               |
| 44             | SCIENCE & TECHNOLOGY<br>ADVANCEMENT | G21390                 | 80               | LOWER EMISSION SCHOOL BUS CNG TANK<br>REPLACEMENT PROGRAM  | UPLAND UNIFIED SCHOOL<br>DISTRICT           | \$0.00                 | 11               |
| 44             | MSRC                                | ML12014                | 23               | PURCHASE CNG & LPG FUELED VEHICLES, EXPAND<br>EXISTING CNG FUELING STATION AND INSTALL ELECTRIC<br>CHARGING STATIONS | CITY OF SANTA ANA                           | \$0.00                 | 6                |
| 44             | MSRC                                | ML12014                | 23               | PURCHASE CNG & LPG FUELED VEHICLES, EXPAND<br>EXISTING CNG FUELING STATION AND INSTALL ELECTRIC<br>CHARGING STATIONS | CITY OF SANTA ANA                           | \$0.00                 | 6                |
| 44             | MSRC                                | ML12045                | 23               | INSTALL CNG STATION  | CITY OF BALDWIN PARK                        | \$0.00                 | 6                |
| 44             | MSRC                                | ML12091                | 23               | INSTALL EV CHARGING STATIONS   | CITY OF BELLFLOWER                          | \$0.00                 | 6                |

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| <b>DEPT ID</b> | <b>DEPT NAME</b> | <b>CONTRACT NUMBER</b> | <b>FUND CODE</b> | <b>DESCRIPTION</b>  | <b>VENDOR NAME</b>            | <b>CONTRACT AMOUNT</b> | <b>FOOT NOTE</b> |
|----------------|------------------|------------------------|------------------|---|-------------------------------|------------------------|------------------|
| 44             | MSRC             | ML14012                | 23               | PURCHASE 7 HEAVY-DUTY ON-ROAD LPG VEHICLES AND<br>INSTALL 6 EV CHARGING STATIONS  | CITY OF SANTA ANA             | \$0.00                 | 6                |
| 44             | MSRC             | ML16040                | 23               | INSTALL EV CHARGING STATIONS  | CITY OF EASTVALE              | \$0.00                 | 11               |
| 44             | MSRC             | ML16057                | 23               | IMPLEMENT COUNTY LINE ROAD "COMPLETE STREETS"<br>PROJECT  | CITY OF YUCAIPA               | \$0.00                 | 6                |
| 44             | MSRC             | ML16071                | 23               | IMPLEMENT BOULDER AVENUE "COMPLETE STREETS"<br>PROJECT  | CITY OF HIGHLAND              | \$0.00                 | 6                |
| 44             | MSRC             | ML18020                | 23               | PURCHASE ONE MEDIUM AND ONE HEAVY-DUTY ZERO<br>EMISSION VEHICLE   | CITY OF COLTON                | \$0.00                 | 6                |
| 44             | MSRC             | ML18031                | 23               | PROCURE 2 LIGHT-DUTY ZEVS, 1 HEAVY-DUTY NEAR<br>ZERO VEHICLE AND EVSE   | CITY OF DIAMOND BAR           | \$0.00                 | 6                |
| 44             | MSRC             | ML18036                | 23               | INSTALL ELECTRIC VEHICLE CHARGING STATIONS  | CITY OF INDIAN WELLS          | \$0.00                 | 6                |
| 44             | MSRC             | ML18041                | 23               | INSTALL ELECTRIC VEHICLE CHARGING STATION   | CITY OF WEST HOLLYWOOD        | \$0.00                 | 6                |
| 44             | MSRC             | ML18043                | 23               | INSTALL EV CHARGING STATIONS  | CITY OF YORBA LINDA           | \$0.00                 | 6                |
| 44             | MSRC             | ML18059                | 23               | INSTALLATION OF 6 ELECTRIC VEHICLE CHARGING<br>STATIONS   | CITY OF GLENDALE              | \$0.00                 | 11               |
| 44             | MSRC             | ML18060                | 23               | PROCURE 29 ON-ROAD LIGHT DUTY ZERO EMISSION<br>VEHICLES, ONE ON-ROAD HEAVY-DUTY ZERO EMISSION<br>VEHICLE, 6 ON-ROAD HEAVY-DUTY NEAR-ZERO<br>EMISSIONS VEHICLE AND INSTALL 185 EV CHARGING<br>STATIONS | COUNTY OF LOS ANGELES         | \$0.00                 | 6                |
| 44             | MSRC             | ML18076                | 23               | PROCURE ONE LIGHT-DUTY ZERO EMISSION VEHICLE  | CITY OF CULVER CITY           | \$0.00                 | 6                |
| 44             | MSRC             | ML18088                | 23               | INSTALL A CLASS I BIKEWAY   | CITY OF BIG BEAR LAKE         | \$0.00                 | 11               |
| 44             | MSRC             | ML18090                | 23               | INSTALL 9 EV CHARGING STATIONS  | CITY OF SANTA CLARITA         | \$0.00                 | 6                |
| 44             | MSRC             | ML18092                | 23               | PROCURE 2 LIGHT-DUTY ZEV'S AND INSTALL A EV<br>CHARGING STATION   | CITY OF SOUTH PASADENA        | \$0.00                 | 6                |
| 44             | MSRC             | ML18101                | 23               | INSTALL 20 EV CHARGING STATIONS   | CITY OF BURBANK               | \$0.00                 | 6                |
| 44             | MSRC             | ML18141                | 23               | PROCURE ONE LIGHT-DUTY ZEV AND INSTALL TWO EV<br>CHARGING STATIONS  | CITY OF ROLLING HILLS ESTATES | \$0.00                 | 6                |
| 44             | MSRC             | ML18147                | 23               | INSTALL 18 EV CHARGING STATIONS   | CITY OF PALM SPRINGS          | \$0.00                 | 6                |
| 44             | MSRC             | ML18159                | 23               | PROCURE 9 LIGHT-DUTY ZEV'S AND INSTALL EV<br>CHARGING STATIONS  | CITY OF RIALTO                | \$0.00                 | 6                |
| 44             | MSRC             | MS14079                | 23               | INSTALL LIMITED ACCESS CNG STATION  | WASTE RESOURCES INC           | \$0.00                 | 6                |



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| DEPT ID         | DEPT NAME | CONTRACT NUMBER | FUND CODE | DESCRIPTION   | VENDOR NAME                            | CONTRACT AMOUNT     | FOOT NOTE |
|-----------------|-----------|-----------------|-----------|---|--|---------------------|-----------|
| 44              | MSRC      | MS14083         | 23        | INSTALL AND MAINTAIN LIMITED ACCESS CNG FUELING STATION | HACIENDA LA PUENTE UNIFIED SCHOOL DIST | \$0.00              | 6         |
| 44              | MSRC      | MS16094         | 23        | COMMUTER RAIL "FIRST MILE/LAST MILE" IMPROVEMENTS       | RIVERSIDE COUNTY TRANSPORTATION COMM   | \$0.00              | 6         |
| 44              | MSRC      | MS18024         | 23        | REGIONAL VAN POOL INCENTIVE PROGRAM                     | RIVERSIDE COUNTY TRANSPORTATION COMM   | \$0.00              | 6         |
| 44              | MSRC      | MS18122         | 23        | INSTALL LIMITED ACCESS CNG STATION W/ RNG               | UNIVERSAL WASTE SYSTEMS, INC.          | \$0.00              | 6         |
| <b>Subtotal</b> |           |                 |           |   |  | <b>\$437,337.33</b> |           |

**V. TERMINATED CONTRACTS-PARTIAL/NO WORK PERFORMED**

|    |                                  |        |       |  |                                |               |   |
|----|----------------------------------|--------|-------|--|--------------------------------|---------------|---|
| 44 | SCIENCE & TECHNOLOGY ADVANCEMENT | C18175 | 81    | PROP 1B TRUCK REPLACEMENT PROGRAM  | BELLAPORT TRANSPORTATION INC   | -\$980,000.00 | 7 |
| 44 | SCIENCE & TECHNOLOGY ADVANCEMENT | C18240 | 56    | PROVIDE TECHNICAL ASSISTANCE TO THE ENHANCED FLEET MODERNIZATION PROGRAM | GREEN PARADIGM CONSULTING, INC | -\$200,000.00 | 7 |
| 44 | SCIENCE & TECHNOLOGY ADVANCEMENT | C20203 | 77    | REPLACEMENT OF 1 OFF-ROAD EQUIPMENT                                      | MARVO HOLSTEINS                | -\$380,558.00 | 7 |
| 44 | SCIENCE & TECHNOLOGY ADVANCEMENT | C20224 | 32    | REPOWER 44 ENGINES ON 22 DUAL-ENGINE VEHICLES                            | TGI EQUIPMENT CORPORATION      | -\$125,402.00 | 7 |
| 44 | SCIENCE & TECHNOLOGY ADVANCEMENT | C20261 | 32,80 | REPLACEMENT OF 4 OFF-ROAD EQUIPMENT                                      | GH DAIRY                       | -\$5,681.00   | 7 |
| 44 | SCIENCE & TECHNOLOGY ADVANCEMENT | C20262 | 77    | REPOWER 2 MAIN ENGINES OF A MARINE VESSEL                                | FUKUTO / REDLEW CHARTERS, INC. | -\$6,800.00   | 7 |
| 44 | SCIENCE & TECHNOLOGY ADVANCEMENT | C20300 | 77    | REPLACEMENT OF 3 OFF-ROAD EQUIPMENT                                      | PICK YOUR PART AUTO WRECKING   | -\$589.00     | 7 |
| 44 | SCIENCE & TECHNOLOGY ADVANCEMENT | C20305 | 77    | REPLACEMENT OF 5 OFF-ROAD EQUIPMENT                                      | TK CONSTRUCTION                | -\$4,740.00   | 7 |
| 44 | SCIENCE & TECHNOLOGY ADVANCEMENT | C21038 | 77    | REPLACEMENT OF 3 OFF-ROAD EQUIPMENT                                      | SUPRA NATIONAL EXPRESS INC.    | -\$16,756.00  | 7 |
| 02 | GOVERNING BOARD                  | C22003 | 01    | BOARD ASSISTANT SERVICES FOR GIDEON KRACOV                               | GENEVIEVE MICHELLE AMSALEM     | -\$34,026.17  | 7 |
| 02 | GOVERNING BOARD                  | C22008 | 01    | BOARD ASSISTANT SERVICES FOR V. MANUEL PEREZ                             | GUILLERMO GONZALEZ             | -\$3,685.01   | 7 |

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| <b>DEPT ID</b>  | <b>DEPT NAME</b> | <b>CONTRACT NUMBER</b> | <b>FUND CODE</b> | <b>DESCRIPTION</b>   | <b>VENDOR NAME</b>       | <b>CONTRACT AMOUNT</b> | <b>FOOT NOTE</b> |
|-----------------|------------------|------------------------|------------------|--|--------------------------|------------------------|------------------|
| 44              | MSRC             | ML16048                | 23               | INSTALL A BICYCLE LOCKER AND EV CHARGING STATIONS  | CITY OF PLACENTIA        | -\$10,000.00           | 7                |
| 44              | MSRC             | ML18038                | 23               | PROCURE 5 LIGHT-DUTY ZEV'S AND EVSE  | CITY OF ANAHEIM          | -\$69,870.00           | 7                |
| 44              | MSRC             | ML18039                | 23               | PROCURE ONE HEAVY-DUTY ZERO EMISSION VEHICLE (ZEV) AND INSTALL ONE LEVEL III FAST CHARGE ELECTRIC VEHICLE CHARGING STATION | CITY OF REDLANDS         | -\$23,809.00           | 7                |
| 44              | MSRC             | ML18044                | 23               | UPGRADE AND INSTALL ELECTRIC VEHICLE CHARGING STATIONS   | CITY OF MALIBU           | -\$50,000.00           | 7                |
| 44              | MSRC             | ML18051                | 23               | PROCURE 9 LIGHT-DUTY & 2 MEDIUM-DUTY ZEVS AND INSTALL 11 EV CHARGING AND 1 CNG FUELING STATION                             | CITY OF RANCHO CUCAMONGA | -\$135,540.00          | 7                |
| 44              | MSRC             | ML18078                | 23               | PURCHASE 17 HEAVY-DUTY NEAR-ZERO EMISSION VEHICLES   | COUNTY OF RIVERSIDE      | -\$50,000.00           | 7                |
| <b>Subtotal</b> |                  |                        |                  |  |                          | <b>-\$2,097,456.18</b> |                  |

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| <b>DEPT<br/>ID</b> | <b>DEPT NAME</b>                      | <b>CONTRACT<br/>NUMBER</b> | <b>FUND<br/>CODE</b> | <b>DESCRIPTION</b> | <b>VENDOR NAME</b> | <b>CONTRACT<br/>AMOUNT</b> | <b>FOOT<br/>NOTE</b>   |
|--------------------|---------------------------------------|----------------------------|----------------------|--------------------|--------------------|----------------------------|--|
|                    | <b><u>SPECIAL FUNDS</u></b>           |                            |                      |                    |                    |                            | <b><u>FOOTNOTES</u></b>  |
| 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   |
| 35                 | AES SETTLEMENT FUND                   |                            |                      |                    |                    |                            | 8 COMPETITIVE SOLICITATION ISSUED BY ANOTHER<br>GOVERNMENT AGENCY                              |
| 36                 | RULE 1309.1 PRIORITY RESERVE FUND     |                            |                      |                    |                    |                            | 9 NO COST - AIR MONITORING/LICENSE AGR   |
| 38                 | LADWP SETTLEMENT PROJECTS FUND        |                            |                      |                    |                    |                            | 11 NO COST - CHANGE IN TERMS   |
| 40                 | NATURAL GAS VEHICLE PARTNERSHIP FUND  |                            |                      |                    |                    |                            | 12 FEDERAL GOVERNMENT PASS-THRU  |
| 45                 | CBE/CBO SETTLEMENT AGREEMENT FUND     |                            |                      |                    |                    |                            | 13 AT DIRECTION OF LEGISLATIVE COMMITTEE   |
| 46                 | BP ARCO SETTLEMENT FUND               |                            |                      |                    |                    |                            | 14 OPTIONAL YEAR RENEWAL/MULTI-YR CONTRACT   |
| 48                 | HEALTH EFFECTS RESEARCH FUND          |                            |                      |                    |                    |                            | 15 TRUCK GRANT PAID TO CASCADE SIERRA SOLUTIONS<br>THROUGH LEASE-TO-OWN PROGRAM. THIS CONTRACT |
| 49                 | CEQA GHG MITIGATION FUND              |                            |                      |                    |                    |                            | 16 AMOUNT UTILIZED MAY BE LESS THAN CONTRACT<br>AMOUNT.  |
| 52                 | TRAPAC SCHOOL AIR FILTRATION          |                            |                      |                    |                    |                            |  |
| 54                 | RULE 1118 MITIGATION FUND             |                            |                      |                    |                    |                            |  |
| 56                 | HEROS II PROGRAM FUND                 |                            |                      |                    |                    |                            |  |
| 57                 | EL MONTE PARK PROJECT SETTLEMENT FUND |                            |                      |                    |                    |                            |  |
| 58                 | AB1318 MITIGATION FEES FUND           |                            |                      |                    |                    |                            |  |
| 59                 | VOUCHER INCENTIVE PROGRAM FUND (VIP)  |                            |                      |                    |                    |                            |  |
| 61                 | ADVANCED TECHNOLOGY GOODS MOVEMENT    |                            |                      |                    |                    |                            |  |
| 67                 | GHG REDUCTION PROJECTS FUND           |                            |                      |                    |                    |                            |  |
| 69                 | LADWP SETTLEMENT PROJECTS FUND        |                            |                      |                    |                    |                            |  |
| 75                 | AIR FILTRATION FUND                   |                            |                      |                    |                    |                            |  |
| 76                 | SO CAL GAS SETTLEMENT FUND            |                            |                      |                    |                    |                            |  |
| 77                 | COMMUNITY AIR PROTECTION AB 134 FUND  |                            |                      |                    |                    |                            |  |
| 79                 | VW MITIGATION REVENUE FUND            |                            |                      |                    |                    |                            |  |

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| DEPT ID | DEPT NAME                            | CONTRACT NUMBER | FUND CODE | DESCRIPTION | VENDOR NAME | CONTRACT AMOUNT | FOOT NOTE |
|---------|--------------------------------------|-----------------|-----------|-------------|-------------|-----------------|-----------|
| 80      | CARL MOYER FUND - AB923 ACCOUNT      |                 |           |             |             |                 |           |
| 81      | PROPOSITION 1B - GOODS MOVEMENT FUND |                 |           |             |             |                 |           |
| 83      | CLEAN SHIPPING TECH DEMO FUND        |                 |           |             |             |                 |           |
| 84      | ALISO CANYON AIR FILTRATION FUND     |                 |           |             |             |                 |           |
| 85      | ALISO FUND PORTER RANCH SEP FUND     |                 |           |             |             |                 |           |

[↑ Back to Agenda](#)

BOARD MEETING DATE: March 4, 2022

AGENDA NO. 16

REPORT: Lead Agency Projects and Environmental Documents Received

SYNOPSIS: This report provides a listing of CEQA documents received by South Coast AQMD between January 1, 2022 and January 31, 2022, and those projects for which South Coast AQMD is acting as lead agency pursuant to CEQA.

COMMITTEE: Mobile Source, February 18, 2022, Reviewed

RECOMMENDED ACTION:  
Receive and file.

Wayne Nastri  
Executive Officer

SR:MK:MM:LS:MC

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**CEQA Document Receipt and Review Logs (Attachments A and B)** – Each month, 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, 2022 to January 31, 2022 is included in Attachment A. A list of active projects for which South Coast AQMD staff is continuing to evaluate or prepare comments for the November and December reporting periods is included as Attachment B. A total of 27 CEQA documents were received during this reporting period and 11 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 South Coast AQMD has been contacted regarding potential air quality-related environmental justice concerns. 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 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.

In January 2006, 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 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 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 of January 1, 2022 to January 31, 2022, South Coast AQMD received 27 CEQA documents. Of the 42 documents listed in Attachments A and B:

- 11 comment letters were sent;
- 17 documents were reviewed, but no comments were made;
- 14 documents are currently under review;
- 0 documents did not require comments (e.g., public notices);
- 0 documents were not reviewed; and
- 0 documents were screened without additional review.

(The above statistics are from January 1, 2022 to January 31, 2022 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 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, 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 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 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.

Attachment C to this report summarizes the active projects for which South Coast AQMD is lead agency and is currently preparing or has prepared environmental documentation. As noted in Attachment C, South Coast AQMD continued working on the CEQA documents for three 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, 2022 to January 31, 2022**

| SOUTH COAST AQMD LOG-IN NUMBER<br>PROJECT TITLE  | PROJECT DESCRIPTION  | TYPE OF DOC.   | LEAD AGENCY         | COMMENT STATUS  |
|--|--|--|---------------------|---|
| <b>Warehouse &amp; Distribution Centers</b><br><b>RVC220107-02</b><br>First Harley Knox Industrial   | The project consists of construction of a 154,250 square foot warehouse on 1.22 acres. The project is located on the northwest corner of Harley Knox Boulevard and Redlands Avenue.<br><br>Comment Period: 1/5/2022 - 2/4/2022<br>Public Hearing: N/A  | Notice of Intent to Adopt a Mitigated Negative Declaration | City of Perris      | Document reviewed - No comments sent for this document received |
| <b>Warehouse &amp; Distribution Centers</b><br><b>RVC220111-02</b><br>Plot Plan No. 200002 Revision No. 1  | The project consists of demolition of a 255,685 square foot warehouse and construction of a trailer parking yard on 11.28 acres. The project is located on the northwest corner of Placentia Avenue and Harvill Avenue in the community of Mead Valley.<br><br>Comment Period: 1/4/2022 - 1/20/2022<br>Public Hearing: N/A | Site Plan  | County of Riverside | Document reviewed - No comments sent for this document received |
| <b>Warehouse &amp; Distribution Centers</b><br><b>RVC220119-01</b><br>Phelan Warehouse at W Nance/N Webster  | The project consists of construction of a 109,229 square foot warehouse on 4.99 acres. The project is located on the southeast corner of West Nance Street and North Webster Avenue.<br><br>Comment Period: 1/19/2022 - 2/17/2022<br>Public Hearing: N/A   | Notice of Intent to Adopt a Mitigated Negative Declaration | City of Perris      | Document reviewed - No comments sent for this document received |
| <b>Warehouse &amp; Distribution Centers</b><br><b>RVC220119-06</b><br>Duke Warehouse at Patterson Avenue and Nance Street Project<br><br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/february/RVC220119-06.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/february/RVC220119-06.pdf</a> | The project consists of construction of a 769,668 square foot warehouse on 35.7 acres. The project is located near the southwest corner of Harley Knox Boulevard and Nevada Avenue.<br><br>Comment Period: 1/19/2022 - 2/17/2022<br>Public Hearing: 2/2/2022   | Notice of Preparation                                      | City of Perris      | South Coast AQMD staff commented on 2/15/2022                   |

\*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, 2022 to January 31, 2022**

| SOUTH COAST AQMD LOG-IN NUMBER   | PROJECT DESCRIPTION  | TYPE OF DOC.  | LEAD AGENCY                            | COMMENT STATUS  |
|--|--|---|--|---|
| <b>PROJECT TITLE</b>   |  |   |  |   |
| <i><b>Warehouse &amp; Distribution Centers</b></i>                               | The project consists of construction of eight buildings totaling 514,269 square feet for warehouse and manufacturing activities on 27.74 acres. The project is located on the northwest corner of Mission Boulevard and Ramona Avenue.   | Notice of Availability of a Draft Environmental Impact Report | City of Montclair                      | Document reviewed - No comments sent for this document received |
| <b>SBC220111-04</b><br>Mission Boulevard and Ramona Avenue Business Park Project | Reference SBC210105-04<br><br>Comment Period: 1/10/2022 - 2/22/2022<br><br>Public Hearing: N/A   |   |  |   |
| <i><b>Industrial and Commercial</b></i>  | The project consists of construction of a 5,950 square foot truck sales and repair facility with 189 truck parking spaces on 7.08 acres. The project is located at 776 West Mill Street on the northeast corner of Interstate 215 and West Mill Street in the designated AB 617 San Bernardino, Muscoy community.  | Notice of Intent to Adopt a Mitigated Negative Declaration    | City of San Bernardino                 | Document reviewed - No comments sent for this document received |
| <b>SBC220105-02</b><br>TEC Equipment   | Comment Period: 12/21/2021 - 1/20/2022<br><br>Public Hearing: 1/26/2022  |   |  |   |
| <i><b>Waste and Water-related</b></i>  | Staff provided comments on the Draft Removal Action Workplan for the project, which can be accessed at: <a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2021/november/LAC211026-07.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2021/november/LAC211026-07.pdf</a> . The project consists of development of cleanup actions to excavate, remove, and dispose top 24 inches of soil contaminated with volatile organic compounds, and installation of a soil vapor barrier on 0.28 acres. The project is located at 1341 West Gardena Boulevard near the northeast corner of West Gardena Boulevard and Normandie Avenue in the City of Gardena. | Response to Comments  | Department of Toxic Substances Control | Document reviewed - No comments sent for this document received |
| <b>LAC220111-01</b><br>SBD Real Estate Four, LLC                                 | Reference LAC211026-07<br><br>Comment Period: N/A<br><br>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 A  
INCOMING CEQA DOCUMENTS LOG  
January 1, 2022 to January 31, 2022**

| SOUTH COAST AQMD LOG-IN NUMBER<br>PROJECT TITLE  | PROJECT DESCRIPTION   | TYPE OF<br>DOC.  | LEAD AGENCY                             | COMMENT<br>STATUS   |
|--|---|--|---|---|
| <i>Utilities</i><br><b>LAC220125-04</b><br>Grayson Repowering Project  | Staff provided comments on the Partially Recirculated Environmental Impact Report for the project, which can be accessed at: <a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2021/november/LAC210819-11.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2021/november/LAC210819-11.pdf</a> . The project consists of construction of a power generation facility with a capacity of 260 megawatts on 13.29 acres. The project is located at 800 Air Way on the southeast corner of Air Way and Flower Street.<br>Reference LAC210819-11, LAC180313-06, LAC170919-02, and LAC161220-09<br><br>Comment Period: N/A <span style="float: right;">Public Hearing: 2/15/2022</span> | Notice of Availability of a Final Environmental Impact Report                        | City of Glendale                        | Document reviewed - No comments sent for this document received |
| <i>Transportation</i><br><b>RVC220107-01</b><br>Interstate 10/Cherry Valley Boulevard Interchange Project                          | The project consists of construction of 4,700 linear feet of auxiliary lanes and roadway improvements along Interstate 10 (I-10) between the I-10 and Singleton Road interchange [Post Mile (PM) R2.1] and the I-10 and Oak Valley Parkway interchange (PM R3.8) in the City of Calimesa.<br><br>Comment Period: 12/23/2021 - 1/24/2022 <span style="float: right;">Public Hearing: N/A</span>  | Notice of Intent to Adopt a Mitigated Negative Declaration/ Environmental Assessment | California Department of Transportation | Document reviewed - No comments sent for this document received |
| <i>Institutional (schools, government, etc.)</i><br><b>RVC220125-03</b><br>West Side Fire Station Project                          | The project consists of construction of a 10,760 square foot fire station on 1.59 acres. The project is located on the northeast corner of State Route 60 and Potrero Boulevard.<br><br>Comment Period: 1/21/2022 - 2/22/2022 <span style="float: right;">Public Hearing: 3/1/2022</span>   | Notice of Intent to Adopt a Mitigated Negative Declaration                           | City of Beaumont                        | Document reviewed - No comments sent for this document received |
| <i>Institutional (schools, government, etc.)</i><br><b>SBC220105-01</b><br>Big Bear High School Football and Track Stadium Project | The project consists of construction of a sports stadium with a 1,000 seating capacity on seven acres. The project is located on the northwest corner of Maple Lane and Baldwin Lane in the community of Sugarloaf within San Bernardino County.<br><br>Comment Period: 12/30/2021 - 1/29/2022 <span style="float: right;">Public Hearing: N/A</span>   | Notice of Intent to Adopt a Mitigated Negative Declaration                           | Bear Valley Unified School District     | Document reviewed - No comments sent for this document received |

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**ATTACHMENT A  
INCOMING CEQA DOCUMENTS LOG  
January 1, 2022 to January 31, 2022**

| SOUTH COAST AQMD LOG-IN NUMBER<br>PROJECT TITLE                              | PROJECT DESCRIPTION  | TYPE OF DOC.  | LEAD AGENCY           | COMMENT STATUS  |
|--|--|---|-----------------------|---|
| <i>Retail</i><br><b>LAC220113-01</b><br>North Hollywood Self Storage Project | The project consists of demolition of a 14,300 square foot structure, and construction of a 100,757 square foot self storage facility on 30,000 square feet. The project is located on the southeast corner of North Vineland Avenue and Weddington Street in the community of North Hollywood-Valley Village.<br><br>Comment Period: 1/13/2022 - 2/14/2022<br>Public Hearing: N/A   | Mitigated Negative Declaration  | City of Los Angeles   | Document reviewed - No comments sent for this document received |
| <i>Retail</i><br><b>RVC220111-03</b><br>MA21054                              | The project consists of construction of 18,800 square feet of retail uses and two restaurants totaling 5,910 square feet on 5.18 acres. The project is located on the southwest corner of Sierra Avenue and Armstrong Road.<br>Reference RVC210623-04<br><br>Comment Period: 1/5/2022 - 1/24/2022<br>Public Hearing: N/A   | Notice of Intent to Adopt a Mitigated Negative Declaration              | City of Jurupa Valley | Document reviewed - No comments sent for this document received |
| <i>Retail</i><br><b>RVC220119-02</b><br>Arco AM/PM Service Station Project   | The project consists of construction of a 5,123 square foot convenience store, 1,200 square feet of retail uses, a fueling service station with 14 gasoline pumps and two diesel pumps, and two fueling canopies totaling 8,701 square feet on a 2.4 acre portion of 6.9 acres. The project is located on the southwest corner of Redlands Boulevard and Hemlock Avenue.<br>Reference RVC211228-03<br><br>Comment Period: 1/14/2022 - 2/14/2022<br>Public Hearing: 2/24/2022 | Notice of Intent to Adopt a Recirculated Mitigated Negative Declaration | City of Moreno Valley | Document reviewed - No comments sent for this document received |
| <i>Retail</i><br><b>RVC220125-01</b><br>Walmart Fuel                         | The project consists of construction of a 440 square foot structure, a gasoline service station with 16 pumps, and a 5,700 square foot fueling canopy on 1.29 acres. The project is located at 1540 East Second Street near the northwest corner of Highland Springs Avenue and East Second Street.<br>Reference RVC201117-12<br><br>Comment Period: 1/25/2022 - 2/10/2022<br>Public Hearing: N/A  | Site Plan   | City of Beaumont      | Document reviewed - No comments sent for this document 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, 2022 to January 31, 2022**

| SOUTH COAST AQMD LOG-IN NUMBER<br>PROJECT TITLE  | PROJECT DESCRIPTION   | TYPE OF DOC.  | LEAD AGENCY            | COMMENT STATUS  |
|--|---|---|------------------------|---|
| <i>General Land Use (residential, etc.)</i><br><b>LAC220104-01</b><br>670 Mesquit Project                        | The project consists of demolition of existing structures, and construction of a 1,792,103 square foot building with 208 residential units, 236 hotel rooms, and subterranean parking on 5.45 acres. The project is located on the southeast corner of Mesquit Street and South Santa Fe Avenue in the community of Central City North within the designated AB 617 East Los Angeles, Boyle Heights, West Commerce community.<br>Reference LAC170426-01<br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/february/LAC220104-01.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/february/LAC220104-01.pdf</a><br><br>Comment Period: 12/30/2021 - 2/14/2022<br>Public Hearing: N/A | Notice of Availability of a Draft Environmental Impact Report | City of Los Angeles    | South Coast AQMD staff commented on 2/8/2022                    |
| <i>General Land Use (residential, etc.)</i><br><b>LAC220107-04</b><br>North Paramount Gateway Specific Plan      | The project consists of construction 5,055 residential units and 31,171 square feet of retail and office uses on 279 acres. The project is located on the northwest corner of Rosecrans Avenue and Anderson Street.<br><br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/february/LAC220107-04.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/february/LAC220107-04.pdf</a><br><br>Comment Period: 1/6/2022 - 2/5/2022<br>Public Hearing: 1/20/2022  | Notice of Preparation   | City of Paramount      | South Coast AQMD staff commented on 2/1/2022                    |
| <i>General Land Use (residential, etc.)</i><br><b>LAC220118-01</b><br>River Park Residential Development Project | The project consists of construction of 226 residential units and five acres of open space on 20 acres. The project is located on the northwest corner of West Wardlow Road and Golden Avenue in the designated AB 617 Wilmington, Carson, West Long Beach community.<br>Reference LAC210225-01<br><br>Comment Period: 1/18/2022 - 3/21/2022<br>Public Hearing: N/A   | Notice of Availability of a Draft Environmental Impact Report | City of Long Beach     | Under review, may submit written comments                       |
| <i>General Land Use (residential, etc.)</i><br><b>LAC220119-04</b><br>Starlite Residential Development           | The project consists of construction of 207 residential units on 12.3 acres. The project is located at 2540 Rosemead Boulevard near the southwest corner of Fern Street and Chico Avenue.<br><br>Comment Period: 1/14/2022 - 2/14/2022<br>Public Hearing: N/A   | Notice of Intent to Adopt a Mitigated Negative Declaration    | City of South El Monte | Document reviewed - No comments sent for this document 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, 2022 to January 31, 2022**

| SOUTH COAST AQMD LOG-IN NUMBER<br>PROJECT TITLE  | PROJECT DESCRIPTION  | TYPE OF DOC.   | LEAD AGENCY           | COMMENT STATUS  |
|--|--|--|-----------------------|---|
| <i>General Land Use (residential, etc.)</i><br><b>LAC220119-07</b><br>Affinity Project                                 | The project consists of demolition of 45,912 square feet of existing structures, and construction of a 154,000 square foot building for medical uses and a 184,376 square foot assisted living facility with 95 rooms and subterranean parking on 3.3 acres. The project is located on the northwest corner of South Arroyo Parkway and East California Boulevard.<br>Reference LAC210819-03<br><br>Comment Period: 1/18/2022 - 3/3/2022<br>Public Hearing: N/A  | Draft Environmental Impact Report                          | City of Pasadena      | Document reviewed - No comments sent for this document received |
| <i>General Land Use (residential, etc.)</i><br><b>ORC220107-03</b><br>Mission Viejo Garden Plaza Redevelopment Project | The project consists of demolition of 46,148 square feet of existing buildings, and construction of 234 residential units totaling 275,891 square feet and 51,120 square feet of retail uses on 6.5 acres. The project is located at 27001 La Paz Road on the northwest corner of La Paz Road and Marguerite Parkway.<br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/february/ORC220107-03.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/february/ORC220107-03.pdf</a><br><br>Comment Period: 1/7/2022 - 2/7/2022<br>Public Hearing: 1/24/2022 | Notice of Preparation                                      | City of Mission Viejo | South Coast AQMD staff commented on 2/1/2022                    |
| <i>General Land Use (residential, etc.)</i><br><b>ORC220113-03</b><br>Lincoln Colony Apartments Development            | The project consists of demolition of 5,338 square feet of existing structures and construction of a 92,264 square foot building with 43 residential units on 0.75 acres. The project is located near the southwest corner of West Lincoln Avenue and South Ohio Street.<br><br>Comment Period: 1/13/2022 - 2/14/2022<br>Public Hearing: 2/28/2022   | Notice of Intent to Adopt a Mitigated Negative Declaration | City of Anaheim       | Document reviewed - No comments sent for this document received |
| <i>General Land Use (residential, etc.)</i><br><b>RVC220119-05</b><br>2700 East Alejo Road Project                     | The project consists of construction of eight residential units on 2.53 acres. The project is located on the northeast corner of East Alejo Road and North Juanita Drive.<br><br>Comment Period: 1/14/2022 - 2/3/2022<br>Public Hearing: 2/23/2022   | Negative Declaration                                       | City of Palms Springs | Document reviewed - No comments sent for this document 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 B**  
**ONGOING ACTIVE PROJECTS FOR WHICH SOUTH COAST AQMD HAS**  
**OR IS CONTINUING TO CONDUCT A CEQA REVIEW**

| SOUTH COAST AQMD LOG-IN NUMBER<br>PROJECT TITLE  | PROJECT DESCRIPTION   | TYPE OF DOC.          | LEAD AGENCY  | COMMENT STATUS                                |
|--|---|-----------------------|--|---|
| <i>Warehouse &amp; Distribution Centers</i><br><b>RVC211223-03</b><br>Agua Mansa Commerce Park Specific Plan Amendment                   | The project consists of construction of an 855,750 square foot cold storage warehouse on 281 acres. The project is located on the southeast corner of Rubidoux Boulevard and Agua Mansa Road.<br>Reference RVC181219-07, RVC181023-01, RVC180509-01, RVC180503-05, RVC171128-09, RVC170705-15, RVC161216-03, and RVC161006-06<br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/RVC211223-03.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/RVC211223-03.pdf</a><br>Comment Period: 12/22/2021 - 1/11/2022<br>Public Hearing: N/A                                     | Site Plan             | City of Jurupa Valley                                    | South Coast AQMD staff commented on 1/11/2022 |
| <i>Warehouse &amp; Distribution Centers</i><br><b>SBC211207-05</b><br>Cypress and Slover Warehouse (Industrial Commerce Center) Project# | The project consists of construction of a 625,500 square foot warehouse on 28.8 acres. The project is located on the northeast corner of Slover Avenue and Oleander Avenue.<br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/SBC211207-05.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/SBC211207-05.pdf</a><br>Comment Period: 12/3/2021 - 1/6/2022<br>Public Hearing: 12/16/2021  | Notice of Preparation | City of Fontana  | South Coast AQMD staff commented on 1/4/2022  |
| <i>Warehouse &amp; Distribution Centers</i><br><b>SBC211221-02</b><br>Speedway Commerce Center II#                                       | The project consists of construction of 6,600,000 square feet of warehouses, 261,360 square feet of commercial uses, 78 acres of parking uses, 33.2 acres of roadways and infrastructure, and 10.2 acres of open space on 432.1 acres. The project is located on the southwest corner of Whittram Avenue and Cherry Avenue in the City of Fontana.<br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/SBC211221-02.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/SBC211221-02.pdf</a><br>Comment Period: 12/13/2021 - 1/13/2022<br>Public Hearing: 1/11/2022          | Notice of Preparation | County of San Bernardino                                 | South Coast AQMD staff commented on 1/11/2022 |
| <i>Warehouse &amp; Distribution Centers</i><br><b>SBC211223-05</b><br>Slover and Alder Avenue Industrial Project                         | The project consists of construction of a 259,481 square foot warehouse on 13.23 acres. The project is located on the southeast corner of Slover Avenue and Alder Avenue in the community of Bloomington.<br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/SBC211223-05.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/SBC211223-05.pdf</a><br>Comment Period: 12/22/2021 - 1/21/2022<br>Public Hearing: 1/18/2022   | Notice of Preparation | County of San Bernardino                                 | South Coast AQMD staff commented on 1/11/2022 |
| <i>Transportation</i><br><b>LAC211201-13</b><br>Sepulveda Transit Corridor Project   | The project consists of construction of a 16.2 mile public transit system with up to nine stations. The project is located along Interstate 405 (I-405) between the Sepulveda Boulevard and Roscoe Boulevard intersection in the community of Van Nuys to the north and the I-405 and Pico Boulevard interchange in the community of Westwood to the south.<br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/LAC211201-13.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/LAC211201-13.pdf</a><br>Comment Period: 11/30/2021 - 2/11/2022<br>Public Hearing: 12/7/2021 | Notice of Preparation | Los Angeles County Metropolitan Transportation Authority | South Coast AQMD staff commented on 1/4/2022  |

# - 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 JANUARY 31, 2022**

| PROJECT DESCRIPTION  | PROPONENT  | TYPE OF DOCUMENT                  | STATUS   | CONSULTANT          |
|--|------------|-----------------------------------|--|---------------------|
| <p>Matrix Oil is proposing to: 1) install one new flare with a maximum rating of 39 million British thermal units per hour (MMBtu/hr) at Site 3 of the Sansinena Oil Field; and 2) increase the throughput of the existing flare at Site 9 from the previous permit limit of 13.65 million standard cubic feet over a 30-day period (MMSCF/30 days) to the maximum rating of 39 MMBtu/hr which is equivalent to 25.39 MMSCF/30 days.</p>   | Matrix Oil | Mitigated Negative Declaration    | The consultant provided a preliminary draft Mitigated Negative Declaration and South Coast AQMD staff has provided comments which are being addressed by the consultant.   | Yorke Engineering   |
| <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> | Quemetco   | Environmental Impact Report (EIR) | <p>Two CEQA scoping meetings were held on September 13, 2018 and October 11, 2018 in the community on the Notice of Preparation/Initial Study (NOP/IS) and 153 oral comments were received. Responses to the comment letters and oral comments relative to the NOP/IS and CEQA scoping meetings have been prepared and are included in Appendix B of the Draft EIR. The Draft EIR was initially released for a 61-day public review and comment period from October 14, 2021 to December 14, 2021, but after receiving several requests seeking a longer review period, staff extended the public review and comment period by an additional 63 days to February 15, 2022.</p> <p>On November 10, 2021, staff held a public meeting which presented an overview of the proposed project, the CEQA process, detailed analysis of the potentially significant environmental topic areas, and the existing regulatory safeguards. Written comments submitted relative to the Draft EIR and oral comments made at the public meeting, along with responses will be included in the Final EIR. An additional community meeting has been scheduled for February 9, 2022.</p> | Trinity Consultants |

| PROJECT DESCRIPTION  | PROPONENT                       | TYPE OF DOCUMENT                                     | STATUS  | CONSULTANT           |
|--|---------------------------------|--|---|----------------------|
| <p>Sunshine Canyon Landfill is proposing to modify its South Coast AQMD permits for its active landfill gas collection and control system to accommodate the increased collection of landfill gas. The proposed project will: 1) install two new low emissions flares with two additional 300-hp electric blowers; and 2) increase the landfill gas flow limit of the existing flares.</p> | <p>Sunshine Canyon Landfill</p> | <p>Subsequent Environmental Impact Report (SEIR)</p> | <p>South Coast AQMD staff reviewed and provided comments on the preliminary air quality analysis and health risk assessment (HRA), which have been addressed by the consultant and incorporated into a Preliminary Draft SEIR which is undergoing staff review.</p> | <p>SCS Engineers</p> |

[↑ Back to Agenda](#)

BOARD MEETING DATE: March 4, 2022

AGENDA NO. 17

REPORT: Rule and Control Measure Forecast

SYNOPSIS: This report highlights South Coast AQMD rulemaking activities and public hearings scheduled for 2022.

COMMITTEE: No Committee Review

RECOMMENDED ACTION:  
Receive and file.

Wayne Nastri  
Executive Officer

SLR:SN:IM:AK:ZS

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## **2022 MASTER CALENDAR**

The 2022 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 (for Best Available Retrofit Control Technology (BARCT) or measures identified in a Community Emission Reduction Plan (CERP)), or Other. Rulemaking efforts that are noted for implementation of the 2016 AQMP, Toxics, and AB 617 are either statutorily required and/or are needed to address a public health concern. Projected emission reductions will be determined during rulemaking.

Staff continues to move forward with rulemaking, recognizing stakeholders' resource limitations due to COVID-19. To maintain social distancing while integrating public participation in the rulemaking process, staff is connecting with stakeholders using tele- and videoconferencing. Also, staff has increased the review time for working group materials to allow stakeholders additional time to prepare for meetings.

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 may have a substantial number of public comments.*
- + *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.*

The following table provides a list of changes since the previous Rule Forecast Report.

|   |   |
|---|---|
| <b>1168</b>   | <b>Adhesives and Solvent Applications</b> |
| Proposed Amended Rule 1168 is being added to November 2022 to address VOC limits for certain applications with upcoming deadlines, and other amendments to improve the clarity. |   |
| <b>1480</b>   | <b>Toxics Monitoring</b>                  |
| Proposed Amended Rule 1480 is being added to May 2022 to remove fee provisions since they are being incorporated in Regulation III.   |   |

## 2022 MASTER CALENDAR

| Month                                     | Title and Description   | Type of Rulemaking       |
|---|---|--------------------------|
| <b>April</b>                              |   |                          |
| 1147*+##                                  | <p><b>NOx Reductions from Miscellaneous Sources</b><br/> Proposed Amended Rule 1147 will revise NOx emission limits to reflect BARCT for miscellaneous combustion sources and will apply to RECLAIM, former RECLAIM facilities, and non-RECLAIM facilities. Other revisions are to improve clarity and reflect categories that will be addressed in other rules.<br/> <i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | AQMP/<br>AB 617<br>BARCT |
| 1147.2*+##                                | <p><b>NOx Reductions from Metal Melting and Heating Furnaces</b><br/> Proposed Rule 1147.2 will establish NOx emission limits to reflect BARCT for metal melting and heating furnaces and will apply to RECLAIM, former RECLAIM, and non-RECLAIM facilities.<br/> <i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | AQMP/<br>AB 617<br>BARCT |
| <b>May</b>                                |   |                          |
| Reg. III<br>304<br>304.1<br>304.2<br>1480 | <p><b>Fees – General Amendments<br/> Equipment, Materials, and Ambient Air Analyses<br/> Analyses Fees<br/> Fees for Operations Supportive of Emissions Analyses<br/> Toxics Monitoring</b><br/> 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 and add fees associated with existing programs and implementation of new or revised programs. Proposed Amended Rules 304, 304.1, and Proposed Rule 304.2 will recover fees resulting from large incidents requiring South Coast AQMD response. Proposed Amended Rule 1480 will remove existing fees from this rule and place them instead in Proposed Amended Regulation III.<br/> <i>Elaine Shen 909.396.2715; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p> | Other                    |
| 403.2                                     | <p><b>Fugitive Dust from Large Roadway Projects</b><br/> Proposed Rule 403.2 will establish requirements to minimize PM emissions and require additional public notification for large roadway construction projects.<br/> <i>Eugene Kang 909.396.3524; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | Other                    |

\* 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

**2022 MASTER CALENDAR (Continued)**

| <b>Month</b>  | <b>Title and Description</b>  | <b>Type of Rulemaking</b> |
|---------------|---|---------------------------|
| <b>June</b>   |   |                           |
| 218.2         | <b>Enhanced Requirements for Continuous Emission Monitoring System</b>  | Other                     |
| 218.3         | <b>Enhanced Requirements for Continuous Emission Monitoring System Performance Specifications</b><br>Proposed Amended Rules 218.2 and 218.3 are needed to include provisions when monitoring mass emission limits using a Continuous Emissions Monitoring Systems for non-RECLAIM and former RECLAIM facilities. Other amendments may be needed for clarity or to remove obsolete provisions.<br><i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i> |                           |
| 429           | <b>Start-Up and Shutdown Exemption Provisions for Oxides of Nitrogen</b><br>Proposed Amended Rule 429 will update startup and shutdown provisions for a variety of combustion equipment regulated under source-specific rules.<br><i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i>  | Other                     |
| <b>August</b> |   |                           |
|               | <b>Title and Description</b>  | <b>Type of Rulemaking</b> |
| 1148.2        | <b>Notification and Reporting Requirements for Oil and Gas Wells and Chemical Suppliers</b><br>Proposed Amended Rule 1148.2 will evaluate the applicability of well activities, improve notifications of well working activities, and address other issues.<br><i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i>   | Other/<br>AB 617 CERP     |
| 1153.1        | <b>Emissions of Oxides of Nitrogen from Commercial Food Ovens</b><br>Proposed Amended Rule 1153.1 will establish NOx BARCT limits and expand the applicability to RECLAIM and former RECLAIM facilities.<br><i>Heather Farr 909.396.3672; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i>  | AQMP/<br>AB 617<br>BARCT  |

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# Part of the transition of RECLAIM to a command-and-control regulatory structure

**2022 MASTER CALENDAR (Continued)**

| <b>Month</b>     | <b>Title and Description</b>   | <b>Type of Rulemaking</b> |
|------------------|--|---------------------------|
| <b>September</b> |  |                           |
| 1178             | <p><b>Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities</b><br/>                     Proposed Amended Rule 1178 will incorporate the use of more advanced early leak detection methods and improve leak detection and repair programs for storage tanks to further reduce VOC emissions.<br/> <i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>                      | AB 617 CERP               |
| 1426.1           | <p><b>Control of Hexavalent Chromium Emissions from Metal Finishing Operations</b><br/>                     Proposed Rule 1426.1 will reduce hexavalent chromium emissions from heated chromium tanks used at facilities with metal finishing operations that are not subject to Rule 1469.<br/> <i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | Toxics                    |
| 1466.1           | <p><b>Control of Particulate Emissions from Demolition of Building</b><br/>                     Proposed Rule 1466.1 will establish requirements to minimize PM emissions during the demolition of buildings that housed equipment and processes with metal toxic air contaminants and pollution control equipment.<br/> <i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>                        | Toxics                    |
| <b>October</b>   |  |                           |
| 1159.1           | <p><b>Control of NOx Emissions from Nitric Acid Tanks</b><br/>                     Proposed Rule 1159.1 will establish requirements to reduce NOx emissions from nitric acid units that will apply to RECLAIM, former RECLAIM, and non-RECLAIM facilities.<br/> <i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | AQMP/<br>AB 617<br>BARCT  |
| 2202*            | <p><b>On-Road Motor Vehicle Mitigation Options</b><br/>                     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 targets.<br/> <i>Vicki White 909.396.3436; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p> | Other                     |

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# Part of the transition of RECLAIM to a command-and-control regulatory structure



**2022 MASTER CALENDAR (Continued)**

| <b>Month</b>                  | <b>Title and Description</b>  | <b>Type of Rulemaking</b> |
|-------------------------------|---|---------------------------|
| <b>October</b><br>(Continued) |   |                           |
| 2306                          | <b>New Intermodal Railyard Indirect Source Rule</b><br>Proposed Rule 2306 will establish requirements for new intermodal railyards to minimize emissions from indirect sources associated with new railyards.<br><i>Elaine Shen 909.396.2715; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i>                          | AQMP/<br>AB 617 CERP      |
| Regulation<br>XX*#            | <b>RECLAIM</b><br>Proposed Amended Regulation XX will address the transition of RECLAIM facilities to a command-and-control regulatory structure.<br><i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i>   | AQMP                      |
| <b>November</b>               | <b>Title and Description</b>  | <b>Type of Rulemaking</b> |
| 1135                          | <b>Emissions of Oxides of Nitrogen from Electricity Generating Facilities</b><br>Proposed Amended Rule 1135 will modify provisions for electricity generating units at Santa Catalina Island to reflect a revised BARCT assessment.<br><i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i> | AQMP/<br>AB 617<br>BARCT  |
| 1151                          | <b>Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations</b><br>Proposed Amended Rule 1151 will provide clarifications of current requirements and amend provisions to address implementation issues.<br><i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706 Socio: Elaine Shen 909.396.2715</i>              | Other                     |
| 1168                          | <b>Adhesive and Sealant Applications</b><br>Proposed Amended Rule 1168 will address VOC limits for certain applications. Other amendments may also be needed to improve the clarity.<br><i>Heather Farr 909.396.3672; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i>  | Other                     |
| 1445*                         | <b>Control of Toxic Emissions from Laser Arc Cutting</b><br>Proposed Rule 1445 will establish requirements to reduce hexavalent chromium and other metal toxic air contaminant particulate emissions from laser arc cutting.<br><i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i>        | Toxics                    |

\* Potentially significant hearing

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# Part of the transition of RECLAIM to a command-and-control regulatory structure

**2022 MASTER CALENDAR (Continued)**

| <b>Month</b>                   | <b>Title and Description</b>   | <b>Type of Rulemaking</b> |
|--------------------------------|--|---------------------------|
| <b>November</b><br>(Continued) |  |                           |
| 1460                           | <b>Control of Particulate Emissions from Metal Recycling and Shredding Operations</b><br>Proposed Rule 1460 will establish housekeeping and best management practices to minimize fugitive particulate emissions from metal cutting and shredding operations.<br><i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i>  | Other                     |
| Regulation XIII <sup>#</sup>   | <b>New Source Review</b><br>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 and to address comments from U.S. EPA. Additional rules under Regulation XIII may be needed to address offsets and other provisions under Regulation XIII.<br><i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i> | AQMP                      |
| <b>December</b>                |  |                           |
| 1146.2 <sup>#</sup>            | <b>Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters</b><br>Proposed Amended Rule 1146.2 will update the NOx emission limits to reflect BARCT. Other provisions may be added to facilitate the deployment of zero-emission units regulated under the proposed amended rule.<br><i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i>   | AQMP/<br>AB 617<br>BARCT  |
| 1180.1                         | <b>Fenceline and Community Monitoring</b><br>Proposed Rule 1180.1 will establish fenceline and community monitoring requirements for non-petroleum refineries and facilities that are not currently included in Rule 1180 – Refinery Fenceline and Community Air Monitoring.<br><i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i>   | Other                     |
| 2304                           | <b>Marine Port Indirect Source Rule</b><br>Proposed Rule 2304 will establish requirements to reduce emissions from indirect sources related to marine ports.<br><i>Elaine Shen 909.396.2715; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i>  | AQMP/<br>AB617 CERP       |

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# Part of the transition of RECLAIM to a command-and-control regulatory structure

## 2022 To-Be-Determined

| 2022 | Title and Description  | Type of Rulemaking |
|------|--|--------------------|
| 102  | <p><b>Definition of Terms</b><br/>Proposed amendments may be needed to update and add definitions, and potentially modify exemptions.<br/><i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | Other              |
| 103  | <p><b>Definition of Geographical Areas</b><br/>Proposed amendments are needed to update geographic areas to be consistent with state and federal references to those geographic areas.<br/><i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | Other              |
| 209  | <p><b>Transfer and Voiding of Permits</b><br/>Proposed amendments may be needed to clarify requirements for change of ownership and permits and the assessment of associated fees.<br/><i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | Other              |
| 219  | <p><b>Equipment Not Requiring a Written Permit Pursuant to Regulation II</b><br/>Proposed Amendments may be needed to address issues raised by U.S. EPA for approval in the State Implementation Plan or to identify sources that are currently exempt from permitting.<br/><i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>                             | Other              |
| 222  | <p><b>Filing Requirements for Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation II</b><br/>Proposed Amendments may be needed to require certain equipment that is currently not permitted to register the equipment to gather information and emissions data.<br/><i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>         | Other              |
| 223  | <p><b>Emission Reduction Permits for Large Confined Animal Facilities</b><br/>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.<br/><i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p> | AQMP               |
| 317  | <p><b>Clean Air Act Non-Attainment Fees</b><br/>Proposed amendments may be needed to modify CAA Section 185 fees for non-attainment.<br/><i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | Other              |

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# Part of the transition of RECLAIM to a command-and-control regulatory structure

**2022 To-Be-Determined (Continued)**

| 2022               | Title and Description   | Type of Rulemaking              |
|--------------------|---|---------------------------------|
| 403.1              | <p><b>Supplemental Fugitive Dust Control Requirements for Coachella Valley Sources</b><br/> Proposed Amended Rule 403.1 would clarify existing requirements for dust control and remove outdated provisions contained in supporting documents for Rule 403.1.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | Other                           |
| 407 <sup>#</sup>   | <p><b>Liquid and Gaseous Air Contaminants</b><br/> Proposed Amended Rule 407 will update SO<sub>x</sub> emission limits to reflect Best Available Retrofit Control Technology, if needed, remove exemptions for RECLAIM facilities, and update monitoring, reporting, and recordkeeping requirements.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>                         | AB 617<br>BARCT                 |
| 410                | <p><b>Odors from Transfer Stations and Material Recovery Facilities</b><br/> Proposed Amended Rule 410 will clarify existing provisions. Additional provisions may be needed to address activities associated with diversion of food waste to transfer stations or material recovery facilities.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>                              | Other                           |
| 425                | <p><b>Odors from Cannabis Processing</b><br/> Proposed Rule 425 will establish requirements for control of odors from cannabis processing.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | Other                           |
| 430                | <p><b>Breakdown Provisions</b><br/> Amendments to Rule 430 will need to be amended to remove exemptions for facilities that exit the RECLAIM program and update references to CEMS rules. Other amendments may be needed to address current policies from U.S. EPA regarding startup, shutdown, and malfunction requirements.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p> | RECLAIM<br>Other                |
| 431.1 <sup>#</sup> | <p><b>Sulfur Content of Gaseous Fuels</b><br/> Proposed Amended Rule 431.1 will assess exemptions, including RECLAIM, and update other provisions, if needed.<br/> <i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | AB 617<br>BARCT/<br>AB 617 CERP |
| 431.2 <sup>#</sup> | <p><b>Sulfur Content of Liquid Fuels</b><br/> Proposed Amended Rule 431.2 will assess exemptions, including RECLAIM, and update other provisions, if needed.<br/> <i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | AB 617<br>BARCT/<br>AB 617 CERP |

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# Part of the transition of RECLAIM to a command-and-control regulatory structure

**2022 To-Be-Determined (Continued)**

| 2022  | Title and Description  | Type of Rulemaking              |
|---|--|---------------------------------|
| 431.3 <sup>#</sup>                                | <p><b>Sulfur Content of Fossil Fuels</b><br/>                     Proposed Amended Rule 431.3 will assess exemptions, including RECLAIM, and update other provisions, if needed.<br/> <i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | AB 617<br>BARCT/<br>AB 617 CERP |
| 442.1<br>1107<br>1124<br><br>1136<br>1145<br>1171 | <p><b>Usage of Solvent</b><br/> <b>Coating of Metal Parts and Products</b><br/> <b>Aerospace Assembly and Component Manufacturing Operations</b><br/> <b>Wood Products Coatings</b><br/> <b>Plastic, Rubber, Leather, and Glass Coatings</b><br/> <b>Solvent Cleaning Operations</b><br/>                     Proposed amendments will prohibit the sale, distribution, and application of materials that do not meet the VOC limits specified in Regulation XI rules and possible provisions to prohibit circumvention of VOC limits. Other provisions may be needed to address exempt compounds.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p> | Other                           |
| 444   | <p><b>Open Burning</b><br/>                     Amendments may be needed to clarify existing provisions.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | Other                           |
| 445 <sup>*</sup>                                  | <p><b>Wood Burning Devices</b><br/>                     Proposed Amended Rule 445 will address additional U.S. EPA requirements for Best Available Control Measures and potentially address ozone contingency measure requirements for the Coachella Valley. Amendments may be needed to revise the penalty structure for violations on No Burn Days during the wood burning season.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | AQMP                            |
| 462   | <p><b>Organic Liquid Loading</b><br/>                     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.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | Other                           |
| 463   | <p><b>Organic Liquid Storage</b><br/>                     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.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | Other                           |

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# Part of the transition of RECLAIM to a command-and-control regulatory structure

**2022 To-Be-Determined (Continued)**

| 2022                  | Title and Description  | Type of Rulemaking              |
|-----------------------|--|---------------------------------|
| 468 <sup>#</sup>      | <p><b>Sulfur Recovery Units</b><br/> Proposed Amended Rule 468 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.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | AB 617<br>BARCT                 |
| 469 <sup>#</sup>      | <p><b>Sulfuric Acid Units</b><br/> Proposed Amended Rule 469 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.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | AB 617<br>BARCT                 |
| 1100                  | <p><b>Implementation Schedule for NOx Facilities</b><br/> Proposed Amended Rule 1100 will establish the implementation schedule for Rule 1147 equipment at NOx RECLAIM and former NOx RECLAIM facilities.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  |                                 |
| 1101 <sup>#</sup>     | <p><b>Secondary Lead Smelters/Sulfur Oxides</b><br/> Proposed Amended Rule 1101 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.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | AB 617<br>BARCT                 |
| 1105 <sup>#</sup>     | <p><b>Fluid Catalytic Cracking Units Sox</b><br/> 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.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | AB 617<br>BARCT/<br>AB 617 CERP |
| 1110.2* <sup>+#</sup> | <p><b>Emissions from Gaseous- and Liquid-Fueled Engines</b><br/> Proposed amendments will address use of emergency standby engines at essential public services for Public Safety Power Shutoff programs. Proposed amendments may also be needed to incorporate possible comments by U.S. EPA for approval into the SIP and address monitoring provisions for new engines.<br/> <i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p> | AQMP/<br>AB 617<br>BARCT        |
| 1111.1                | <p><b>Zero-Emission Residential Furnaces</b><br/> Proposed Rule 1111.1 may include provisions to encourage zero emission residential furnaces that goes beyond Rule 1111 for gas-fired furnaces.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | AQMP                            |

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# Part of the transition of RECLAIM to a command-and-control regulatory structure

**2022 To-Be-Determined (Continued)**

| 2022   | Title and Description  | Type of Rulemaking              |
|--------|--|---------------------------------|
| 1113   | <p><b>Architectural Coatings</b><br/> Proposed amendments may be needed address delisted compounds and other amendments to improve clarity and to remove obsolete provisions.<br/> <i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | Other                           |
| 1118*  | <p><b>Control of Emissions from Refinery Flares</b><br/> Proposed Amended Rule 1118 will incorporate revisions to further reduce flaring at refineries, provisions for clean service flares, and facility thresholds. Other amendments to improve clarity and to remove obsolete provisions.<br/> <i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p> | AQMP/<br>AB 617 CERP            |
| 1119#  | <p><b>Petroleum Coke Calcining Operations – Oxides of Sulfur</b><br/> 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.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>       | AB 617<br>BARCT/<br>AB 617 CERP |
| 1121*  | <p><b>Control of Nitrogen Oxides from Residential Type, Natural-Gas-Fired Water Heaters</b><br/> Proposed amendments may be needed to further reduce NOx emissions from water heaters.<br/> <i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | AQMP                            |
| 1121.1 | <p><b>Zero Emission Residential Water Heaters</b><br/> Proposed Rule 1121.1 may include provisions to encourage zero emission water heaters that goes beyond Rule 1121 for gas-fired water heaters.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | AQMP                            |
| 1133.3 | <p><b>Emission Reductions from Greenwaste Composting Operations</b><br/> 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.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | AQMP                            |
| 1138   | <p><b>Control of Emissions from Restaurant Operations</b><br/> Proposed Amended Rule 1138 will further reduce emissions from char boilers.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | AQMP                            |

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# Part of the transition of RECLAIM to a command-and-control regulatory structure

**2022 To-Be-Determined (Continued)**

| 2022                | Title and Description   | Type of Rulemaking    |
|---------------------|---|-----------------------|
| 1142                | <p><b>Marine Tank Vessel Operations</b><br/>                     Proposed Amended Rule 1142 will address VOC and hydrogen sulfide emissions from marine tank vessel operations, applicability, noticing requirements, and provide clarifications.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | Other                 |
| 1146                | <p><b>Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters</b><br/>                     Proposed amendments to Rule 1146 may be needed to incorporate comments from U.S. EPA.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | Other                 |
| 1146.1 <sup>#</sup> | <p><b>Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters</b><br/>                     Proposed amendments to Rule 1146.1 may be needed to clarify provisions for industry-specific categories and to incorporate comments from U.S. EPA.<br/> <i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p> | Other                 |
| 1148.1 <sup>*</sup> | <p><b>Oil and Gas Production Wells</b><br/>                     Proposed Amendments to Rule 1148.1 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.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | Other/<br>AB 617 CERP |
| 1165                | <p><b>Control of Emissions from Incinerators</b><br/>                     Proposed Rule 1165 will establish emission standards, source testing, and monitoring, recordkeeping, and reporting requirements for incinerators.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | AQMP                  |
| 1166                | <p><b>Volatile Organic Compound Emissions from Decontamination of Soil</b><br/>                     Proposed Amended Rule 1166 will update requirements, specifically concerning notifications and usage of mitigation plans (site specific versus various locations).<br/> <i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | Other                 |

\* 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



**2022 To-Be-Determined (Continued)**

| 2022  | Title and Description  | Type of Rulemaking    |
|-------|--|-----------------------|
| 1171  | <p><b>Solvent Cleaning Operations</b><br/>                     Proposed Amendments to Rule 1171 may be needed to address certain exempt chemicals and compliance issues.<br/> <i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706 Socio: Elaine Shen 909.396.2715</i></p>  | Other                 |
| 1173  | <p><b>Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants</b><br/>                     Proposed Amended Rule 1173 will further reduce emissions from petroleum and chemical plants by requiring early leak detection approaches.<br/> <i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | Other/<br>AB 617 CERP |
| 1176  | <p><b>VOC Emissions from Wastewater Systems</b><br/>                     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.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | Other/<br>AB 617 CERP |
| 1180  | <p><b>Refinery Fenceline and Community Air Monitoring</b><br/>                     Amendments to Rule 1180 may be needed to provide additional clarity and if Proposed Rule 1180.1 is adopted, provisions may be needed to provide additional clarity.<br/> <i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | Other                 |
| 1403* | <p><b>Asbestos Emissions from Demolition/Renovation Activities</b><br/>                     Proposed Amended Rule 1403 will enhance implementation, improve rule enforceability, update provisions, notifications, exemptions, 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.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p> | Toxics                |
| 1404  | <p><b>Hexavalent Chromium Emissions from Cooling Towers</b><br/>                     Amendments may be needed to provide additional clarifications regarding use of process water that is associated with sources that have the potential to contain chromium in cooling towers and address VOC emissions.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | Toxics<br>AQMP        |
| 1405  | <p><b>Control of Ethylene Oxide and Chlorofluorocarbon Emissions from Sterilization or Fumigation Processes</b><br/>                     Amendments may be needed to address ethylene oxide emissions from sterilization of medical equipment.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | Toxics                |

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# Part of the transition of RECLAIM to a command-and-control regulatory structure

**2022 To-Be-Determined (Continued)**

| 2022           | Title and Description  | Type of Rulemaking     |
|----------------|--|------------------------|
| 1415<br>1415.1 | <p><b>Reduction of Refrigerant Emissions from Stationary Air Conditioning Systems, and Reduction of Refrigerant Emissions from Stationary Refrigeration Systems</b></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>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>                | Other                  |
| 1420           | <p><b>Emissions Standard for Lead</b></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. Other provisions may be needed to address storage and handling requirements, and revise closure requirements.</p> <p><i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>            | Toxics                 |
| 1420.1         | <p><b>Emission Standards for Lead and Other Toxic Air Contaminants from Large Lead-Acid Battery Recycling Facilities</b></p> <p>Proposed Amendments are needed to update applicable test methods and provide clarifications regarding submittal of a source-test protocol. Additional amendments may be needed to address monitoring and post closure requirements.</p> <p><i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | Toxics                 |
| 1420.2         | <p><b>Emission Standards for Lead from Metal Melting Facilities</b></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. Additional amendments may be needed to address monitoring and post closure requirements.</p> <p><i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p> | Toxics                 |
| 1435*          | <p><b>Control of Emissions from Metal Heat Treating Processes</b></p> <p>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.</p> <p><i>Michael Krause 909.396.2706; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | Toxics/<br>AB 617 CERP |

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# Part of the transition of RECLAIM to a command-and-control regulatory structure

**2022 To-Be-Determined (Continued)**

| 2022  | Title and Description   | Type of Rulemaking |
|-------|---|--------------------|
| 1450* | <p><b>Control of Methylene Chloride Emissions</b><br/>                     Proposed Rule 1450 will reduce methylene chloride emissions from furniture stripping and establish monitoring, reporting, and recordkeeping requirements.<br/> <i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | Toxics             |
| 1455  | <p><b>Control of Hexavalent Chromium Emissions from Torch Cutting and Welding</b><br/>                     Proposed Rule 1455 will establish requirements to reduce hexavalent chromium emissions from torch cutting and welding of chromium alloys.<br/> <i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | Toxics             |
| 1469  | <p><b>Hexavalent Chromium Emissions from Chromium Electroplating and Chromic Acid Anodizing Operations</b><br/>                     Amendments to Rule 1469 may be needed to address potential changes with the CARB’s Hexavalent Chromium Airborne Toxic Control Measure for Chrome Plating and Chromic Acid Anodizing Operations.<br/> <i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>                                     | Toxics             |
| 1470  | <p><b>Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines</b><br/>                     Proposed Amended Rule 1470 will include provisions to further reduce diesel particulate emissions from stationary diesel-fueled internal combustion engines.<br/> <i>TBD; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | Toxics             |
| 1472  | <p><b>Requirements for Facilities with Multiple Stationary Emergency Standby Diesel-Fueled Internal Combustion Engines</b><br/>                     Proposed Amended Rule 1472 will remove provisions that are no longer applicable, update and streamline provisions to reflect the 2015 Health Risk Assessment Guidelines and assess the need for a Compliance Plans.<br/> <i>Michael Morris 909.396.3282; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p> | Toxics             |

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# Part of the transition of RECLAIM to a command-and-control regulatory structure

**2022 To-Be-Determined (Continued)**

| 2022  | Title and Description  | Type of Rulemaking   |
|---|--|--|
| 2306.1  | <p><b>Existing Intermodal Railyard Indirect Source Rule</b><br/>                     Proposed Rule 2306.1 will establish requirements for existing intermodal railyards to minimize emissions from indirect sources associated with these facilities.<br/> <i>Elaine Shen 909.396.2715; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>   | AQMP/<br>AB 617 CERP                                       |
| Regulation XXIII* <sup>+</sup>                                  | <p><b>Facility-Based Mobile Sources</b><br/>                     Proposed rules within Regulation XXIII would reduce emissions from indirect sources (e.g., mobile sources that visit facilities).<br/> <i>Elaine Shen 909.396.2715; CEQA: Michael Krause 909.396.2706; Socio: Elaine Shen 909.396.2715</i></p>  | AQMP/<br>Toxics/<br>AB 617 CERP                            |
| Regulation II, III, 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, emission limits, technology-forcing emission limits, conflicts with other agency requirements, to abate a substantial endangerment to public health, additional reductions to meet SIP short-term measure commitments, to address issues raised by U.S. EPA or CARB for the SIP, compliance issues that are raised by the Hearing Board, or regulatory amendments needed as a result of the COVID-19 pandemic. Amendments to existing rules may be needed to address use of materials that contain chemicals of concern. 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, and if adopted, 2022 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 emissions testing or ambient monitoring.</p> | Other/ AQMP/<br>Toxics/<br>AB 617<br>BARCT/<br>AB 617 CERP |

\* Potentially significant hearing

<sup>+</sup> Reduce criteria air contaminants and assist toward attainment of ambient air quality standards

<sup>#</sup> Part of the transition of RECLAIM to a command-and-control regulatory structure

[↑ Back to Agenda](#)

BOARD MEETING DATE: March 4, 2022

AGENDA NO. 18

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 11, 2022, Reviewed

RECOMMENDED ACTION:  
Receive and file.

Wayne Nastri  
Executive Officer

RMM:MAH:XC:dc

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### **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.

In light of COVID-19 and the related budget impact, we are evaluating all of our projects and delaying non-critical projects as long as possible.

### **Summary of Report**

The attached report identifies 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 4, 2022 Board Meeting**

**Status Report Major Ongoing and Upcoming Projects for  
Information Management**

| <b>Project</b>                    | <b>Brief Description</b>   | <b>Estimated Project Cost</b> | <b>Completed Actions</b>   | <b>Upcoming Milestones</b>   |
|-----------------------------------|--|-------------------------------|--|--|
| Phone System Upgrade              | Upgrade components of the agency Cisco Unified Communications System that are past end of support  | \$175,000                     | <ul style="list-style-type: none"> <li>• RFQ released September 3, 2021</li> <li>• Awarded January 7, 2022</li> </ul>  | <ul style="list-style-type: none"> <li>• Complete upgrade March 31, 2022</li> </ul>  |
| AQ-SPEC Cloud Platform Phase 2    | Integrate separate data systems into the AQ-SPEC cloud-based platform to manage data and build interactive data visualizations and data dashboards for web-based viewing | \$313,350                     | <ul style="list-style-type: none"> <li>• Project Charter released</li> <li>• Task Order issued, evaluated, and awarded</li> <li>• Project kickoff completed</li> <li>• Requirements gathering completed</li> <li>• Fit Gap and data storage analysis completed</li> <li>• Architecture and functional design completed</li> <li>• Work Plan development for Phase 2 completed</li> </ul>   | <ul style="list-style-type: none"> <li>• Approval of dashboard designs</li> </ul>  |
| PeopleSoft Electronic Requisition | 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"> <li>• Project Charter released</li> <li>• Task Order issued, evaluated, and awarded</li> <li>• Requirements gathering and system design completed</li> <li>• System setup and code development, and User Acceptance Testing for Information Management completed</li> <li>• System setup and code development, and User Acceptance Testing completed for Administrative and Human Resources, and Technology Advancement Office completed</li> </ul> | <ul style="list-style-type: none"> <li>• Deploy to IM and AHR divisions</li> <li>• Training and Integrated User Testing for other divisions</li> </ul> |

| Project  | Brief Description   | Estimated Project Cost | Completed Actions   | Upcoming Milestones  |
|--|---|------------------------|---|--|
| South Coast AQMD Mobile Application Enhancements | Enhancement of Mobile Application to incorporate FIND   | \$90,000               | <ul style="list-style-type: none"> <li>• Vision and Scope completed</li> <li>• Task Order issued</li> <li>• Project initiation completed</li> <li>• System design completed</li> </ul>  | <ul style="list-style-type: none"> <li>• System development</li> </ul>   |
| 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 staff | \$525,000              | <ul style="list-style-type: none"> <li>• Board approved initial Phase 2 funding December 2017</li> <li>• Board approved remaining Phase 2 funding October 5, 2018</li> <li>• Completed report outlining recommendations for automation of Permitting Workflow</li> <li>• Developed application submittals and form filing for first nine of 32 400-E forms</li> <li>• Completed application submittals and form filing for 23 types of equipment under Rule 222 for User Testing</li> <li>• Deployed to production the top three most frequently used Rule 222 forms: Negative Air Machines, Small Boilers and Charbroilers</li> <li>• Completed requirements gathering for Phase 2 of the project (an additional 10 400-E-XX forms)</li> <li>• Development of Phase 2 additional 12 400-E-XX forms completed</li> <li>• Deployment to stage of all 400-E-XX and Rule 222 forms for User Acceptance Testing completed</li> <li>• User Acceptance Testing and deployment to production of Emergency IC Engines Form completed</li> <li>• User Acceptance Testing and deployment to production of first 3 Rule 222 forms (Tar Pots, Cooling Towers, and Power Washers) completed</li> </ul> | <ul style="list-style-type: none"> <li>• Requirements gathering for Phase 3 of the project (final twelve (12) 400-E-XX forms)</li> <li>• Complete User Acceptance Testing and deployment to production of first ten 400-E-XX forms</li> <li>• Complete User Acceptance Testing and deployment to production of next set of Rule 222 forms</li> </ul> |

| Project   | Brief Description  | Estimated Project Cost | Completed Actions   | Upcoming Milestones  |
|---|--|------------------------|---|--|
| Lower-Emission School Bus Program                 | Development of an Online Grant Management System (GMS) Portal for the Lower-Emission School Bus Incentive Program  | \$110,500              | <ul style="list-style-type: none"> <li>• Draft Charter Document issued</li> <li>• Project initiation completed</li> <li>• Task Order issued</li> <li>• Phase 1 deployed to production – applicant/third party registration and application submission</li> <li>• Customized GMS look and feel</li> <li>• Phase 2 AQMD staff to create new application on-line for applications received by mail completed</li> <li>• Deployment of Staff Evaluation Module completed</li> <li>• Development of calculation, ranking and messaging has been completed</li> </ul>   | <ul style="list-style-type: none"> <li>• Development of Contracting Module</li> </ul>  |
| VW Environmental Mitigation Action Plan Project   | CARB has assigned South Coast AQMD to develop web applications for: Zero-Emission Class 8 Freight and Port Drayage Truck Project and Combustion Freight and Marine Project. The agency is also responsible for maintaining a database that will be queried for reporting | \$355,000              | <ul style="list-style-type: none"> <li>• Draft Charter Document issued</li> <li>• Project initiation completed</li> <li>• Task Order issued</li> <li>• Deployed Phase 1 to production completed</li> <li>• Phase 2 to production – messaging, evaluation, and administration completed</li> <li>• Phase 3 - ZE Class 8 Application deployed to production</li> <li>• Deployed Phase 3 – Ranking</li> <li>• Deployed Combustion Freight On Road Form changes</li> <li>• Phase 3 – ZE Class 8 Application Solicitation completed</li> <li>• 2nd Combustion Freight On Road Solicitation completed</li> <li>• User Acceptance Testing for Phase 3 – Contracting completed</li> </ul> | <ul style="list-style-type: none"> <li>• User Acceptance Testing for Phase 3 – Inspection</li> </ul>                               |
| Replace Your Ride (RZR)/One Stop Shop Integration | Development of integration access points for RZR and third-party applications  | \$115,026              | <ul style="list-style-type: none"> <li>• Draft Charter Document issued</li> <li>• Project initiation completed</li> <li>• Task Order issued</li> <li>• Phase 1 Sprint 1 – Security Portal Enhancement completed</li> <li>• Phase 2 Sprint 2 - RZR service endpoints completed</li> <li>• Phase 3 Sprint 4 – creating .net core web API completed</li> </ul>   | <ul style="list-style-type: none"> <li>• Cloud based service endpoints</li> <li>• Phase 3 Sprint 5 – end to end testing</li> </ul> |



| Project                            | Brief Description  | Estimated Project Cost | Completed Actions   | Upcoming Milestones   |
|------------------------------------|--|------------------------|---|---|
| Carl Moyer Program GMS             | Development of simplified and streamlined Online Grant Management System (GMS) Portal for Carl Moyer Program   | \$116,275              | <ul style="list-style-type: none"> <li>• Draft Charter Document issued</li> <li>• Project initiation completed</li> <li>• Task Order issued</li> <li>• Development of Phase 1 completed</li> <li>• User Acceptance Testing of Phase 1 completed</li> <li>• Phase 1 completed and approved by stakeholder</li> <li>• Phase 2 approved by ITSC</li> </ul>   | <ul style="list-style-type: none"> <li>• Phase 2 – kickoff and gathering requirements</li> </ul>  |
| Source Test Tracking System (STTS) | Online STSS will keep track of timelines and quantify the number of test protocols and reports received. System will provide an external online portal to submit source testing protocols and reports, track the review process, and provide integration to all other business units. It will also provide an external dashboard to review the status of a submittal | \$250,000              | <ul style="list-style-type: none"> <li>• Project Charter approved</li> <li>• Project initiation completed</li> <li>• Task Order issued</li> <li>• Project kickoff completed</li> <li>• User requirements gathering for internal users completed</li> <li>• Developed full business process model</li> <li>• Developed screens mock-ups</li> <li>• Reviewed proposed automation with EQUATE Working Group completed</li> <li>• Proposal for system development approved</li> <li>• Completed development of Sprint 1 to 8</li> <li>• Internal User Testing completed</li> <li>• Completed overview of development progress to EQUATE Working Group.</li> <li>• Deploy updated STTS Data Model and move application to stage completed</li> </ul> | <ul style="list-style-type: none"> <li>• Complete User Acceptance testing of STTS Portal in stage environment</li> <li>• Deploy STTS Portal to production</li> <li>• Complete testing of STTS Portal with regulated community volunteers</li> </ul> |

| Project  | Brief Description   | Estimated Project Cost | Completed Actions  | Upcoming Milestones  |
|--|---|------------------------|--|--|
| Warehouse Indirect Source Rule online reporting portal | Development of online reporting portal for Rule 2305 –Warehouse Indirect Source | \$250,000              | <ul style="list-style-type: none"> <li>• Draft Charter Document issued</li> <li>• Project initiation completed</li> <li>• Task Order issued</li> <li>• Deployed Phase 1.1 – Warehouse Operations Notification Submittal</li> <li>• Deployed Phase 1.2 – Warehouse Operations Notification Evaluation</li> <li>• Phase 2 Project initiation and planning completed</li> <li>• Phase 2 software requirements completed</li> <li>• Phase 2 architecture and design completed</li> <li>• Deployed Phase 2.1 – Annual WAIRE Report (AWR) completed</li> </ul> | <ul style="list-style-type: none"> <li>• Phase 2.2 Development - Initial Site Information Report (ISIR)</li> </ul>   |
| AB 2766 – Motor Vehicle Subvention Program             | Development of a web application reporting portal for AB 2766 Program           | \$81,655               | <ul style="list-style-type: none"> <li>• Draft Charter Document issued</li> <li>• Project initiation completed</li> <li>• Task Order issued</li> <li>• Project planning phase for forms completed</li> <li>• Development of forms (1-9 &amp; D1) is completed</li> </ul>   | <ul style="list-style-type: none"> <li>• System Development-AQMD workflow is being developed</li> <li>• Stakeholder testing of forms and workflow for government entities</li> </ul> |
| Renewal of HP Server Maintenance & Support             | Purchase of maintenance and support services for servers and storage devices    | \$130,000              |  | <ul style="list-style-type: none"> <li>• Request Board approval for HP server maintenance and support March 4, 2022</li> <li>• Execute contract April 30, 2022</li> </ul>            |

Projects that have been completed within the last 12 months are shown below.

**Completed Projects**

| Project   | Date Completed     |
|---|--------------------|
| Telecommunications Services   | February 28, 2022  |
| Prequalified Vendors to Provide Computer, Network, Printer, Hardware and Software, and Audio Visual Equipment | February 4, 2022   |
| Cybersecurity Assessment  | January 31, 2022   |
| Office 365 License Renewal  | January 31, 2022   |
| PeopleSoft Finance and Human Capital Management updates for tax year 2021                                     | January 10, 2022   |
| Implementation of Labor Agreement   | January 10, 2022   |
| Annual Emissions Reporting System 2022 Revisions  | December 17, 2021  |
| Warehouse Operations Notification Evaluation Module   | December 12, 2021  |
| CLASS Database Software Licensing   | November 30, 2021  |
| AQ-Spec/AB617 Data Management System  | November 16, 2021  |
| Rule 1180 Notification System   | October 6, 2021    |
| PAATS and PPS System enhancements for Gasoline Dispensing Stations  | September 16, 2021 |
| Warehouse Operations Notification Online Submittal Portal   | August 6, 2021     |
| Lawn and Garden Battery Incentive Program   | August 5, 2021     |
| Renewal of OnBase Software Support  | July 15, 2021      |
| FIND Map Search   | June 30, 2021      |
| Office 365 Implementation   | May 30, 2021       |
| CAPES (Clean Air Program for Elementary Students) website   | May 14, 2021       |
| Renewal of HP Server Maintenance & Support  | April 30, 2021     |
| FIND Enhancement to include Rule 222 equipment  | April 14, 2021     |
| Prop 1B Internal Evaluation Module  | April 09, 2021     |
| Lower Emission School Bus Internal Evaluation Module  | April 09, 2021     |

# Budget and Economic Outlook Update

Board Meeting

March 4, 2022



# Presentation Topics

- Economic Indicators
- South Coast AQMD Metrics and Economic Implications
- Summary Charts

# Summary of Metrics – Monthly

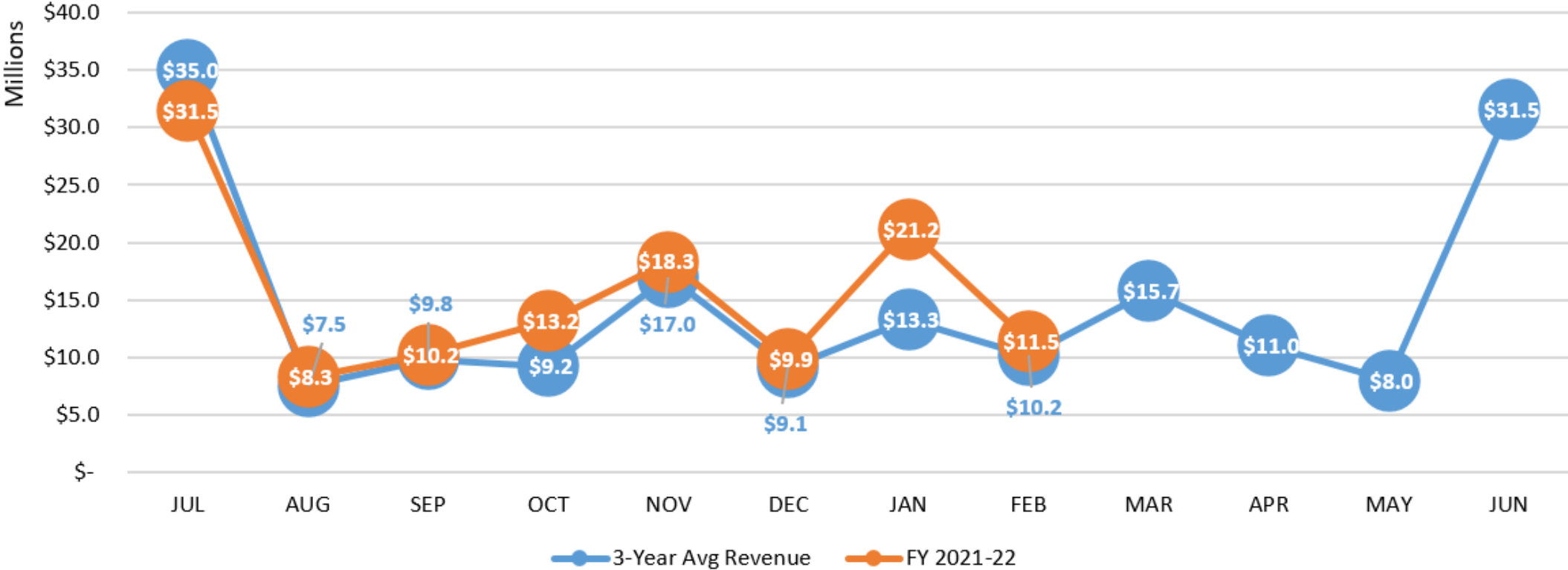
| Metric   |                      |                      |                       |
|--|----------------------|----------------------|-----------------------|
| <b>State Economic Indicators</b>   | <b>January 2021</b>  | <b>January 2022</b>  | <b>Notes</b>          |
| <i>Statewide Refinery Activity<br/>(Million Barrels Crude Oil Input)</i> | 42.8                 | 39.1                 |                       |
| <i>Port TEU Throughput<br/>(Million TEUs)</i>                            | 1.6                  | 1.7                  |                       |
| <i>Statewide Unemployment</i>  | 9.3%                 | 6.5%                 | (December data)       |
| <b>South Coast AQMD</b>  | <b>February 2021</b> | <b>February 2022</b> |                       |
| <i>Revenue</i>   | \$10.3 million       | \$11.5 million       |                       |
| <i>Expenditures</i>  | \$13.3 million       | \$14.4 million       |                       |
| <i>Vacancy Rate</i>  | 16.7%                | 16.8%                |                       |
| <i>Permit Applications Received</i>                                      | 526                  | 534*                 | *Feb 2022 preliminary |
| <i>Expired or Potentially Expired Permits</i>                            | 73                   | 335                  |                       |

# Summary of Metrics – Year to Date

| Metric   |                            |                             |                         |
|--|----------------------------|-----------------------------|-------------------------|
| <b>State Economic Indicators</b>   | <b>Feb 2020 – Jan 2021</b> | <b>Feb 2021 – Jan 2022</b>  | <b>Notes</b>            |
| <i>Statewide Refinery Activity<br/>(Million Barrels Crude Oil Input)</i> | 461                        | 523                         |                         |
| <i>Port TEU Throughput<br/>(Million TEUs)</i>                            | 17.5                       | 20.1                        |                         |
| <b>South Coast AQMD</b>  | <b>Jul 2020 - Feb 2021</b> | <b>July 2021 – Feb 2022</b> |                         |
| <i>Revenue</i>   | \$110.8 million            | \$124.0 million             |                         |
| <i>Expenditures</i>  | \$105.5 million            | \$108.1 million             |                         |
| <i>Permit Applications Received</i>                                      | 4059                       | 4053                        | (*Feb 2022 preliminary) |
| <i>Expired or Potentially Expired Permits</i>                            | 744                        | 1,592                       | 1 year to reinstate     |

# Revenue

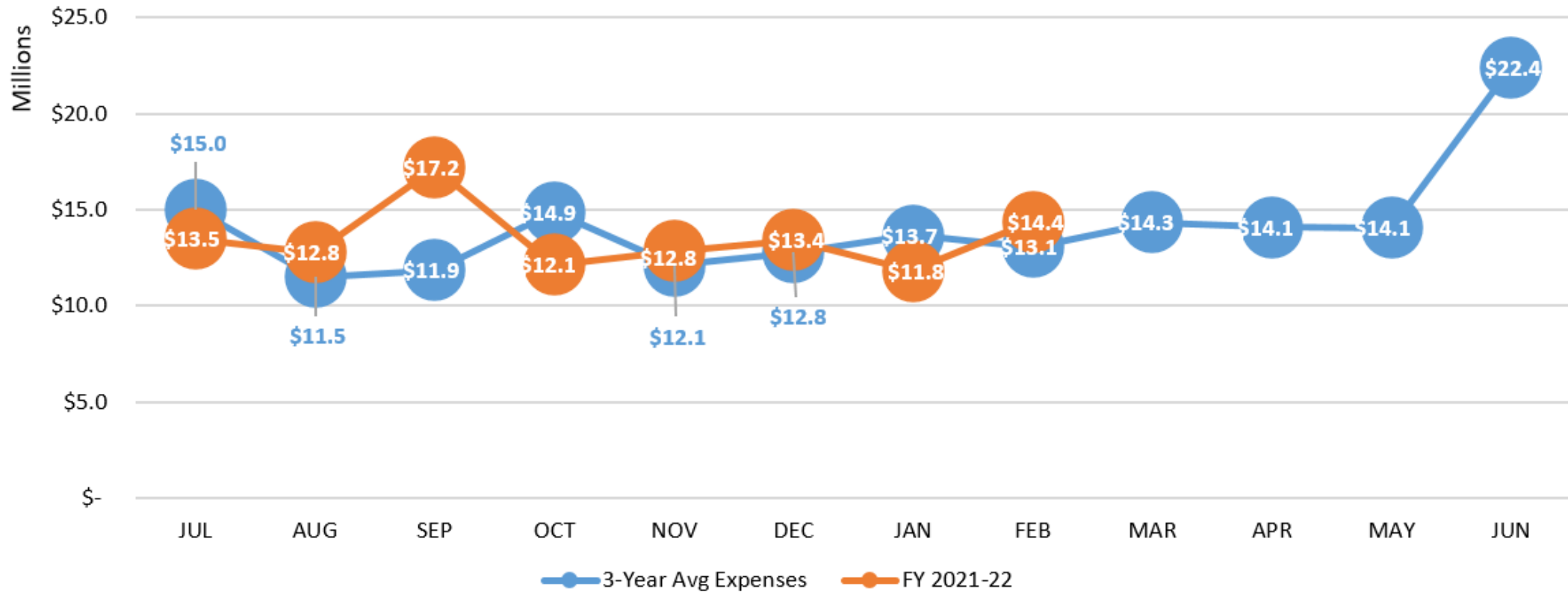
## Revenue Comparison 3-Year Average to FY 2021-22





# Expenditure

## Expenditure Comparison 3-Year Average to FY 2021-22

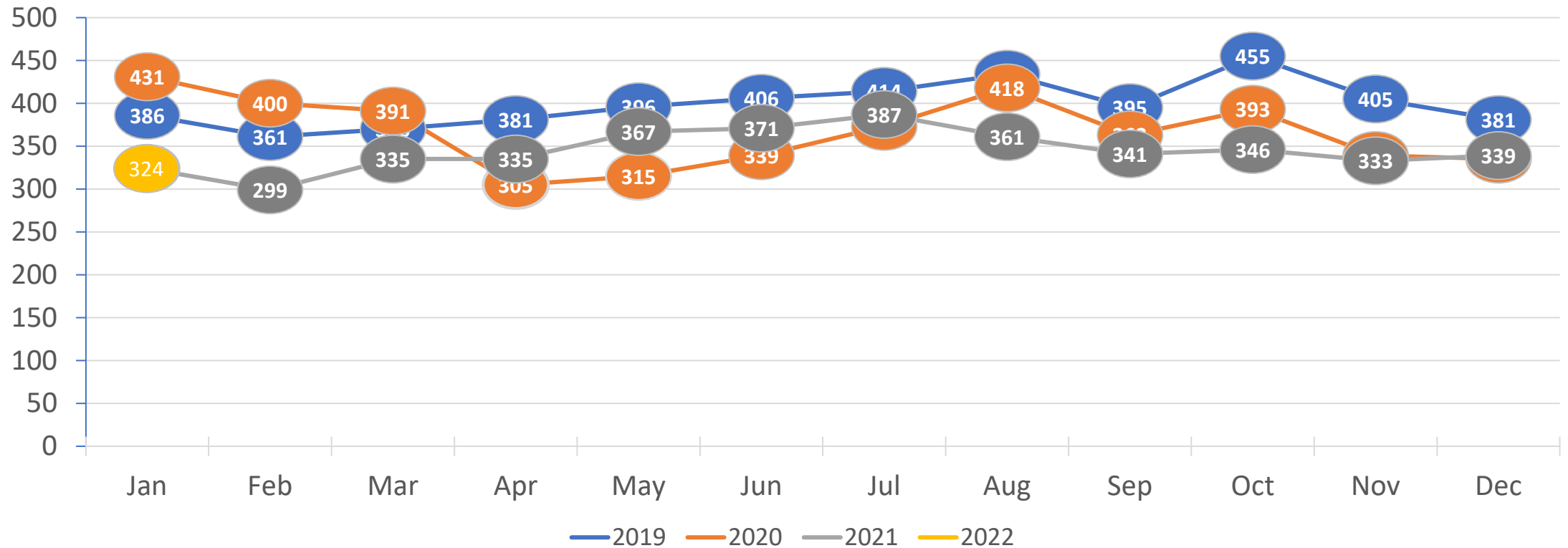


# Staffing Levels as of 3/2/22

- 959 budgeted FTEs
- 161 vacant positions
- 798 filled positions
- 16.8 % vacancy rate

# Emission Trends

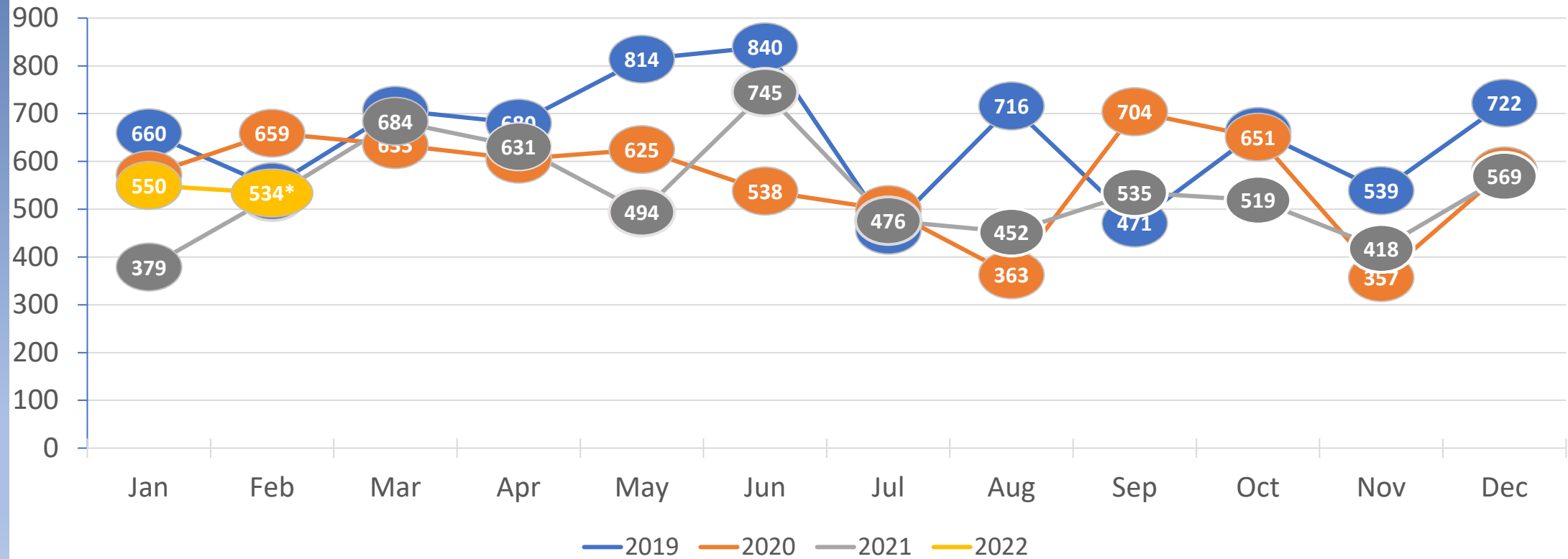
## NOx Emissions, RECLAIM Major Sources (tons)



As of February 24, 2022

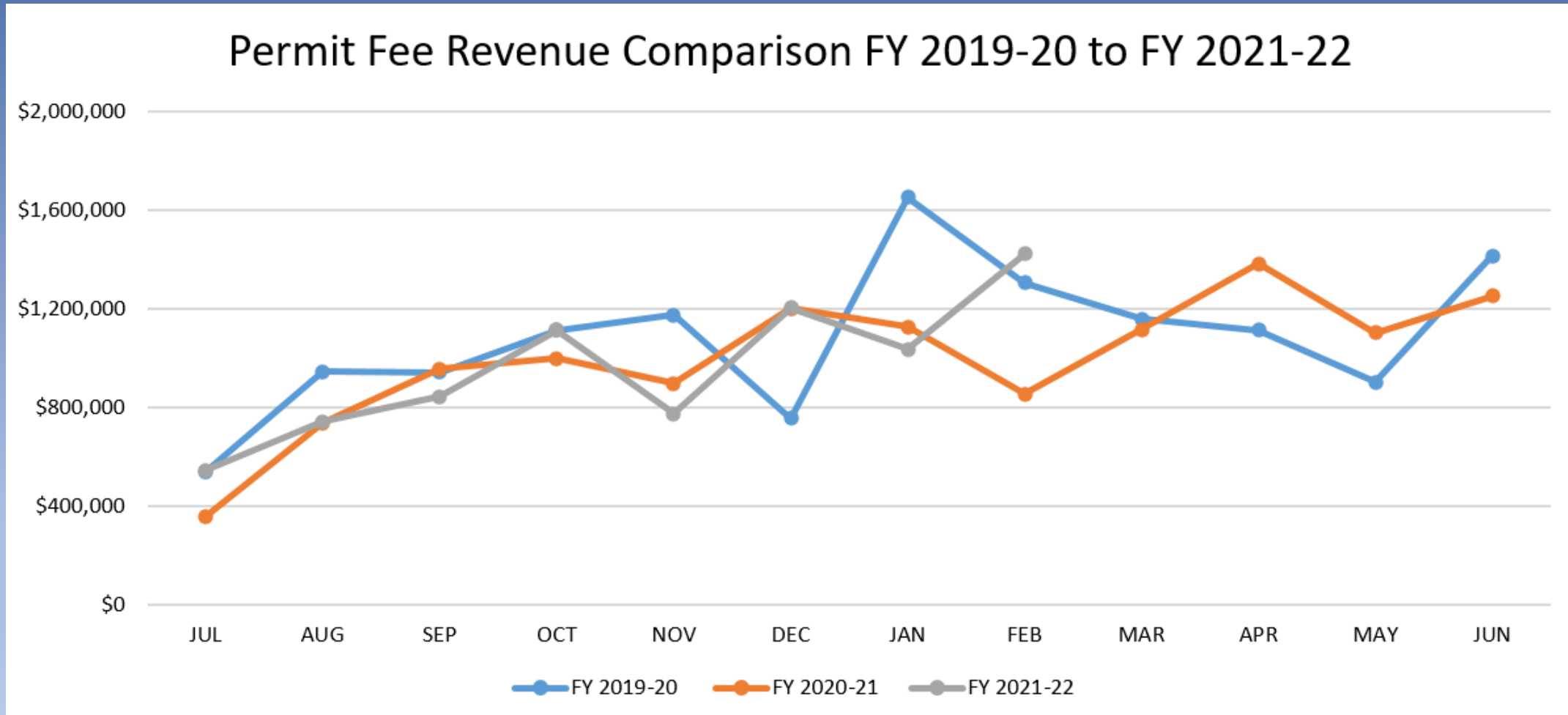
# Permit Activity

## Number of Applications Received per Month

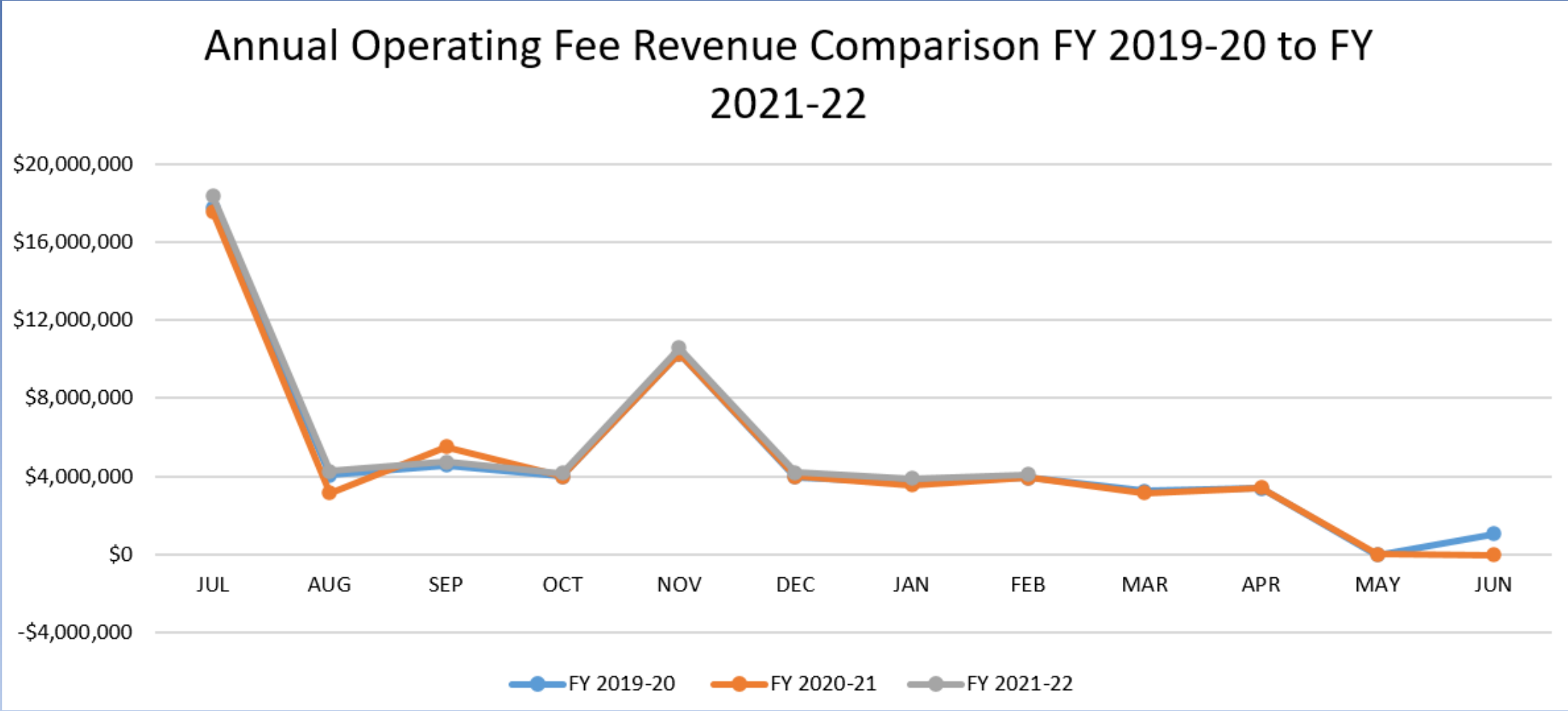


\*February Data Preliminary

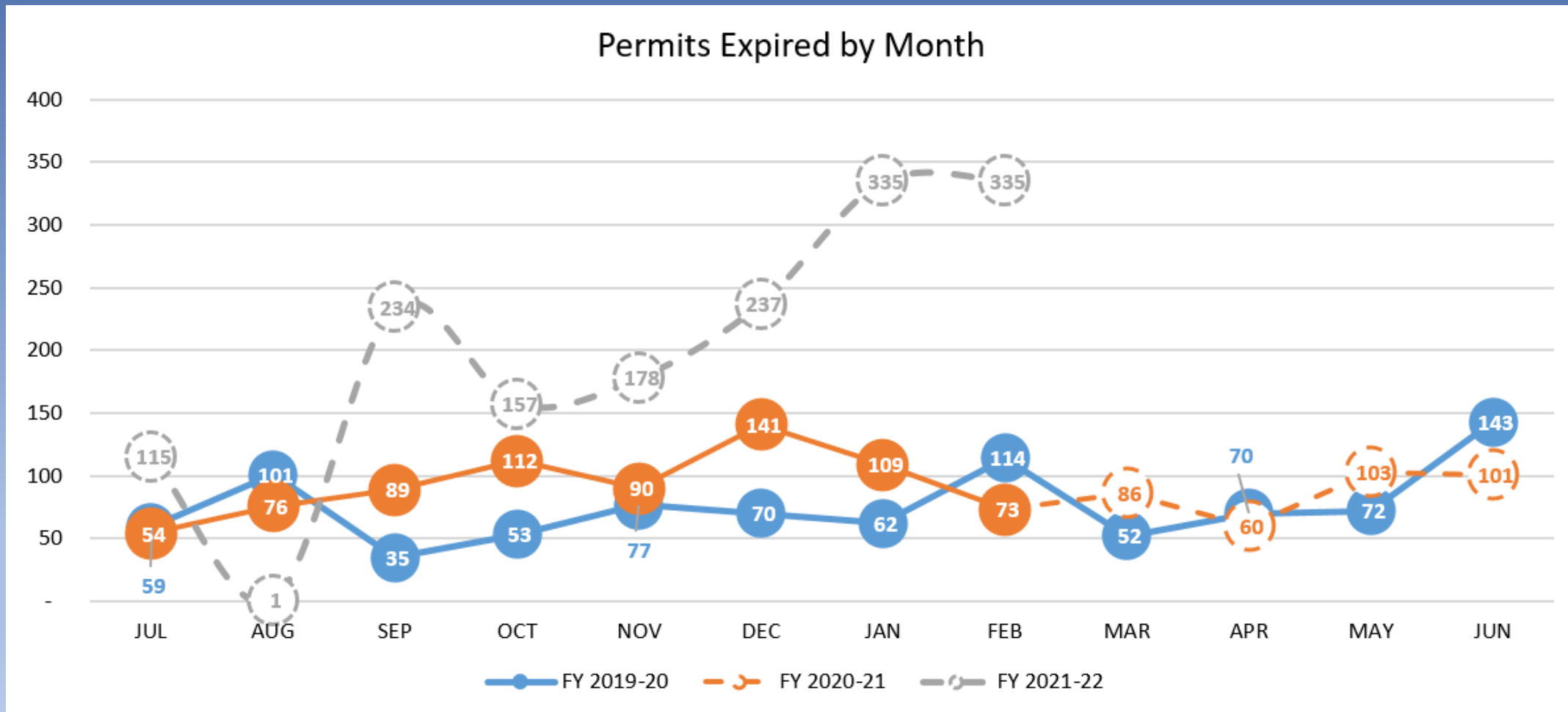
# Permit Revenue



# Annual Operating Fee Revenue



# Permits - Expired and Potentially Expired



Dotted lines represent permits that have time to be reinstated

# Summary of Metrics – Monthly

| Metric   |                      |                      |                       |
|--|----------------------|----------------------|-----------------------|
| <b>State Economic Indicators</b>   | <b>January 2021</b>  | <b>January 2022</b>  | <b>Notes</b>          |
| <i>Statewide Refinery Activity<br/>(Million Barrels Crude Oil Input)</i> | 42.8                 | 39.1                 |                       |
| <i>Port TEU Throughput<br/>(Million TEUs)</i>                            | 1.6                  | 1.7                  |                       |
| <i>Statewide Unemployment</i>  | 9.3%                 | 6.5%                 | (December data)       |
| <b>South Coast AQMD</b>  | <b>February 2021</b> | <b>February 2022</b> |                       |
| <i>Revenue</i>   | \$10.3 million       | \$11.5 million       |                       |
| <i>Expenditures</i>  | \$13.3 million       | \$14.4 million       |                       |
| <i>Vacancy Rate</i>  | 16.7%                | 16.8%                |                       |
| <i>Permit Applications Received</i>                                      | 526                  | 534*                 | *Feb 2022 preliminary |
| <i>Expired or Potentially Expired Permits</i>                            | 73                   | 335                  |                       |



# Summary of Metrics – Year to Date

| Metric   |                            |                             |                         |
|--|----------------------------|-----------------------------|-------------------------|
| <b>State Economic Indicators</b>   | <b>Feb 2020 – Jan 2021</b> | <b>Feb 2021 – Jan 2022</b>  | <b>Notes</b>            |
| <i>Statewide Refinery Activity<br/>(Million Barrels Crude Oil Input)</i> | 461                        | 523                         |                         |
| <i>Port TEU Throughput<br/>(Million TEUs)</i>                            | 17.5                       | 20.1                        |                         |
| <b>South Coast AQMD</b>  | <b>Jul 2020 - Feb 2021</b> | <b>July 2021 – Feb 2022</b> |                         |
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# Overview of 2022 Air Quality Management Plan (AQMP)

Board Meeting

March 4, 2022

# Background – Air Quality Management Plans

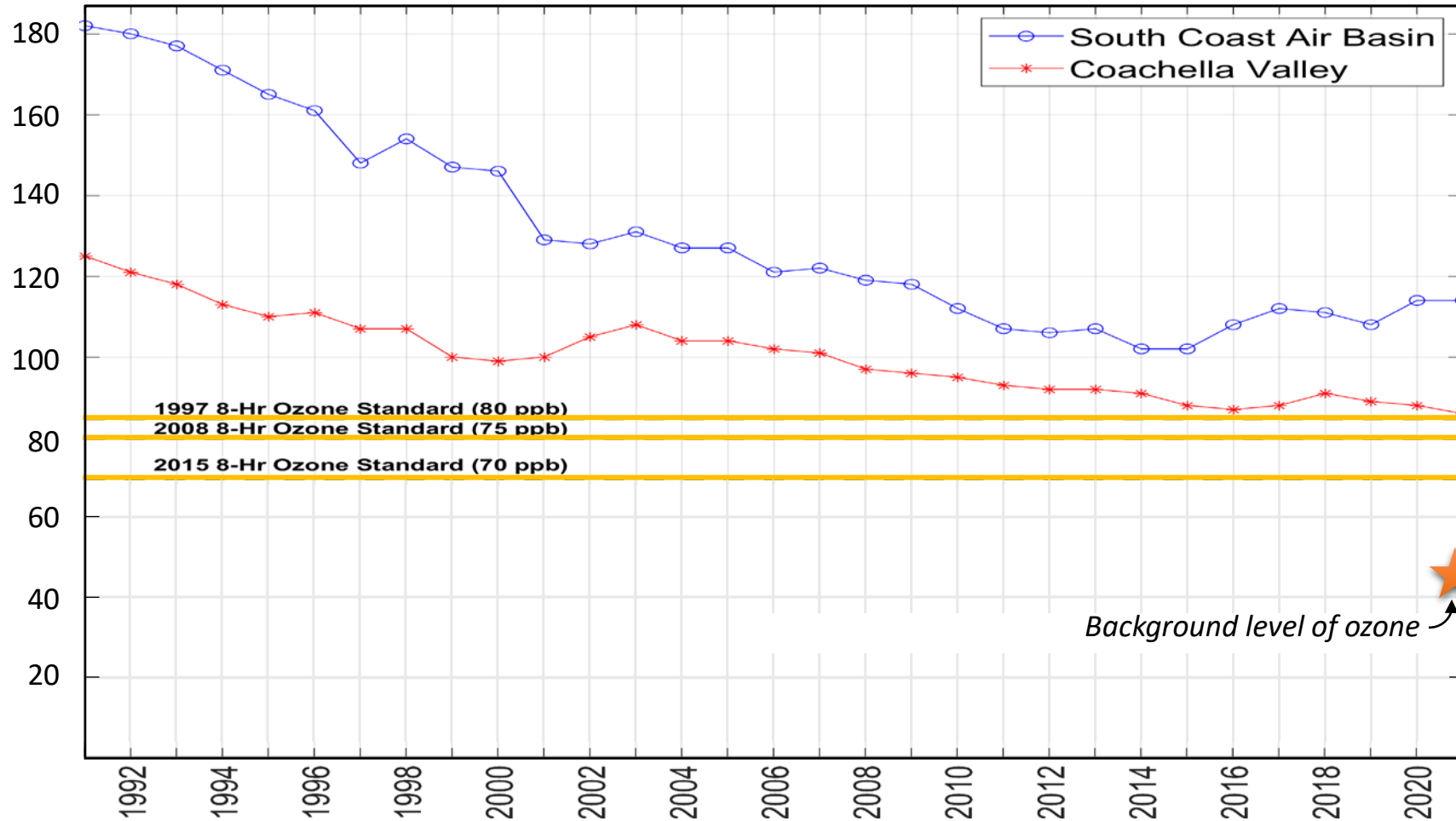
- An Air Quality Management Plan (AQMP) is the region’s blueprint on how it will attain air quality standards
- When U.S. EPA revises a National Ambient Air Quality Standard\*
  - South Coast AQMD is required to prepare an AQMP if the region does not meet the standard
  - Each plan is prepared for a specific standard and does not address all standards at once
- In 2015, U.S. EPA strengthened the ozone NAAQS from 75 to 70 parts per billion (ppb)
  - EPA does not consider costs when setting health-based standard
- 2022 AQMP focuses on 2015 8-hour ozone standard with attainment year in 2037\*\*



\*NAAQS cover ozone, particulate matter, lead, carbon monoxide, sulfur dioxide, and nitrogen dioxide

\*\* State standards also addressed, whereas upcoming deadlines for other standards (e.g., 2023 ozone deadline) not part of this plan

# Ozone Trends in the South Coast Air Basin\*

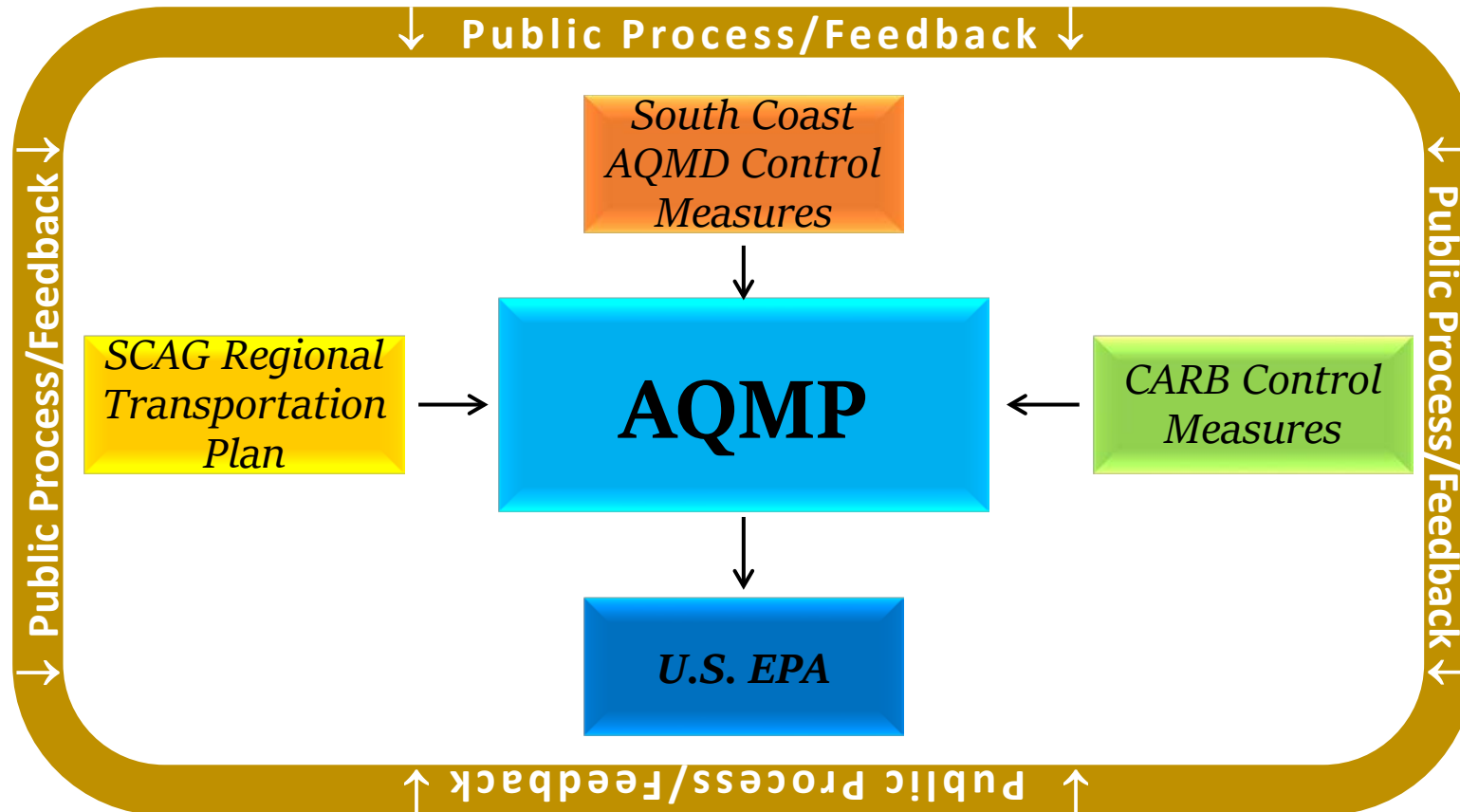


Poor meteorology and complex photochemistry have resulted in recent poor ozone air quality despite on-going emission reductions

Standards allow for some air pollution

Background level of ozone

# 2022 AQMP Input

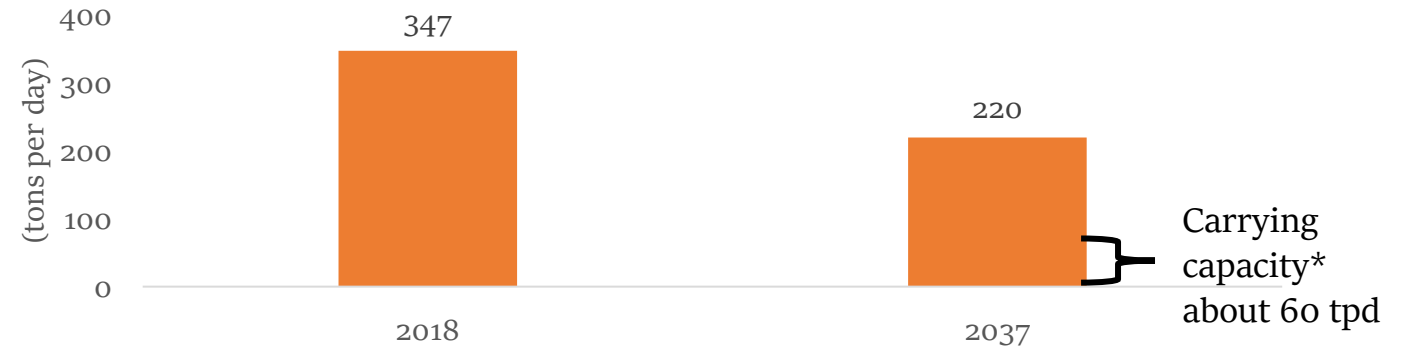


# Key Pollutants for Ozone Attainment

- NOx is key pollutant to attain ozone standards
- VOC reductions
  - Can reduce PM and can also reduce ozone at high NOx levels
  - Much less effective for reducing ozone at the low NOx levels needed for attainment

**No path for attainment from VOC reductions without substantial NOx reductions**

PRELIMINARY BASIN TOTAL NOX EMISSIONS  
(SUMMER PLANNING)

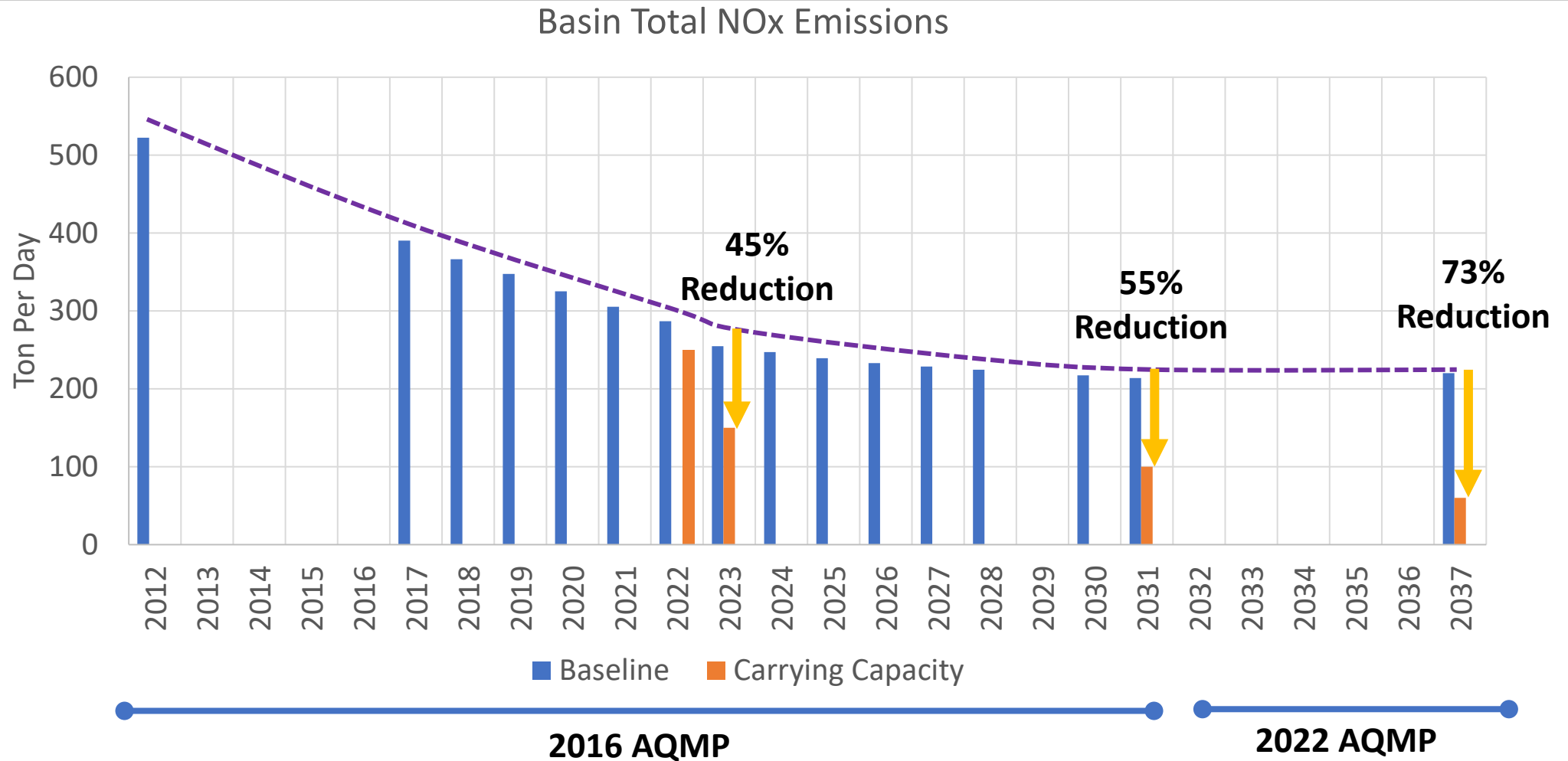


PRELIMINARY BASIN TOTAL VOC EMISSIONS  
(SUMMER PLANNING)



\*Carrying Capacity is maximum allowable NOx emissions to attain a standard

# NOx Emissions and Reduction Goals

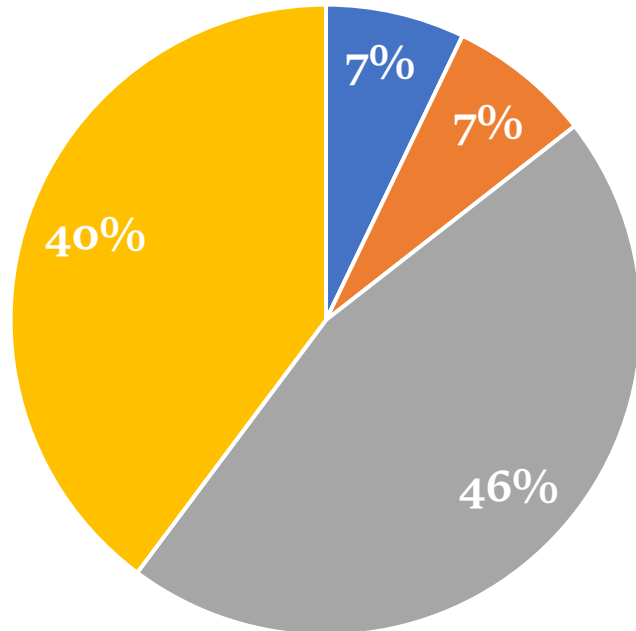


2016 AQMP emissions inventory for 2012 to 2031, and 2022 AQMP preliminary emissions inventory for 2037

# Distribution of Preliminary NOx Baseline Emissions in 2018 vs 2037

2018 NOx (Summer Planning)

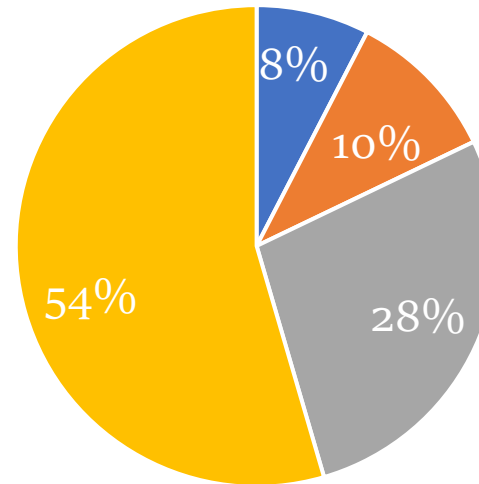
■ Point ■ Area ■ On-Road ■ Off-Road



347 tons per day

2037 NOx (Summer Planning)

■ Point ■ Area ■ On-Road ■ Off-Road



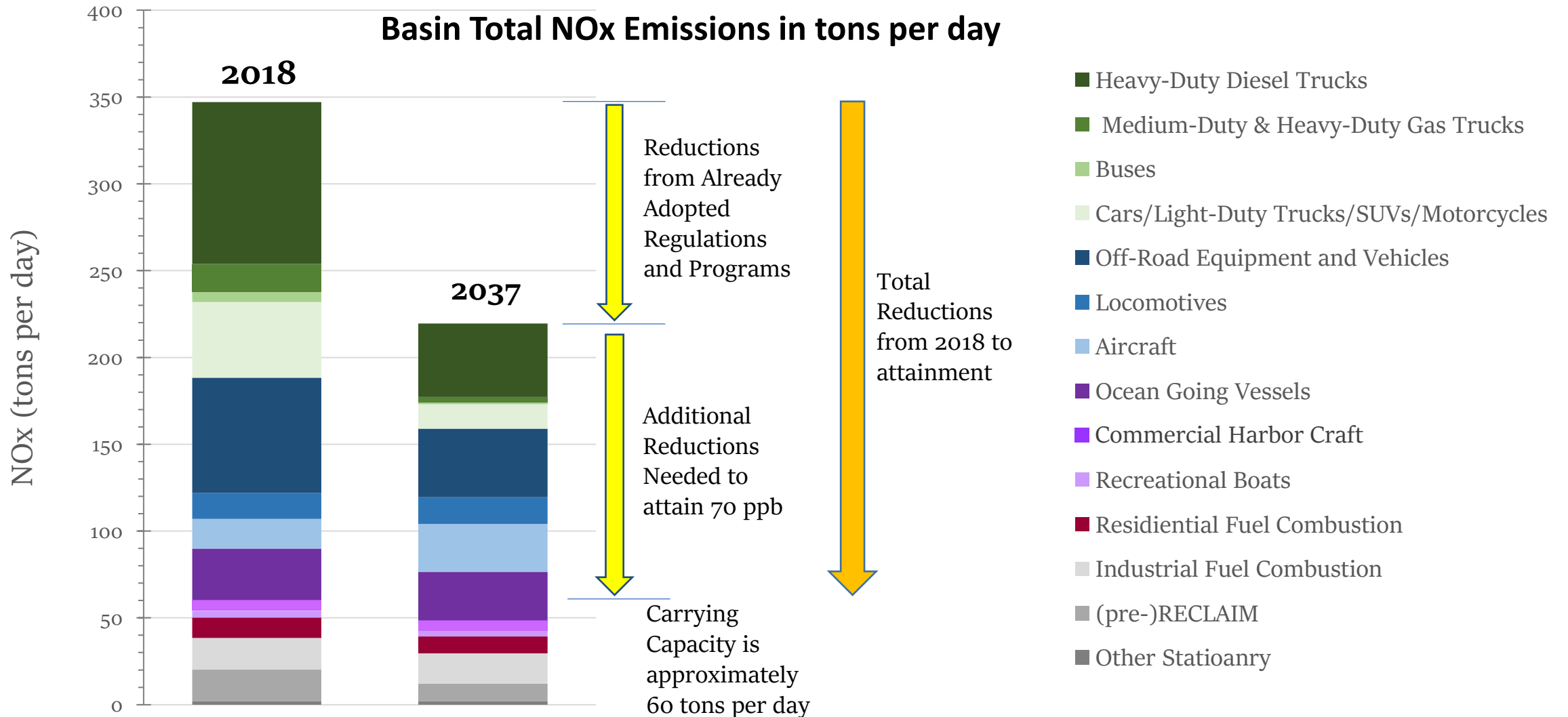
220 tons per day

*This ozone standard requires shifting focus beyond on-road and more to off-road sources*

These are Business-As-Usual (baseline) inventories, which reflects implementation of adopted regulations and programs



# NOx Reductions Needed for Attainment



# Is Attaining the Ozone Standard in 15 Years Possible?

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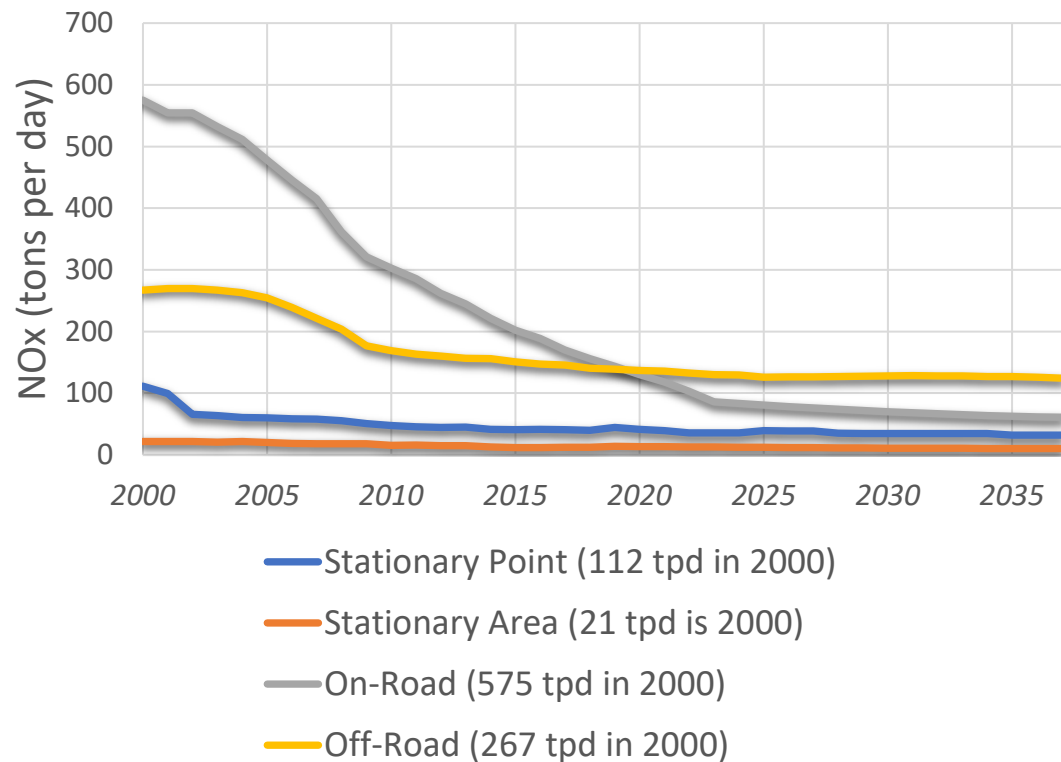
*Attaining  
this  
standard is  
possible,  
but...*

- *Will be difficult*
- *Cannot be achieved alone*
- *Will be expensive with existing technologies*
- *Will require flexibility provided by Clean Air Act*
  - *'Black Box'*

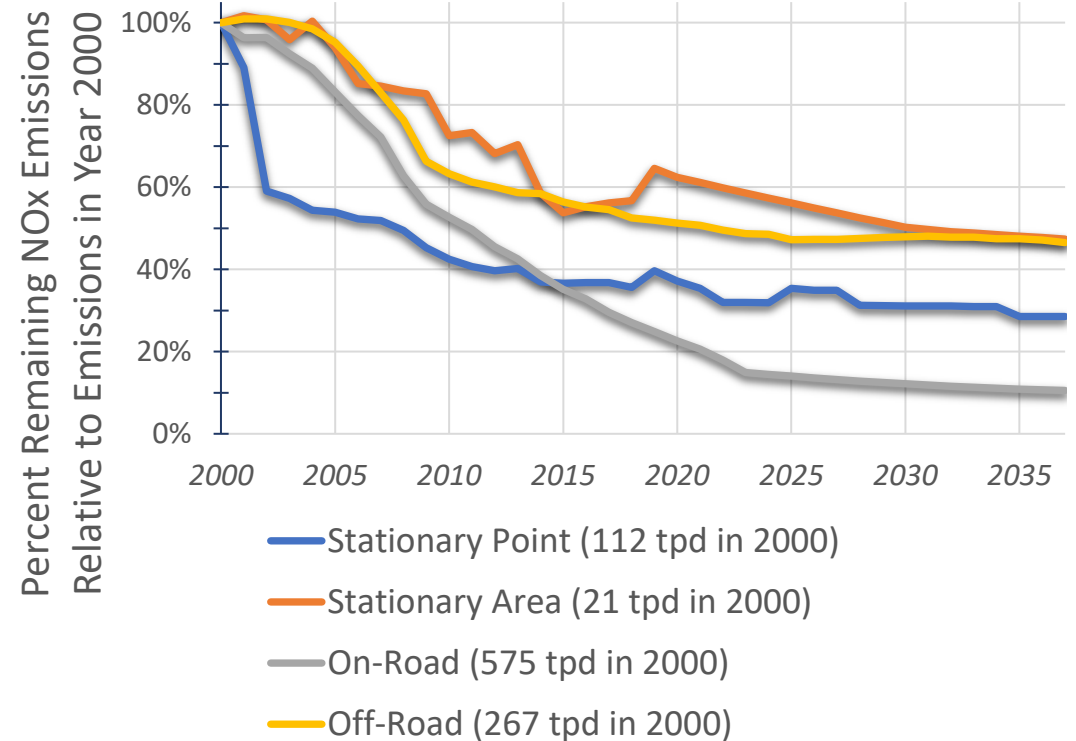
2037

# Historic and Projected Baseline NOx Emissions in South Coast

## Total NOx Emissions by Major Emission Category



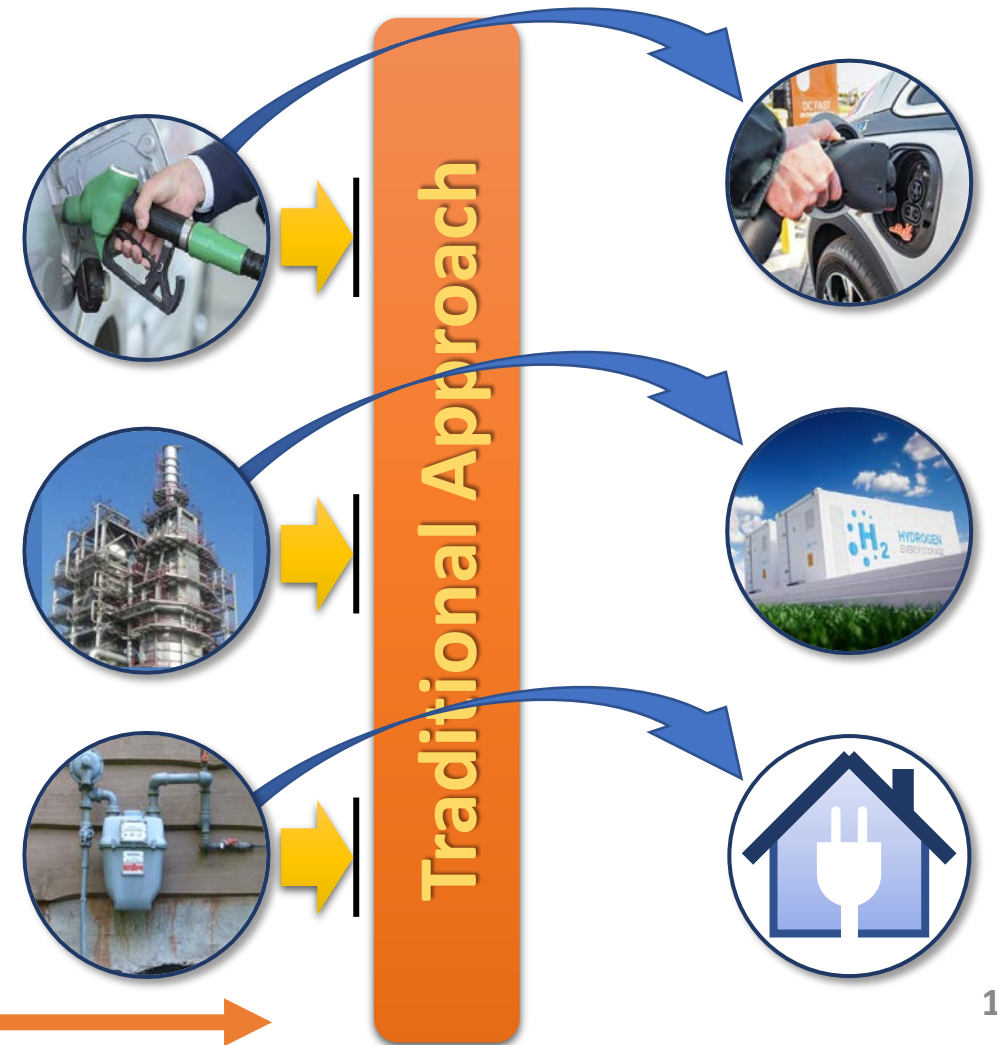
## Percent Remaining Emissions by Major Emission Category



# Traditional Air Quality Planning Won't Work

Traditional approach relies on additional tailpipe/exhaust stack controls, new engines technology, or fuel improvements tailored to individual use cases

*These traditional approaches on already highly controlled sources cannot achieve additional ~73% reduction in South Coast and must be bypassed wherever possible*



# Key Considerations on a Zero Emissions Approach

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- What does the pathway look like through time?



- Which fuels for which applications?

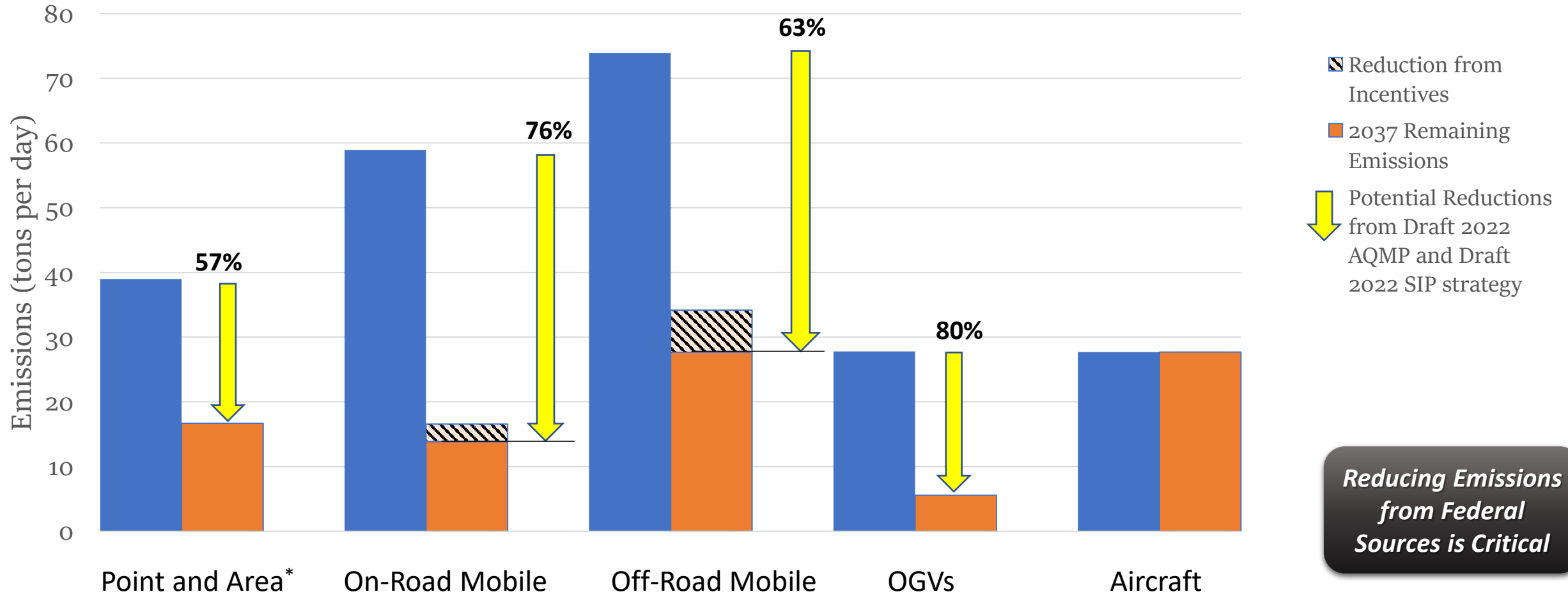


- How can this be made most affordable?



- Ensures adoption at scale, and available equitably

# Summary of Potential Approach to Reducing NOx by Major Source Category



\*Some incentives also anticipated for area sources, but not yet defined

# Anticipated Key Issues

---

## *Large Magnitude of Emission Reductions*

- Amount needed from Stationary & Mobile measures, Federal & State measures

## *Transition to Zero Emissions*

- Infrastructure (grid, hydrogen, reliability, affordability)
- Fuels pathway given earlier attainment dates for other standards

## *Building Electrification*

- Coordination with other agencies

# Federal and International Sources

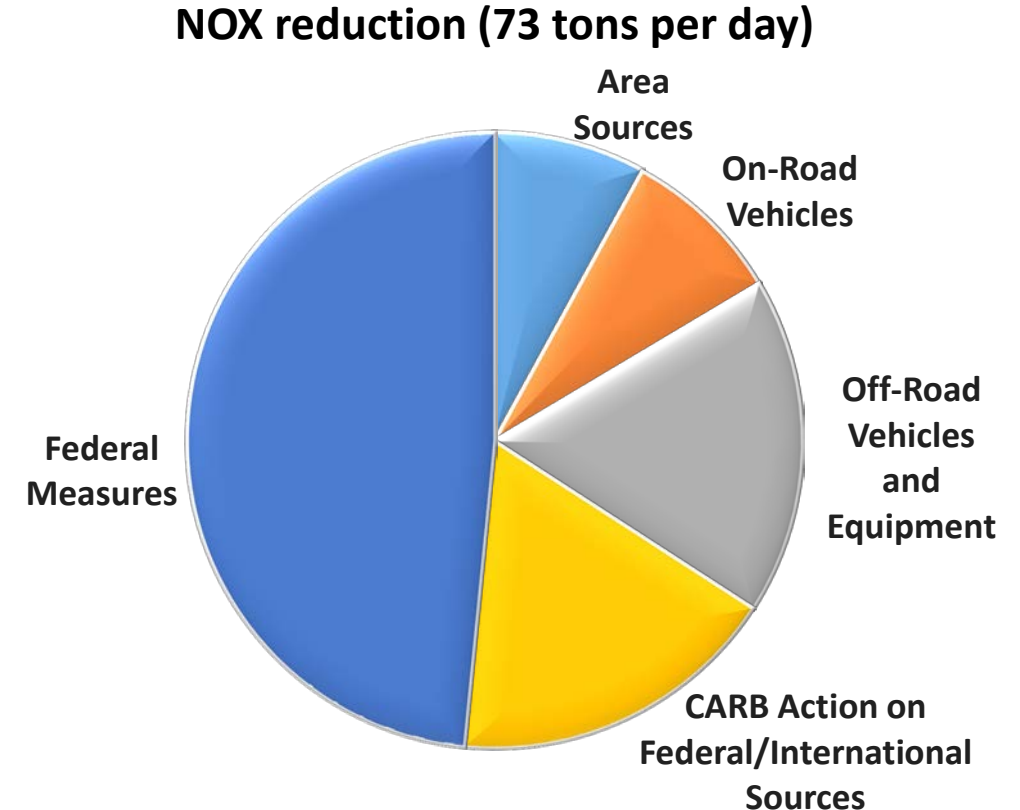
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- Approximately 1/3 of the 2037 baseline emissions inventory is regulated primarily under federal and international jurisdiction, with limited authority for CARB/South Coast AQMD
  - Ships, aircraft, locomotives
- Cannot assign responsibility to federal government to reduce emissions, even from federal sources
- Foreseeable emission reductions from SIP/AQMP are therefore limited for these categories – requires ‘black box’ flexibility
- Attainment is not possible without significant reductions from these sources



# CARB Measures

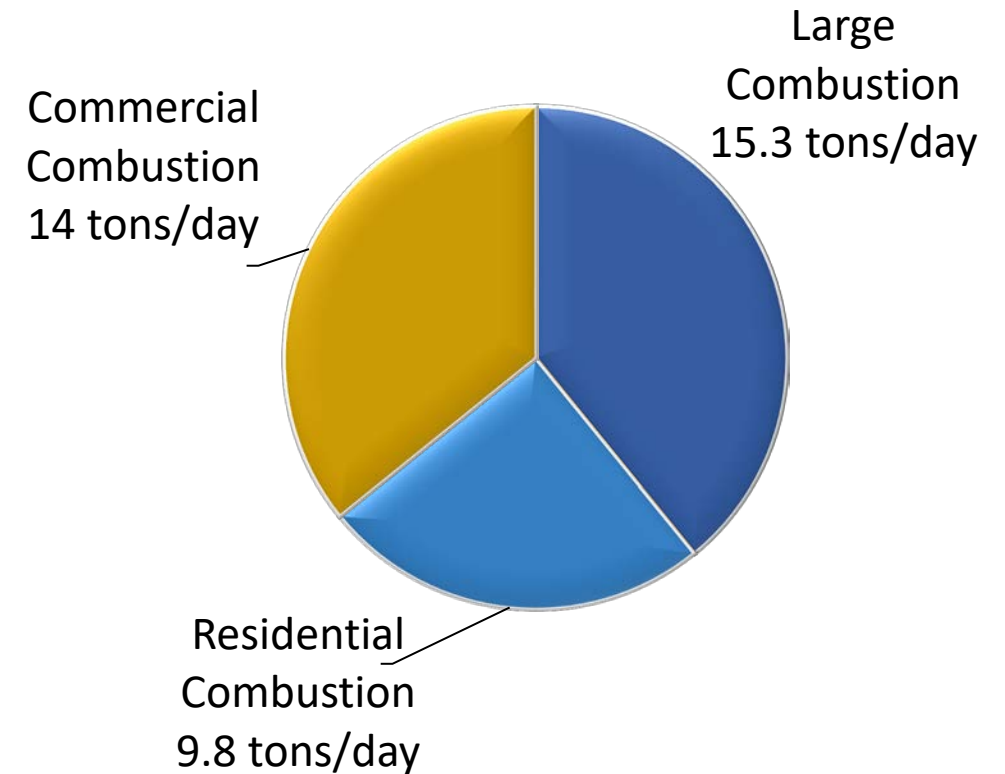
- Draft 2022 AQMP will include CARB measures for the following categories
  - Area sources (2 Measures)
  - On-Road Vehicles (3 Measures)
  - Off-Road Vehicles and Equipment (7 Measures)
  - CARB's measures for federally and internationally regulated sources (1 Measure)
  - Federally and internationally regulated sources that required federal action (5 Measures)



# 2037 Stationary & Area Source NOx Baseline Emissions

- Three main categories:
  - Residential Combustion Sources
  - Commercial Combustion Equipment
  - Large Combustion Equipment

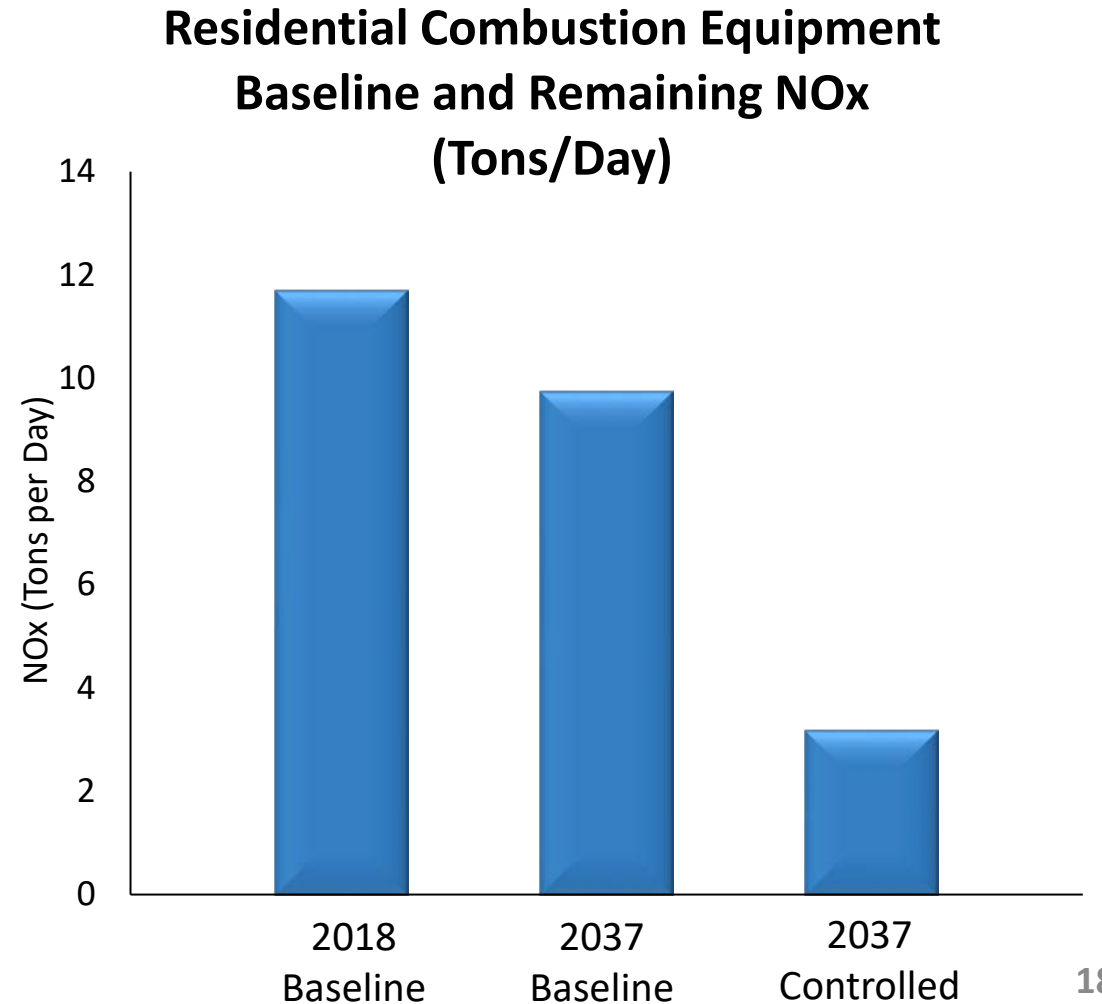
## 2037 NOx Baseline Emissions



**Total NOx: 39 Tons/Day**

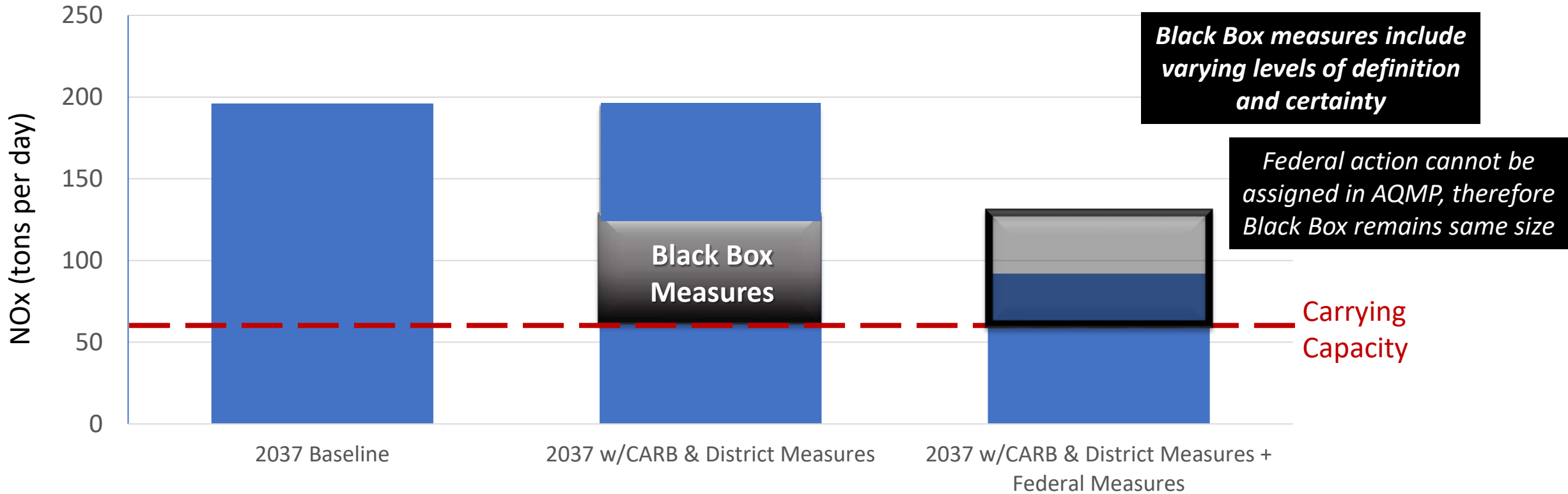
# Overview of Residential and Commercial Combustion Sources Control Strategy

- Residential combustion:
  - A combination of zero-emission and other low-NOx technology approaches
  - 2037 Goal: ~70 percent reduction
- Commercial combustion
  - A combination of zero-emission, near-zero, and other NOx combustion reduction technology approaches
  - 2037 Goal: ~70 percent reduction
- Coordination with other agencies is key



# Results of Draft Control Strategy

2037 South Coast NOx Emissions with CARB & South Coast AQMD Draft Measures and Federal Actions\*



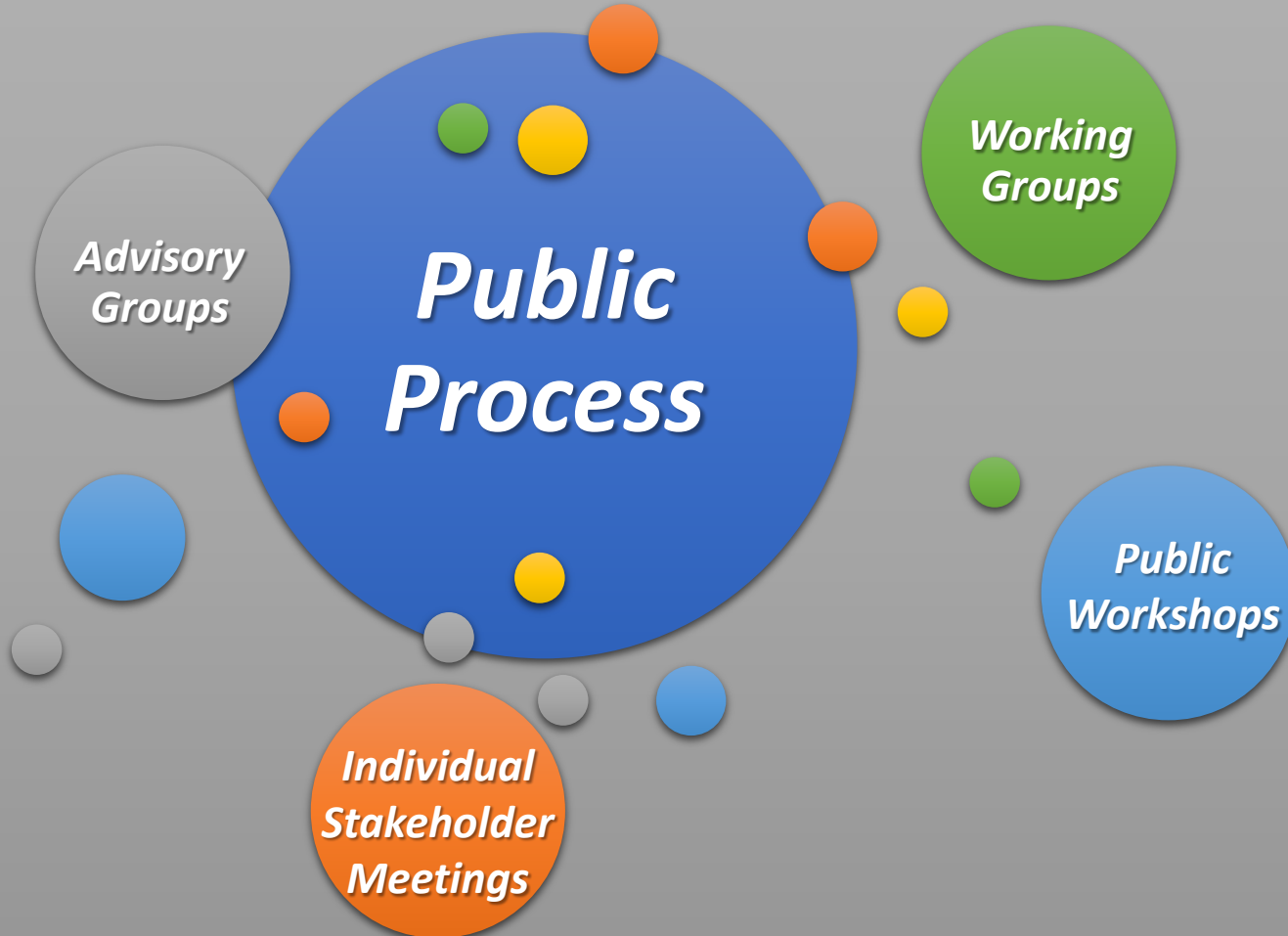
\*NOx ton/day from CARB's Draft SIP Strategy

# Other Key Issues

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- Coachella Valley
- Emission reductions in adjacent air basins can affect South Coast carrying capacity
- Cost-effectiveness and affordability

# Outreach



'Standard' Comprehensive AQMP Outreach



Additional Critical Outreach

# Next Steps

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[↑ Back to Agenda](#)

BOARD MEETING DATE: March 4, 2022

AGENDA NO. 21

REPORT: Administrative Committee

SYNOPSIS: The Administrative Committee held a meeting remotely on Friday, February 11, 2022. The following is a summary of the meeting.

RECOMMENDED ACTION:  
Receive and file.

Ben J. Benoit, Chair  
Administrative Committee

JW:cb

---

### **Committee Members**

Present: Chair Ben Benoit, Committee Chair  
Senator (Ret.) Vanessa Delgado, Vice Chair  
Mayor Michael Cacciotti  
Board Member Gideon Kracov

Absent: Supervisor Janice Rutherford

### **Call to Order**

Chair Benoit called the meeting to order at 10:00 a.m.

### **DISCUSSION ITEMS:**

1. **Board Members' Concerns:** There were no concerns to report.
2. **Chair's Report of Approved Travel:** There was no travel to report.
3. **Report of Approved Out-of-Country Travel:** There was no travel to report.
4. **Review March 4, 2022 Board Agenda:** Board Member Kracov asked when we will return to a hybrid meeting format. Wayne Nastri, Executive Officer, indicated the March Board meeting is expected to be in a hybrid format.



5. **Approval of Compensation for Board Member Assistant(s)/Consultant(s):**  
None to report.

6. **Update on South Coast AQMD Inclusion, Diversity and Equity Efforts:**  
Dr. Anissa Heard-Johnson, Diversity, Equity & Inclusion Officer, provided an update on agency efforts.

Dr. Heard-Johnson highlighted a Fabulous Female Friday event and provided updates on other events and meetings occurring in February, which included the Lunar New Year, African American Heritage month and monthly think tank. She indicated that we also addressed the Japanese Internment Commemoration through a virtual tour with the Japanese American National Museum and speaking with a camp survivor.

Dr. Heard-Johnson provided employee resource work group updates for employee recruitments and employee professional development. She also provided an update on Justice, Equity, Diversity and Inclusion Council meetings and trainings, as well as meeting with statewide equity colleagues as a Subject Matter Expert for their program development.

Chair Benoit thanked Dr. Heard-Johnson for highlighting Fabulous Female Fridays and the learning opportunities.

Vice Chair Delgado thanked Dr. Heard-Johnson for the work with other agencies and the collaboration in leading the effort of justice, equity, diversity and inclusion.

Harvey Eder, Public Solar Power Coalition, provided public comment on religion, Nazis, and anti-Semitism.

Chair Benoit commented on the tragedy of the Nazi events.

7. **Budget and Economic Outlook Update:** Jill Whynot, Chief Operating Officer, indicated that our revenue and expenditures continue to be aligned. We have seen higher numbers of permit applications week over week for the last several weeks, but applications are still approximately 20 percent lower than pre-pandemic levels. The vacancy rate remains about 17 percent despite hiring efforts and typically there are many retirements in the first quarter of the year.

Mayor Cacciotti asked about our recruitment process and incentives to keep employees from leaving the agency. He inquired if we conduct salary comparisons. Mr. Nastri indicated that we conduct salary reviews constantly. The

pandemic has shown that many employees can work remotely. Staff is working on a policy to address returning to the office, which will balance telework with the need to build our culture and collaborate together. Salaries must be commensurate with job duties and also reflect available resources.

Mayor Cacciotti suggested a future agenda topic about recruitment, retention and salaries.

Chair Benoit agreed with Mayor Cacciotti.

8. **Status Report on Major Ongoing and Upcoming Projects for Information Management:** Ron Moskowitz, Chief Information Officer/Information Management, reported that the 9<sup>th</sup> annual Dr. Martin Luther King, Jr. virtual event was successful. The Affordable Care Act Update for 2021 was deployed successfully in time for February processing. A new version of Rule 222 module for online application and web filing was deployed. This version allows applicants to submit and pay for applications and receive instantaneous approval of three types of equipment registrations and additional forms will be released later this year.
9. **South Coast AQMD's FY 2021-22 Second Quarter ended December 31, 2021 Budget vs. Actual (Unaudited):** Sujata Jain, Chief Financial Officer/Finance, provided a presentation on the second quarter budgeted versus actual results for the quarter that ended on December 31, 2021. She provided a summary of the fiscal year 2021/2022 budget and showed revenue and expenditures, as well as comparisons from prior fiscal years during the second quarter. Ms. Jain also provided a five-year projection. She indicated that we are on trend and overall aligned, and that the 5-year projection for the reserve balance is about 20 percent. Staff is working on bringing a balanced budget to the Board in May or June for consideration.

Mayor Cacciotti inquired about the CAPES fund balance and why additional money is needed. Ms. Jain explained the history of funding sources for the program. Lisa Tanaka O'Malley, Assistant Deputy Executive Officer/Legislative, Public Affairs & Media, reported that the CAPES program is going well and that work on new educational videos is in progress. The program is completely virtual right now, there are videos available online and outreach is occurring to schools in all four counties.

Mayor Cacciotti requested a link or copy of the videos.

**ACTION ITEMS:**

10. **Transfer Funds Between Major Objects and Execute Purchase Orders for AB 617 Implementation:** Andrea Polidori, Director of Monitoring and Analysis/Science & Technology Advancement, reported this action is to transfer funds between major objects and to issue sole-source purchase orders up to \$200,000 to replace two existing multi-metals monitoring systems. Mr. Polidori indicated that these instruments will be used in AB 617 communities as part of their community air monitoring plans.

Chair Benoit inquired about the older multi-metal monitoring systems. Mr. Polidori indicated that the vendor will give credit for returning the old equipment.

Moved by Cacciotti; seconded by Delgado, unanimously approved.

Ayes: Benoit, Delgado, Cacciotti, Kracov  
Noes: None  
Absent: Rutherford

11. **Authorize Purchase of Maintenance and Support Services for Servers and Storage Devices:** Mr. Moskowitz reported this action is to obtain approval for the purchase of hardware and software maintenance and support services for servers and storage devices from Hewlett Packard for one year. He indicated that the servers and storage applications that are the current support system for all security, core activities and main support will expire on April 30, 2022 and the funds are available in the budget.

Moved by Cacciotti; seconded by Benoit, unanimously approved.

Ayes: Benoit, Delgado, Cacciotti, Kracov  
Noes: None  
Absent: Rutherford

12. **Transfer and Appropriate Funds from Interest Earned from Special Revenue Funds to General Fund and Transfer Funds to Information Management's Budget to Support South Coast AQMD Operations, and Close Special Revenue Fund:** Mr. Moskowitz reported this action is to transfer funds from interest earned from four Special Revenue Funds to the General Fund and the closure of the El Monte Court Settlement Fund. He indicated this funding will be used to support critical cybersecurity projects and critical system upgrades and support.

Chair Benoit requested additional information on how the funds will be used. Mr. Moskowitz indicated that a large portion of the funding would support upgrading our CLASS system and to move off old legacy software. Chair Benoit indicated he looked forward to the upgraded systems.

Moved by Cacciotti; seconded by Benoit, unanimously approved.

Ayes: Benoit, Delgado, Cacciotti, Kracov  
Noes: None  
Absent: Rutherford

### **WRITTEN REPORT:**

13. **Environmental Justice Advisory Group Minutes for the October 22, 2021 Meeting:** The report was acknowledged and received.
14. **Local Government & Small Business Assistance Advisory Group Minutes for the December 10, 2021 Meeting:** The report was acknowledged and received.

### **OTHER MATTERS:**

15. **Other Business:** There was no other business to report.
16. **Public Comment:** Mr. Eder provided public comment on solar power and litigation.

Chair Benoit commented on closed captioning, mentioned that SCAG has started using closed captioning in public meetings, and asked Mr. Moskowitz for follow up on this as an option.

17. **Next Meeting Date:** The next regular Administrative Committee meeting is scheduled for March 11, 2022 at 10:00 a.m.

### **Adjournment**

The meeting adjourned at 10:47 a.m.

### **Attachments**

Environmental Justice Advisory Group Minutes for the October 22, 2021 Meeting  
Local Government & Small Business Assistance Advisory Group Minutes for December 10, 2021



# South Coast Air Quality Management District

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

## **ENVIRONMENTAL JUSTICE ADVISORY GROUP FRIDAY, OCTOBER 22, 2021 MEETING MINUTES**

### **MEMBERS PRESENT:**

Senator Vanessa Delgado (Ret.), EJAG Chair (Board Member)  
Supervisor Janice Rutherford, EJAG Vice Chair (Board Member)  
Veronica Padilla-Campos (Board Member)  
Rhetta Alexander, Valley Interfaith Council  
Manuel Arredondo, Coachella Valley School District, Retiree  
Angelica Baldares Sierra Club  
Suzanne Bilodeau, Knott's Berry Farm  
Dr. Afif El-Hasan, American Lung Association  
Mary Figueroa, Riverside Community College  
Angela Garcia, Department of Toxic Substance Control  
Kareem Gongora, San Bernardino County Planning Commission  
Ana Gonzalez, Center for Community Action and Environmental Service  
Dr. Monique Hernandez, California State University, Los Angeles  
David McNeill, Baldwin Hills Conservancy  
Donald Smith, 136th Street Block Club

### **MEMBERS ABSENT:**

Mayor Pro-Tem Ben Benoit, Board Member  
Elizabeth Alcantar, City of Cudahy  
Dr. Lawrence Beeson, Loma Linda University, School of Public Health  
Paul Choe, Korean Drycleaners & Laundry Association  
Kerry Doi, Pacific Asian Consortium in Employment  
Dr. Jill Johnston, University of Southern California  
Humberto Lugo, Community Member  
Daniel Morales, National Alliance for Human Rights  
Rafael Yanez, Community Member

### **OTHERS PRESENT:**

Ernesto Villasenor

**SOUTH COAST AQMD STAFF:**

Derrick Alatorre, Deputy Executive Officer  
Matt Miyasato, Deputy Executive Officer  
Daphne Hsu, Principal Deputy District Counsel  
Alicia Lizarraga, Public Affairs Manager  
Maryam Hajbabaei, AQ Specialist  
Kevin Orellana, Senior Enforcement Manager  
Julie Franco, Sr. Public Information Specialist  
Brandee Keith, Secretary

**Agenda Item #1: Call to Order/Opening Remarks**

Vice Chair Janice Rutherford called the meeting to order at 12:03 p.m. Ms. Julie Franco read the housekeeping items and then took roll call.

**Agenda Item #2: Review of Follow-Up/Action Items**

Mr. Derrick Alatorre reviewed the action items from the August 27, 2021 meeting:

- **Staff was asked to agendize an update of the School Air Filtration Program.** An update on the program item #5 on today's agenda.
- **Staff was asked to send members a list of the 96 schools in the School Air Filtration Program.** The list of the schools in the program was emailed to Members on October 15, 2021.
- **Staff was asked to provide artwork details of EJ Conference.** Information was emailed to Members on October 5, 2021.
- **Staff was asked to provide an update on the San Bernardino Valley College EJ webinar for students and expanding it to other colleges.** An update on the EJ Discussion will be agendized to a future meeting in 2022.
- **Staff was asked to follow up with Ms. Figueroa regarding a South Coast AQMD guest speaker at a Casa Blanca community meeting.** On October 1, staff spoke with Ms. Figueroa regarding a South Coast AQMD guest speaker and followed-up with an email on October 5, 2021.
- **Staff to agendize an overview on rendering plants for an upcoming meeting.** An overview on rendering facilities is Item #6 on today's agenda.

**Agenda Item #3: Approval of August 27, 2021 Meeting Minutes**

Chair Delgado called for the approval of the August 27, 2021 meeting minutes. Mr. Kareem Gongora moved to approve the minutes and Ms. Ana Gonzalez seconded the motion. The minutes were approved.

**Agenda Item #4: 2022 Goals and Objectives**

Advisory Group Members reviewed and discussed 2022 Goals and Objectives. Supervisor Janice Rutherford suggested the Air Quality Management Plan (AQMP) be included in the Goals and Objectives.

Mr. Manuel Arredondo motioned to approve the 2022 Goals and Objectives, as amended to include the AQMP. Mr. David McNeill seconded the motion. The Goals and Objectives were approved as amended.

**Agenda Item #5: Update of School Air Filtration Program**

Dr. Maryam Hajbabaei presented an update on the school air filtration projects.

Chair Delgado asked whether additional funding from CARB would be assigned to the AB 617 communities for air filtration. Staff advised that the AB 617 program is a community driven process, where the Community Steering Committees prioritize what projects to fund in their communities.

Dr. Afif El-Hassan expressed interest in the effects of air filtration on student absenteeism and other potential benefits. Dr. El-Hassan offered his assistance in analyzing data. Chair Delgado asked if school districts would provide records to assess potential impacts on student attendance. Dr. Hajbabaei indicated she would look into this request.

**Action Item: Staff to request attendance records from school districts participating in the School Air Filtration Program.**

Ms. Angela Garcia asked how residences were prioritized for the pilot air filtration study. Dr. Hajbabaei responded that South Coast AQMD is working with community organizations to identify residences who would like to participate based on criteria such as proximity to railyards. Ms. Garcia inquired about the type of data that will be collected from the pilot study. Dr. Hajbabaei advised that particulate matter and black carbon data would be collected from two homes because budget is limited.

Dr. Monique Hernandez asked for a description of the types of filtration units used in the classrooms. Dr. Hajbabaei responded that the contractors analyze the site and recommend appropriate filtration for either HVAC panel filters and/or portable units.

Supervisor Janice Rutherford asked if there was information on why schools declined air filtration and whether there were follow-up efforts to determine if their issues could be addressed. Dr. Hajbabaei advised that some funds utilized for air filtration projects must be used in specific communities and other air filtration projects are limited to 3- to 5-years which can deter schools from participating. Dr. Matt Miyasato explained that he believes the cause for hesitation from schools is due to cost. Supervisor Rutherford requested a list describing the equity of the schools selected and a list of those schools that do not want to participate.

**Action Item: Staff to provide Supervisor Janice Rutherford information on school participation in the School Air Filtration Program, their geographical area, and a list of those schools that have declined to participate in the program.**

Mr. Kareem Gongora asked whether South Coast AQMD was able to use California Energy Commission (CEC) or federal funds to support the air filtration program. Though South Coast AQMD has not received CEC funds for this project, schools have been able to apply for them to put toward such projects.

Board Member Padilla-Campos asked how participation in the program is decided and outreach conducted. Dr. Miyasato explained that in the case of Supplemental Environmental Project (SEP) funds, South Coast AQMD prioritizes schools near roadways where most emissions occur. AB 617 funds are allocated for schools according to the greatest needs near traffic.

Supervisor Janice Rutherford asked whether Indirect Source Rule (ISR) mitigation funds were anticipated to be put toward school air filtration projects. Dr. Miyasato stated that the funds are prioritized based on community input and interest.

Ms. Ana Gonzales noted that many school district have received funding to implement air filtration in classrooms and suggested any additional South Coast AQMD monies be directed to schools that may not have received any money.

#### **Agenda Item #6: Overview of Rendering Plants**

Mr. Kevin Orellana provided an overview on rendering plant facilities. Mr. Orellana explained the rendering process and the location of the five rendering facilities under South Coast AQMD jurisdiction. Mr. Orellana described the investigation process surrounding rendering plants to establish a public nuisance under Rule 415 – Odors from Rendering Facilities.

Chair Delgado noted a contrast between the odor mitigation efforts at the Darling Ingredients Inc. (Darling) plant and the Baker Commodities Inc. (Baker) plant and asked what sort of penalty had been applied to the latter. Baker is not as far along in the process to install odor-mitigating equipment, which has contributed to the odor problem. South Coast AQMD issued a Notice of Violation to Baker for failing to adequately address odor-causing conditions. Chair Delgado asked whether the Order for Abatement had originated with South Coast AQMD and Ms. Daphne Hsu clarified that petitions for orders for abatement are heard before the South Coast AQMD Hearing Board.

Ms. Angela Garcia expressed concern that many residents may not know the complaint process and suggested alternative outreach ideas for the community. She asked who reviews the permit to construct applications for Rule 415. Mr. Orellana stated that because there is air quality control equipment involved, applications are reviewed by South Coast AQMD's Permitting Department. If there are CEQA implementations, those are assessed as well.

Ms. Garcia also asked what the timeline is for the facilities to apply for permits to construct and how long is South Coast AQMD's approval process for the permits. Mr. Orellana stated that the permits for the rendering plants have already been approved. He also stated that there is a Spanish line for people to call.

Chair Delgado expressed concern that many residents feel there is no reason to call in complaints and that nothing will be done. Mr. Orellana expressed the importance of calling, as the number of



calls affects South Coast AQMD's ability to respond. Mr. Alatorre added that South Coast AQMD can always improve outreach efforts but stressed the importance of calling in complaints.

Mr. David McNeill asked for a breakdown on the number of investigations relative to the number of complaints, and the penalties issued in response. Mr. Orellana stated that South Coast AQMD responds to every complainant, though some complainants prefer to submit their complaint anonymously. He also stated that penalties are levied based on the type of violation as well as whether there have been repeated violations, and statutory maximums increase over time.

Board Member Padilla-Campos asked for the specific sizes of the smallest and the largest plant. She also asked if the Coast Packing Co. (Coast) facility is exempt from enforcement until it begins to take in more material. Mr. Orellana said that the size designations for the facilities are based on the volume of material processed by each plant and that the facility is not exempt. If there are odors coming from the facility, they will still investigate.

Board Member Padilla-Campos expressed concern that the burden of reporting is placed on the community rather than the facilities. Mr. Orellana said that while public nuisance investigations are reliant upon resident complaints, discoverable onsite violations are met with enforcement when they are found.

Board Member Padilla-Campos asked how long it takes to resolve an odor issue. Mr. Orellana replied that the goal is immediate resolution if possible but for larger or long-term odor issues, facilities may need to conduct a cause analysis, and South Coast AQMD would give the facility a timeline by which to comply with mitigation of the odor.

Ms. Suzanne Bilodeau asked how successful South Coast AQMD inspectors are in identifying sources of odors and subsequent enforcements. Since the implementation of the rule in 2017, South Coast AQMD has issued 21 Notices to Comply and 26 Notices of Violation.

Mr. Kareem Gongora asked whether the rule would rely on self-reporting, as the Warehouse ISR. Mr. Orellana answered that because rendering plants are defined as stationary sources, South Coast AQMD is authorized to regulate them without relying on self-reporting.

Mr. McNeill commented that Vernon has a Public Health Department and expressed hope that South Coast AQMD and local agencies partner and collaborate to hold rendering facilities accountable.

#### **Agenda Item #7: Member Updates**

Mr. Kareem Gongora expressed interest in hearing more about Proposed Rule 429.1 – Startup and Shutdown Provisions at Petroleum Refineries and Related Operations scheduled to go before the Governing Board on November 5, 2021.

**Action Item: Staff to send any publicly available documents pertaining to Rule 429.1 to members.**

Ms. Mary Figueroa thanked staff for their involvement in arranging a speaker for the Casablanca community. She shared the challenges of planning a meeting when interested members of the

community do not have reliable access to the internet and encouraged awareness of these challenges in outreach and communication when outreaching to these communities.

Ms. Ana Gonzalez requested an agenda item for the next meeting to present and discuss the Proposed Intermodal ISR Rule 2306, to possibly formulate a group response and potential recommendation to the Governing Board.

**Action Item: Staff to agendize Intermodal ISR Proposed Rule 2306 on the next agenda.**

**Agenda Item #8: Other Business**

Ms. Alicia Lizarraga shared information about the upcoming first hybrid Environmental Justice Conference on October 27, 2021 and encouraged group members to attend and invite others. Chair Delgado encouraged members to share the information with their networks.

**Action Item: Staff to provide members with the Environmental Justice Conference toolkit.**

**Agenda Item #9: Public Comment Period**

Mr. Ernesto Villaseñor expressed interest in the odor issues related to the Dominguez Channel.

**Action Item: Staff to provide information to EJAG on the Dominguez Channel.**

**Next Meeting Date**

The next regular EJAG meeting is on Friday, January 28, 2022 at 12:00 pm.

**Adjournment**

The meeting was adjourned at 1:51 pm.



# South Coast Air Quality Management District

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

## LOCAL GOVERNMENT & SMALL BUSINESS ASSISTANCE ADVISORY GROUP FRIDAY, DECEMBER 10, 2021 MEETING MINUTES

### MEMBERS PRESENT:

Mayor Carlos Rodriguez, LGSBA Chairman (Board Member)  
Supervisor Janice Rutherford (Board Member)  
Felipe Aguirre  
Mayor Rachelle Arizmendi, City of Sierra Madre  
Paul Avila, P.B.A. & Associates  
Geoffrey Blake, Metal Finishers of Southern California  
Todd Campbell, Clean Energy  
LaVaughn Daniel, DancoEN  
John DeWitt, JE DeWitt, Inc.  
Bill LaMarr, California Small Business Alliance  
Eddie Marquez, Roofing Contractors Association  
Rita Loof, RadTech International  
David Rothbart, Los Angeles County Sanitation Districts

### OTHERS PRESENT:

Mark Abramowitz  
Erin Berger, SoCal Gas  
Harvey Eder  
Matt Holder, Board Member Consultant (*Rodriguez*)  
Debra Mendelsohn, Board Member Consultant (*Rutherford*)

### SOUTH COAST AQMD STAFF:

Jill Whynot, Chief Operating Officer  
Derrick Alatorre, Deputy Executive Officer  
Sarah Rees, Deputy Executive Officer  
Daphne Hsu, Principal Deputy District Counsel  
Elaine-Joy Hills, Air Quality Specialist  
Anthony Tang, Information Technology Supervisor  
Paul Wright, Senior Information Technology Specialist  
Aisha Reyes, Administrative Assistant

### Agenda Item #1 – Call to Order/Opening Remarks

Chair Carlos Rodriguez called the meeting to order at 11:31 a.m.

### Agenda Item #2 – Approval of November 12, 2021 Meeting Minutes

Chair Rodriguez called for approval of the November 12, 2021 meeting minutes.

Mr. Bill LaMarr suggested sending draft minutes to advisory group members for review prior to posting in the agenda. The recommendation will be taken into consideration per Chair Rodriguez.

A motion to approve the minutes was made by Mr. LaMarr; seconded by Mr. Geoffrey Blake; unanimously approved.

Ayes: Aguirre, Arizmendi, Blake, Campbell, Daniel, DeWitt, LaMarr, Loof, Rothbart, Rutherford, Rodriguez

Noes: None

Abstain: None

Absent: Avila, Marquez

### **Agenda Item #3 – Review of Follow-Up/Action Items**

Mr. Derrick Alatorre reviewed the follow-up and action items from the previous meeting.

Mayor Rachelle Arizmendi asked if the advisory group needed to take action on meeting virtually every 30 days. Ms. Daphne Hsu indicated the Governing Board has taken action that applies to advisory groups and committees.

No public comment.

### **Agenda Item #4 – Approval of Local Government & Small Business Assistance Advisory Group 2021 Accomplishments and Seek Items for 2022 Goals & Objectives**

Mr. Alatorre presented a summary of the 2021 accomplishments and 2022 goals and objectives of the LGSBA Advisory Group.

Mr. LaMarr suggested that California Air Resources Board's (CARB) forklift regulation be added as an agenda item to monitor and to enlist CARB to provide periodic briefings.

Mr. John DeWitt proposed adding the measuring of hard costs against results to the goals and objectives; for example, the costs of vapor recovery, double piping, and replacement of single-wall tanks to double-wall tanks. Mr. Alatorre stated that his understanding of the request is that it would be a cost benefit analysis whenever a rule is implemented, which he will work with staff on from the Planning, Rule Development and Area Sources (PRDAS) department, as well as Chair Rodriguez.

Ms. Rita Loof 1) requested an update on Rule 219; 2) offered a presentation by RadTech International on the latest developments in manufacturing, metal finishing, inks, coatings, and disinfectants; and 3) requested a presentation and update on CARB's Environmental Justice Advisory Committee that deals with the Assembly Bill (AB) 32 Scoping Plan.

Mr. David Rothbart requested a presentation on Rule 317, which is listed on the second page of the goals.

Mr. LaMarr referred to Mr. DeWitt's earlier proposal and indicated that the request may be for a retrospective analysis and not so much a cost benefit analysis. What Mr. LaMarr has in mind is a look back of five to seven years where staff presents a rule and attributes certain costs and benefits and will assert to the Board that the rule will eliminate certain toxics or emissions. Chair Rodriguez asked for a prioritization or specifics for the request, which will be further discussed in the January 2022 meeting.

Direction was made to the LGSBA members to email their top priorities regarding this item to Ms. Elaine Hills and Ms. Van Doan by January 7, 2022 and agendaize this item for January 2022.

***Action Item #1:** Put on agenda a discussion on LGSBA priorities associated with the retrospective analysis requested by Mr. DeWitt and Mr. LaMarr.*

Mayor Arizmendi made a motion to approve the 2021 accomplishments and 2022 goals and objectives, reflecting the directions and proposals of the advisory group members, with the exception of the retrospective analysis topic, which will be discussed in the January 2022 meeting.

Mr. Alatorre added that this motion also includes approving the 2021 accomplishments. Ms. Hsu stated that the additions today were Mr. LaMarr's request to add forklift regulations and Ms. Loof's request for updates on Rule 219 and AB 32. Ms. Loof stated she also wanted to add the presentation by industry on technology.

Mr. Todd Campbell requested to include the port MOU in the agenda.

Mr. Felipe Aguirre requested a discussion on the odor issues in the City of Vernon, update on rule implementation, and a briefing on the status of Quemetco.

Moved by Mayor Arizmendi; seconded by Ms. Loof; unanimously approved.

Ayes: Aguirre, Arizmendi, Avila, Blake, Campbell, Daniel, DeWitt, LaMarr, Loof, Marquez, Rodriguez

Noes: None

Abstain: None

Absent: Rothbart, Rutherford

Mr. Harvey Eder made public comment on the Environmental Justice AB 32 Scoping Plan, legislative analysis, and climate change.

#### **Agenda Item #5 – Monthly Report on Small Business Assistance Activities**

Mr. Eder made public comment.

#### **Agenda Item #6 – Monthly Status Report on Rule 2305 Implementation: Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program**

Chair Rodriguez stated that due to Brown Act, questions or interest on the status of the WAIRE program should be directed to the Governing Board and/or Mobile Source Committee. Short comments are allowed according to Ms. Hsu.

Mr. Campbell asked what is involved in a warehouse operations notification report. Ms. Jill Whynot responded that information on WAIRE program is available on South Coast AQMD's website. Chair Rodriguez stated he made a request that Mobile Source Committee have regular updates on this matter.

Mr. Eder made public comment on Environmental Justice, particulate matter, and solar energy value.

#### **Agenda Item #7 – Other Business**

Mr. Alatorre notified the LGSBA advisory group members of the 2022 meeting dates.

Mr. Blake requested a discussion on the current approach to rulemaking as it applies to Rule 617 with regards to costs associated with continuous air monitoring requirements in the January 2022 meeting.

*Action Item #2: Put on agenda a discussion on the approach to rulemaking associated with continuous air monitoring requirements.*

**Agenda Item #8 – Public Comment**

Mr. Eder made public comment on community choice segregation.

**Agenda Item #9 – Next Meeting Date**

The next regular LGSBA Advisory Group meeting is scheduled for Friday, January 14, 2022 at 11:30 a.m.

**Adjournment**

The meeting adjourned at 1:09 p.m.

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BOARD MEETING DATE: March 4, 2022

AGENDA NO. 22

REPORT: Investment Oversight Committee

SYNOPSIS: The Investment Oversight Committee held a meeting remotely on Friday, February 18, 2022. The following is a summary of the meeting.

RECOMMENDED ACTION:  
Receive and file.

Michael A. Cacciotti, Chair  
Investment Oversight Committee

SJ:gp

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### **Committee Members**

Present: Mayor Pro Tem Michael Cacciotti, Chair  
Richard Dixon  
Brent Mason  
Patrick Pearce

Absent: Senator Vanessa Delgado (Ret.), Vice Chair  
Board Member Veronica Padilla-Campos

### **Call to Order**

Council Member Michael Cacciotti called the meeting to order at 12:00 p.m.

### **DISCUSSION ITEMS:**

1. *Quarterly Report of Investments:* The Committee reviewed the quarterly investment report that was provided to the Board. By December 31, 2021, the South Coast AQMD's weighted average yield on total investments of \$1,152,480,217.55 from all sources was 0.47%. The allocation by investment type was 97.0% in the Los Angeles County Pooled Surplus Investment Fund (PSI) and 3.0% in the State of

California Local Agency Investment Fund (LAIF) and South Coast AQMD's Special Purpose Investments (SPI). The one-year Treasury Bill rate as of December 31, 2021 was 0.38%.

2. Financial Market Update: Richard Babbe from PFM Asset Management provided an overview of current economic conditions. The U.S. Real GDP Annualized Rate in the fourth quarter of 2021 was characterized by changing expectations. COVID impacted consumer activity due to fears of new variants and possible concerns of the situation in Ukraine. The economy was strong due to fiscal stimulus and low interest rates. The national unemployment rate was 4%, though this is still higher than pre-pandemic levels, likely due to child-care issues, health and well being of employees, and increases in the value of 401K retirement accounts. Companies, specifically small businesses were having difficulty retaining and hiring employees. This impacts the manufacturing and non-manufacturing sectors, causing them to slow down. Severe shortages were seen in the retail sector where prices of cars rose by about 12% as inventories shrank. Similarly, the housing market was strong due to low interest rates. The U.S. trade deficit increased as the U.S. continues to demand more foreign goods. Even though individual disposable income increased due to stimulus money, household debt was at an all time high. The Consumer Price Index was at a historic high of 7%, driving up the retail price for food and gasoline. Several price and production indicators show that inflation might linger on and may not come down overnight. This might cause the Federal Reserve to increase interest rates faster than previously anticipated causing short-term treasury yields to go up.

**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. Staff recommended approval of the Annual Investment Policy, with no additional updates or amendments. 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: Richard Dixon; Seconded by Brent Mason;

Ayes: Mayor Pro Tem Michael Cacciotti, Chair, Richard Dixon, Brent Mason, Patrick Pearce

Noes: None

Abstain: None

Absent: Senator Vanessa Delgado (Ret.), Vice Chair, Board Member Veronica Padilla-Campos



**OTHER MATTERS:**

**4. Other Business**

There was no other business to report.

**5. Public Comment Period**

There were no public comments to report.

**6. Next Meeting Date**

The next regular meeting of the Investment Oversight Committee is scheduled for May 20, 2022 at noon.

**Adjournment**

The meeting adjourned at 12:40 p.m.

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BOARD MEETING DATE: March 4, 2022

AGENDA NO. 23

REPORT: Legislative Committee

SYNOPSIS: The Legislative Committee held a meeting remotely on Friday, February 11, 2022. The following is a summary of the meeting.

| <b>Agenda Item</b>  | <b>Recommendation/Action</b> |
|---|------------------------------|
| HR 6662 (Barragán) – EVs for All Act of 2022  | Support                      |
| Overview of Proposed Comprehensive Air Quality Campaign Relating to State Legislative Activities                              | Approve                      |
| Proposed South Coast AQMD Sponsored Legislation In Concept: AB 617 Policy Changes   | Approve                      |
| Proposed South Coast AQMD Sponsored Legislation in Concept: Independent Special District Status for Air Districts             | Approve                      |
| Proposed South Coast AQMD Sponsored Legislation in Concept: Renewable Portfolio Standard (RPS) Style Standard for Air Quality | Approve                      |
| Proposed South Coast AQMD Sponsored Legislation in Concept: Goods Movement-Related Port Cargo Fee                             | Approve                      |

**RECOMMENDED ACTION:**

Receive and file this report and approve agenda items as specified in this letter.

Michael A. Cacciotti, Chair  
Legislative Committee

## **Committee Members**

Present: Mayor Pro Tem Michael A. Cacciotti, Chair  
Board Member Veronica Padilla-Campos  
Senator Vanessa Delgado (Ret.)  
Supervisor V. Manuel Perez  
Supervisor Janice Rutherford

Absent: None

## **Call to Order**

Chair Michael Cacciotti called the meeting to order at 9:00 a.m.

## **ACTION/DISCUSSION ITEMS:**

### **1. Recommend Position on Federal Bills:**

#### **H.R. 6662 (Barragán) EVs for All Act of 2022**

Lisa Tanaka O'Malley, Assistant Deputy Executive Officer/Legislative, Public Affairs & Media, presented H.R. 6662 (Barragán). The bill would direct the Secretary of Energy to establish a \$50 million per year grant program to facilitate electric vehicle sharing services operated at public housing projects, and for other purposes. Board Member Padilla-Campos recused herself from this item due to a potential financial interest.

#### **Staff recommended a "SUPPORT" position on this bill.**

Moved by Delgado; seconded by Perez  
Ayes: Cacciotti, Delgado, Perez, Rutherford  
Noes: None  
Abstain: Padilla-Campos

Harvey Eder, Public Solar Power Coalition, provided public comment on the need for equitable distribution of grant funding.

### **2. Update on South Coast AQMD Board membership legislation**

Derrick Alatorre, Deputy Executive Officer/Legislative, Public Affairs & Media, provided an update on SB 342 (Gonzalez). The bill would have expanded the South Coast AQMD Governing Board from 13 to 15 members by adding two environmental justice appointees. The bill failed to pass out of the Senate and a similar bill could possibly be introduced in 2022. Staff will update the Committee on any future developments.

There was no public comment.

### **3. Overview of Proposed Comprehensive Air Quality Campaign Relating to State Legislative Activities**

Philip Crabbe III, Senior Public Affairs Manager/Legislative, Public Affairs & Media presented on a comprehensive air quality campaign proposal for state legislative activities. The proposed multi-year plan would include:

- A formal audit of CARB in conjunction with the Joint Legislative Audit Committee to seek information and assess programs and actions to prioritize and achieve near-term emission reductions to meet attainment of federal air quality standards;
- A public awareness and education campaign; and
- Four bill concepts for South Coast AQMD sponsor bills.

Supervisor Rutherford inquired about the CARB audit. Wayne Natri, Executive Officer, responded that the audit is to evaluate the state's efforts to achieve emission reductions to meet federal standards and to hold it accountable for any shortfalls.

Supervisor Rutherford commented that public relations efforts should focus on educating state and federal stakeholders on their responsibilities to reduce air pollution and the timeframes to replace heavy-duty truck fleets. Mr. Natri concurred with Supervisor Rutherford.

Supervisor Rutherford inquired about the goods movement port cargo fee proposal. Mr. Natri stated that staff recently discussed the air quality impacts of ports, ocean-going vessels and goods movement with Bay Area Air Quality Management District, San Joaquin Valley Air Pollution Control District and U.S. EPA. Individual ports have expressed that mitigation fees, which are not uniformly applied, could impact their competitiveness. By working with the three air agencies responsible for the major ports, a statewide cargo fee could mitigate concerns about competitiveness within California. A port cargo fee could generate resources to address goods movement-related air quality impacts.

Senator Delgado requested clarification on the proposed state legislative campaign and if the framework can be amended to address other issues such as public nuisance enforcement. Mr. Natri clarified that the proposal is separate from the public nuisance enforcement discussion and it will take time to investigate opportunities and to develop.

Supervisor Perez expressed support for an audit of CARB actions, especially for funding to meet attainment, public education and outreach campaigns.

Supervisor Rutherford requested clarification on the anti-diesel truck funding. Mr. Crabbe explained that there is a statewide coalition working to fund incentives for near-zero emission heavy-duty trucks and potentially zero-emission technologies.

Chair Caciotti expressed that the public relations campaign should reach the general public, as there is a lack of understanding on air quality issues.

Mr. Eder provided public comment on solar energy.

**Staff recommended approval of this proposal for a Comprehensive Air Quality Campaign.**

Moved for Approval by Perez; seconded by Delgado; unanimously approved

Ayes: Cacciotti, Delgado, Padilla-Campos, Perez, Rutherford

Noes: None

Abstain: None

Absent: None

**4. Proposed South Coast AQMD Sponsored Legislation In Concept: AB 617 Policy Changes**

Mr. Alatorre presented a bill proposal that would amend the AB 617 program. The proposed bill would:

- Extend the time to establish a Community Emissions Reduction Plan (CERP) from 1 to 2 years;
- Require non-air quality agencies to assist in the development, implementation, and enforcement of CERPs as needed; and,
- Authorize funding for Community Steering Committees (CSCs) for administrative items such as translation services, meeting venue costs, training, and stipends for members.

Board Member Padilla-Campos inquired if CSC input was received and how the stipends would be distributed. Mr. Alatorre confirmed receipt of CSC input and indicated that the CSCs would administer the stipends from the proposed funds. Supervisor Perez concurred that direct funding for CSCs is aligned with community requests.

Senator Delgado asked if elected officials involved with the creation of AB 617 are involved or have been consulted regarding this bill proposal. Mr. Alatorre advised that there have been communications with Assembly Member Cristina Garcia, but she is currently not involved in this effort.

Chair Cacciotti asked if the bill provisions are in line with CSC requests for programmatic changes. Mr. Alatorre confirmed the provisions aligned with CSC requests.

Board Member Padilla-Campos and Supervisor Perez requested to be kept informed of which state legislator would be leading the AB 617 efforts.

Supervisor Perez inquired about pesticide monitoring by the Department of Pesticide Regulation (DPR) in the Coachella Valley, related to AB 617. Jason Low, Assistant Deputy Executive Officer/Science & Technology Advancement, responded that DPR and CARB continue to work on these issues.

There was no public comment.

**Staff recommended bill proposal in concept, for possible South Coast AQMD sponsorship.**

Moved for Approval by Padilla-Campos; seconded by Perez; unanimously approved  
Ayes: Cacciotti, Delgado, Padilla-Campos, Perez, Rutherford  
Noes: None  
Abstain: None  
Absent: None

**5. Proposed South Coast AQMD Sponsored Legislation in Concept: Independent Special District Status for Air Districts**

Denise Peralta Gailey, Public Affairs Manager/Legislative, Public Affairs & Media, presented a proposal that would make a technical change in existing law to allow air districts to be considered “independent special districts” for the purposes of applying and receiving state and federal funding.

Supervisor Rutherford inquired about the impact of this proposal on South Coast AQMD tax authority. Barbara Baird, Chief Deputy Counsel, responded that the proposal would be limited to classification of air districts as independent for the purpose of receiving funding and would not grant taxation authority.

There was no public comment.

**Staff recommended bill proposal in concept, for possible South Coast AQMD sponsorship.**

Moved for Approval by Perez; seconded by Padilla-Campos; unanimously approved  
Ayes: Cacciotti, Delgado, Padilla-Campos, Perez, Rutherford  
Noes: None  
Abstain: None  
Absent: None

**6. Proposed South Coast AQMD Sponsored Legislation in Concept: Renewable Portfolio Standard (RPS) Style Standard for Air Quality**

Mr. Crabbe presented a bill proposal that would create a RPS-style standard for air quality. The bill would require CARB to reduce a specified amount of emissions per year until meeting specific air quality goals in sync with attainment requirements.

Additionally, it would require CARB to provide an annual progress report to the Legislature.

Chair Cacciotti requested and received confirmation by staff that this proposal would be similar to the electric utility efforts to increase their use of renewable energy.

There was no public comment.

**Staff recommended bill proposal in concept, for possible South Coast AQMD sponsorship.**

Moved for Approval by Perez; seconded by Delgado; unanimously approved  
Ayes: Cacciotti, Delgado, Padilla-Campos, Perez, Rutherford  
Noes: None  
Abstain: None  
Absent: None

**7. Proposed South Coast AQMD Sponsored Legislation in Concept: Goods Movement-Related Port Cargo Fee**

Mr. Crabbe III presented a bill proposal that would create a goods movement-related port cargo fee to generate funding for emission reduction projects, to attain federal air quality standards. The amount of this fee and which ports statewide would be included in the bill are open for further discussion.

Jacqueline Moore, Pacific Merchant Shipping Association, provided public comment in opposition to any fee or tax on containers at the Ports of Los Angeles or Long Beach.

Supervisor Perez expressed support for the bill concept and commented that it could serve as a mechanism for further discussions on how to reduce emissions from the ports. Supervisor Rutherford also expressed support for the bill.

**Staff recommended bill proposal in concept, for possible South Coast AQMD sponsorship.**

Moved for Approval by Perez; seconded by Delgado; unanimously approved  
Ayes: Cacciotti, Delgado, Padilla-Campos, Perez, Rutherford  
Noes: None  
Abstain: None  
Absent: None

## **DISCUSSION ITEMS:**

### **8. Update and Discussion on Federal Legislative Issues**

South Coast AQMD's legislative consultants (Kadesh & Associates, Carmen Group, and Cassidy & Associates) provided written reports on federal issues.

Supervisor Rutherford requested more detail on meetings referenced in the federal consultants' reports. Mr. Nastri responded that the meetings took place with the Council on Environmental Quality, Office of Management and Budget, and U.S. EPA, regarding the pending rule to reduce NOx emissions from heavy-duty trucks.

Chair Cacciotti asked if South Coast AQMD is eligible to apply for U.S. EPA grants for enhanced air quality monitoring. Mr. Nastri responded that staff is promoting and assisting communities to apply for grants.

### **9. Update and Discussion on State Legislative Issues**

South Coast AQMD's legislative consultants (Joe A. Gonsalves & Son, Resolute, and California Advisors, LLC) provided written reports on state issues.

## **OTHER MATTERS:**

### **10. Other Business**

There was no other business to report.

### **11. Public Comment Period**

Mr. Eder commented on a news article on climate modeling.

### **12. Next Meeting Date**

The next regular Legislative Committee meeting is scheduled for Friday, March 11, 2022 at 9:00 a.m.

## **Adjournment**

The meeting adjourned at 10:02 a.m.

## **Attachments**

1. Attendance Record
2. Recommend Position on Federal Bill
3. State Campaign Summary Attachment
4. State Legislative Proposals Attachment
5. Update on Federal Legislative Issues – Written Reports
6. Update on State Legislative Issues – Written Reports



# ATTACHMENT 1

## **SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT LEGISLATIVE COMMITTEE MEETING ATTENDANCE RECORD – February 11, 2022**

|   |                                    |
|---|------------------------------------|
| Mayor Pro Tem Michael A. Cacciotti .....  | South Coast AQMD Board Member      |
| Board Member Veronica Padilla-Campos..... | South Coast AQMD Board Member      |
| Senator Vanessa Delgado.....              | South Coast AQMD Board Member      |
| Supervisor V. Manuel Perez.....           | South Coast AQMD Board Member      |
| Supervisor Janice Rutherford .....        | South Coast AQMD Board Member      |
|   |                                    |
| Debra Mendelsohn .....                    | Board Consultant (Rutherford)      |
| Mark Taylor.....                          | Board Consultant (Rutherford)      |
| Amy Wong .....                            | Board Consultant (Padilla-Campos)  |
| Ben Wong.....                             | Board Consultant (Cacciotti)       |
|   |                                    |
| Alfredo Arredondo .....                   | Resolute                           |
| Paul Gonsalves .....                      | Joe A. Gonsalves & Son             |
| Gary Hoitsma .....                        | Carmen Group, Inc.                 |
| Mark Kadesh .....                         | Kadesh & Associates                |
| Ben Miller .....                          | Kadesh & Associates                |
| Amelia Morales .....                      | Cassidy & Associates               |
|   |                                    |
| Mark Abramowitz .....                     | Public Member                      |
| Amber Aviles .....                        | Public Member                      |
| Jaime Bartolome.....                      | Public Member                      |
| Alan Caldwell.....                        | Public Member                      |
| Ken Dami .....                            | Public Member                      |
| Harvey Eder.....                          | Public Solar Power Coalition       |
| Jason Henderson.....                      | CCEEB                              |
| Natalie Irwin.....                        | Public Member                      |
| Bill LaMarr.....                          | California Small Business Alliance |
| Erick Martell .....                       | Public Member                      |
| Dan McGivney .....                        | SoCalGas                           |
| Jacqueline Moore .....                    | PMSA                               |
| David Rothbart .....                      | Public Member                      |
| Craig Sakamoto .....                      | Public Member                      |
| Patty Senecal .....                       | Public Member                      |
| Marsha Waller .....                       | Phillips 66                        |
| Peter Whittingham.....                    | Public Member                      |
| Christine Wolfe .....                     | CCEEB                              |
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117<sup>TH</sup> CONGRESS  
2<sup>D</sup> SESSION

# H. R. 6662

To direct the Secretary of Energy to establish a grant program to facilitate electric vehicle sharing services operated at public housing projects, and for other purposes.

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## IN THE HOUSE OF REPRESENTATIVES

FEBRUARY 9, 2022

Ms. BARRAGÁN (for herself, Mr. SMITH of Washington, Ms. CLARKE of New York, Mr. ESPAILLAT, Ms. MATSUI, Mr. CARSON, Ms. TITUS, Ms. JAYAPAL, Mr. GRIJALVA, Ms. JACKSON LEE, Mr. PAYNE, Mr. GALLEGRO, Mr. KILMER, Mr. LOWENTHAL, Mr. LIEU, Ms. STRICKLAND, Mr. GOMEZ, Mr. LEVIN of California, Ms. PINGREE, Mr. COSTA, Mrs. WATSON COLEMAN, Mr. RYAN, and Mr. HUFFMAN) introduced the following bill; which was referred to the Committee on Energy and Commerce, and in addition to the Committee on Transportation and Infrastructure, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

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## A BILL

To direct the Secretary of Energy to establish a grant program to facilitate electric vehicle sharing services operated at public housing projects, and for other purposes.

*1 Be it enacted by the Senate and House of Representa-*  
*2 tives of the United States of America in Congress assembled,*

**3 SECTION 1. SHORT TITLE.**

**4 This Act may be cited as the “Electric Vehicles for**  
**5 All Act” or the “EVs for All Act”.**

1 SEC. 2. DEPARTMENT OF ENERGY ELECTRIC VEHICLE

2 SHARING SERVICE GRANT PROGRAM.

3 (a) ESTABLISHMENT.—Not later than 1 year after  
4 the date of enactment of this section, the Secretary shall  
5 carry out, in coordination with the Secretary of Transpor-  
6 tation and the Secretary of Housing and Urban Develop-  
7 ment, a program to award, on a competitive basis, grants  
8 to facilitate electric vehicle sharing services operated at  
9 public housing projects.

10 (b) ELIGIBLE ENTITIES.—

11 (1) IN GENERAL.—The Secretary may award a  
12 grant under this section to the following entities:

13 (A) A public housing agency.

14 (B) A local government.

15 (C) A non-profit organization that has en-  
16 tered into an agreement with a public housing  
17 agency or local government under which the  
18 agency or government agrees to host an electric  
19 vehicle sharing service on the property of such  
20 agency or government.

21 (2) APPLICATIONS.—To be eligible to receive a  
22 grant under this section, an entity specified in para-  
23 graph (1) shall submit to the Secretary an applica-  
24 tion in such form, at such time, and containing such  
25 information as the Secretary determines appropriate.

1 (c) CRITERIA FOR GRANT AWARDS.—In awarding  
2 grants under this section, the Secretary shall consider the  
3 following criteria:

4 (1) The capacity of an applicant to operate a  
5 proposed electric vehicle sharing service.

6 (2) Whether such proposed service would ad-  
7 dress—

8 (A) the infrastructure needs of the public  
9 housing project where such service will be oper-  
10 ated; and

11 (B) the transportation needs of the com-  
12 munity surrounding such public housing  
13 project.

14 (3) Whether the applicant has developed a cul-  
15 turally competent community engagement and edu-  
16 cation plan for outreach regarding such proposed  
17 service.

18 (4) The economic and operational sustainability  
19 of such proposed service.

20 (5) Whether the applicant proposes to install  
21 networked direct current fast charging equipment in  
22 connection with such proposed service.

23 (6) Whether the applicant proposes to purchase  
24 electric vehicles with respect to which final assembly

1 occurred at a location operating under a collective  
2 bargaining agreement.

3 (7) Whether the applicant proposes to purchase  
4 electric vehicles that—

5 (A) with respect to final assembly, are as-  
6 sembled using component parts that are at least  
7 50 percent domestic content; and

8 (B) are powered by battery cells manufac-  
9 tured in the United States.

10 (8) Other criteria as determined appropriate by  
11 the Secretary.

12 (d) PERMITTED GRANT USES.—

13 (1) IN GENERAL.—A recipient of a grant  
14 awarded under this section may only use grant  
15 funds for the following to facilitate an electric vehi-  
16 cle sharing service operated at a public housing  
17 project:

18 (A) The purchase of light-duty electric ve-  
19 hicles that are not more than 5 years old.

20 (B) The purchase, installation, and main-  
21 tenance of electric vehicle charging infrastruc-  
22 ture.

23 (C) Community education and outreach  
24 with respect to such service.

1 (D) Incentives for residents of the public  
2 housing project to use such service, including  
3 subsidized fares.

4 (E) Maintenance, repairs, and other costs  
5 associated with operating such service, includ-  
6 ing towing, impound, and driving infraction  
7 fines.

8 (F) Monitoring, data collection, and eval-  
9 uation with respect to such service.

10 (G) Technical assistance relating to the es-  
11 tablishment, operation, and evaluation of such  
12 service.

13 (2) MINIMUM STANDARDS FOR PURCHASED  
14 ELECTRIC VEHICLES.—The Secretary shall establish  
15 minimum standards relating to functionality and  
16 range for electric vehicles eligible to be purchased  
17 under paragraph (1)(A).

18 (e) GRANT LIMITATIONS.—

19 (1) AVAILABILITY.—Grant funds awarded  
20 under this section shall be available to the recipient  
21 of such funds for obligation or expenditure during  
22 the 5-year period beginning on the date on which  
23 such funds are awarded.

24 (2) MAXIMUM AMOUNT.—A grant under this  
25 section may not be in an amount that exceeds

1       \$1,000,000 for each public housing project at which  
2       the grant recipient will operate an electric vehicle  
3       sharing service.

4       (f) REPORTS.—As a condition of receiving a grant  
5       under this section, a grant recipient shall submit to the  
6       Secretary, before the end of each year during which the  
7       recipient receives grant amounts, a report that—

8               (1) describes the activities carried out with such  
9       amounts; and

10              (2) includes data on—

11                      (A) the operating and capital costs for the  
12                      electric vehicle sharing service facilitated with  
13                      such amounts;

14                      (B) the revenue generated by such service;

15                      (C) the daily averages of individual book-  
16                      ings and hours of electric vehicle use for such  
17                      service;

18                      (D) the number of active users of such  
19                      service;

20                      (E) the distance traveled by the electric ve-  
21                      hicles of such service;

22                      (F) the estimated reduction in greenhouse  
23                      gas emissions and criteria air pollutants associ-  
24                      ated with such service; and



1 (G) the results of a survey of customers of  
2 such service that provides information on cus-  
3 tomer preferences, destinations, and other in-  
4 formation the Secretary determines appropriate.

5 (g) LABOR.—

6 (1) CONTRACTS FOR INSTALLATION OF ELEC-  
7 TRIC VEHICLE CHARGING INFRASTRUCTURE.—As a  
8 condition of receiving a grant under this section, a  
9 grant recipient shall ensure, to the greatest extent  
10 practicable, that—

11 (A) not less than 40 percent of the employ-  
12 ees of any nongovernmental entity that enters  
13 into a contract with such recipient, or a sub-  
14 contract thereof, for the installation of electric  
15 vehicle charging infrastructure are—

16 (i) domiciled—

17 (I) if the installation is carried  
18 out at a location in a major urban  
19 area, not further than 15 miles from  
20 the location of such installation; or

21 (II) if the installation is not car-  
22 ried out at a location in a major  
23 urban area, not further than 50 miles  
24 from the location of such installation;

1 (ii) members of the Armed Forces or  
2 veterans;

3 (iii) displaced and unemployed energy  
4 workers;

5 (iv) registered apprentices who have  
6 completed less than 15 percent of the re-  
7 quired hours for the apprenticeship pro-  
8 gram in which they are enrolled; or

9 (v) persons who—

10 (I) were formerly—

11 (aa) incarcerated in a juve-  
12 nile or adult detention or correc-  
13 tional facility; or

14 (bb) placed on probation,  
15 community supervision, or in a  
16 diversion program;

17 (II) are emancipated from the  
18 foster care system;

19 (III) have a disability;

20 (IV) are homeless;

21 (V) receive public assistance; or

22 (VI) lack a general education or  
23 high school diploma; and

24 (B) not less than 40 percent of the em-  
25 ployees of any such entity hold an Electric Ve-

1 hicle Infrastructure Training Program certifi-  
2 cation.

3 (2) W<sub>AGES</sub>.—

4 (A) I<sub>N GENERAL</sub>.—As a condition of re-  
5 ceiving a grant under this section, a grant re-  
6 cipient shall ensure that all laborers and me-  
7 chanics employed by a nongovernmental entity  
8 that enters into a contract for the performance  
9 of construction, alteration, or repair work that  
10 is facilitated, in whole or in part, by such grant,  
11 or a subcontract thereof, are paid wages at  
12 rates not less than those prevailing on similar  
13 construction, alteration, or repair work in the  
14 locality as determined by the Secretary of  
15 Labor in accordance with subchapter IV of  
16 chapter 31 of title 40, United States Code.

17 (B) L<sub>ABOR STANDARDS</sub>.—With respect to  
18 the labor standards in subparagraph (A), the  
19 Secretary of Labor shall have the authority and  
20 functions set forth in Reorganization Plan  
21 Numbered 14 of 1950 (64 Stat. 1267; 5 U.S.C.  
22 App.) and section 3145 of title 40, United  
23 States Code.

1 (h) AUTHORIZATION OF APPROPRIATIONS.—There is  
2 authorized to be appropriated to carry out this section  
3 \$50,000,000 for each of fiscal years 2022 through 2031.

4 (i) DEFINITIONS.—In this section:

5 (1) The term “electric vehicle” means a vehicle  
6 that derives all or part of its power from electricity.

7 (2) The term “electric vehicle charging infra-  
8 structure”—

9 (A) means any property, other than a  
10 building or the structural components thereof,  
11 that is—

12 (i) used to charge electric vehicles;

13 (ii) present at the location where such  
14 vehicles are charged; and

15 (iii) available for use by members of  
16 the general public; and

17 (B) includes any utility service connection,  
18 or utility panel upgrade, that is required for the  
19 charging of electric vehicles.

20 (3) The term “electric vehicle sharing service”  
21 means a service that—

22 (A) allows an individual to apply for a  
23 membership that pre-approves the individual to  
24 rent electric vehicles from such service; and

1 (B) permits pre-approved individuals to  
2 rent such vehicles for short periods of time.

3 (4) The term “final assembly” means the proc-  
4 ess by which a manufacturer produces a new electric  
5 vehicle at, or through the use of, a plant, factory, or  
6 other place from which the vehicle is delivered to a  
7 dealer or importer with all component parts nec-  
8 essary for the mechanical operation of the vehicle in-  
9 cluded with the vehicle, whether or not the compo-  
10 nent parts are permanently installed in or on the ve-  
11 hicle.

12 (5) The term “major urban area” means a met-  
13 ropolitan statistical area within the United States  
14 with an estimated population that is greater than or  
15 equal to 1,500,000.

16 (6) The term “networked direct current fast  
17 charging equipment” means electric vehicle charging  
18 equipment that—

19 (A) provides a direct current power source  
20 at a minimum of 50 kilowatts; and

21 (B) is enabled to connect to a network to  
22 facilitate data collection and access.

23 (7) The term “registered apprentice” means a  
24 person participating in a program registered pursu-  
25 ant to the Act of August 16, 1937 (commonly

1 known as the “National Apprenticeship Act”; 50  
2 Stat. 664, chapter 663; 29 U.S.C. 50 et seq.).

3 (8) The term “Secretary” means the Secretary  
4 of Energy.

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South Coast Air Quality Management District  
Legislative Analysis Summary – H.R. 6662  
Version: As introduced on February 9, 2022  
Analyst: LTO

**H.R. 6662 (Barragán)**  
Electric Vehicles for All Act of 2022

**Summary:** To direct the Secretary of Energy to establish a grant program to facilitate electric vehicle sharing services operated at public housing projects, and for other purposes.

**Background:** Transportation is one of the largest household expenses along with housing, food and healthcare.<sup>1</sup> Although environmental justice communities are disproportionately impacted by air pollution, residents often do not have access to EVs due to cost as well as the lack of charging infrastructure.

Since 2015, the Enhanced Fleet Modernization Program better known as Replace Your Ride (RYP) provides incentive funds to qualified South Coast AQMD residents to upgrade older, more polluting vehicles with hybrid or electric vehicles. RYP is an income-based program which also can provide vouchers for car-sharing or public transit passes.

RYP is a popular program resulting in the replacement of more than 8,000 older passenger vehicles for a cost of over \$64.9 million. In fact, the program was oversubscribed in 2020, resulting in CARB allocating an additional \$1.43 million in Spring 2021. Cleaner vehicles are less polluting, and as they are usually newer models, can provide greater transportation stability for the owners.

The “Electric Vehicles for All Act of 2022” would provide clean air transportation through a low-cost car sharing program offered to residents living in public housing. The concept has been piloted in two communities in the South Coast AQMD jurisdiction by the Los Angeles Cleantech Incubator (LACI) including San Pedro and Pacoima. The program at the Rancho San Pedro public housing complex includes two EVs which may be rented for \$3 per hour. The “EVs for All Act” would help further close the gap for cleaner, more secure transportation in underserved communities throughout the nation.

**Status:** Pending Introduction

**Specific Provisions:** The “EVs For All Act” would require the U.S. Departments of Energy (DoE) and Housing and Urban Development (HUD), to develop a competitive grant program to facilitate EV sharing services at public housing projects. The program would provide grants up to \$1 million to acquire EVs (not more than five-years old), install the required charging infrastructure, conduct outreach, subsidize fares, and expenses related to maintenance and repairs, as well as data collection. Eligible grant applicants are public housing agencies, local government, or non-profits to support EV car sharing services at public housing projects. The bill would authorize up to \$50M in annual appropriations from 2022-2031.

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<sup>1</sup> U.S. Department of Transportation, Bureau of Transportation Statistics, <https://data.bts.gov/stories/s/ida7-k95k#:~:text=Data%20and%20discussion%20on%20total%20national%20household%20spending%20on%20transportation%20also%20available.&text=Households%20spent%20an%20average%20of,as%20healthcare%20benefits%2C%20is%20excluded.>

Additionally, the bill promotes job creation by requiring contractors to hire local workers, especially veterans and others who may face employment challenges.

**Impacts on South Coast AQMD’s Mission, Operations or Initiatives:** The “EV for All Act” aligns with South Coast AQMD’s environmental justice and AB 617 programs to provide access to clean air vehicles and infrastructure in underserved communities.

**Recommended Position:** SUPPORT



## **Overview of Proposed Comprehensive Air Quality Campaign Relating to State Legislative Activities - Brief Summary**

Proposed campaign includes a framework for a potentially multi-year plan of action that involves:

### **1) State Audit Request**

Use of formal audit process in conjunction with Joint Legislative Audit Committee (JLAC) in Sacramento to seek information and assess CARB's efforts, programs and actions taken in terms of achieving and prioritizing near-term emission reductions and attainment of ambient air quality standards as required by federal law. Audit can highlight successes and identify gaps and deficiencies in terms of current attainment efforts. Audit inquiries can be specifically tailored.

### **2) Public Relations Effort** – Focus on educating public and stakeholders on items including:

- a. Negative health and economic impacts of air pollution;
- b. Challenge South Coast region faces in reducing air pollution and toxics, especially in disadvantaged communities; and
- c. Clean technology options available to reduce pollution, including diesel toxic emissions from mobile sources (e.g. heavy-duty trucks)

### **3) Legislative and Budgetary Efforts Seeking Air Quality-related Incentive Funding** – including:

- a. AB 8 Reauthorization – extending Carl Moyer funding sources;
- b. AB 617 Incentive Funding Budget Request;

- c. Anti-Diesel Truck Funding Budget Request;
- d. Proposed Legislation: Independent Special District Status for Air Districts – can increase eligibility for state and federal funding;
- e. Proposed Legislation: Renewable Portfolio Standard (RPS) Style Standard for Air Quality – creates standards that could help motivate air quality funding in budget process; and
- f. Proposed Legislation: Goods Movement-Related Port Cargo Fee

**4) Legislative and Budgetary Efforts that Support and Highlight Local Programs and Regulatory Activity in South Coast Region**

- a. AB 617 Implementation Funding Budget Request;
- b. AB 617 Community Steering Committee Members' Administrative Costs Legislation and Budget Request;
- c. Proposed Legislation: AB 617 Policy Changes; and
- d. Education/outreach efforts regarding South Coast AQMD regulatory actions

**Brief Summary of Four Potential South Coast AQMD-Sponsored State  
Legislative Proposals**

**1) Proposed Legislation: AB 617 Policy Changes**

- a. Bill would make policy and budget-related changes to AB 617 program in response to community needs and concerns:
  - i. Extends time to establish a CERP from 1 to 2 years after AB 617 community is selected;
  - ii. Requires non-air quality agencies to assist in the development, implementation, and enforcement of CERPs as needed; and
  - iii. Authorizes funding for community steering committees for administrative items, including, but not limited to, translation services, meeting venue costs, meeting coordination, training and stipends.

**2) Proposed Legislation: Independent Special District Status for Air Districts**

- a. Bill would clarify state law to allow local air districts to be considered “independent special districts.”
- b. Can increase air districts’ eligibility for state and federal funding opportunities.

### **3) Proposed Legislation: Renewable Portfolio Standard (RPS) Style Standard for Air Quality**

- a. Bill would create an RPS style standard for air quality. RPS is concept that set escalating renewable energy procurement requirements for California utilities.
- b. Bill would require that CARB act to reduce a specified percentage/amount of air pollutants per year until meeting specific air quality goals by a certain date, in sync with attainment requirements.
- c. Bill would create state requirements that could help motivate air quality funding in budget process by highlighting when there are failures to achieve sufficient annual incremental progress toward attainment of federal standards.
- d. Would require annual reporting by CARB, regarding efforts/progress towards attainment.

### **4) Proposed Legislation: Goods Movement-Related Port Cargo Fee**

- a. Bill would create a goods movement-related port cargo fee that would generate a potentially significant amount of air quality-related incentive funding that would assist with our efforts to attain federal standards.
- b. Amount of fee and which ports statewide are included in legislation are open for discussion.

## KADESH & ASSOCIATES

### South Coast AQMD Report for the February 2022 Legislative Meeting covering January 2022 Kadesh & Associates

The second session of the 117<sup>th</sup> Congress began slowly this month. The Continuing Resolution that was approved in December was supposed to buy enough time for full-year appropriations to be negotiated, but there was very little progress on negotiations for several weeks, while the House was in recess and the Senate pursued an unsuccessful attempt on voting rights and elections. As of late January, however, senior Appropriations Committee members from the House and Senate have now begun to negotiate directly, which gives some hope that they will reach agreement by the time the current Continuing Resolution expires on February 18 – or at least not too long after that deadline. Senate Appropriations Chairman Leahy has suggested that an omnibus appropriations bill might take shape by the first week of February.

There have also been initial discussions about attaching other funding if an appropriations deal is reached, potentially including additional pandemic funding or disaster aid for areas hit by tornadoes in December. Meanwhile, the executive branch has reported that relying on stopgap funding is hampering the rollout of the Bipartisan Infrastructure Law (BIL), because federal agencies are limited in their ability to start new programs and hire new employees under a Continuing Resolution. Along with earmarks, which also still must be resolved between the House and Senate, this difficulty in implementing the BIL is an additional incentive for Congress to reach bipartisan agreement on a full-year appropriations bill.

After the holiday season and early-January lull, the Congressional calendar for the next few months is starting to look busy. In addition to the appropriations deadline of February 18, we expect action in the House on its legislation to increase domestic R&D to better compete with China (the Senate has already passed legislation along these lines), there continues to be significant interest among leadership and rank-and-file members in reviving the Build Back Better Act, and the Senate will soon turn to the process of considering a new Supreme Court Justice. The President's State of the Union address is scheduled for March 1, so Democratic leaders in the House and Senate have a target date to deliver on at least some of these priority items.

One of the BIL initiatives that we have been tracking is the new funding for clean fueling and charging infrastructure, based on the Clean Corridors legislation that South Coast AQMD has supported. The Federal Highway Administration (FHWA) has put out a request for information to help guide the design of those programs, and we are sharing South Coast AQMD's perspective and information about ways to maximize air quality improvements with the congressional delegation. We are also working with South Coast AQMD and the congressional delegation on the continued effort to expedite a heavy-duty truck rule and strengthen rules on other mobile sources.

# KADESH & ASSOCIATES

## Kadesh & Associates Activity Summary-

-Monitored new legislation and worked with South Coast AQMD to brief congressional delegation on air quality issues.

-Worked with South Coast AQMD staff on strategy to address nonattainment deadlines, including working in coordination with Bay Area AQMD to draw congressional attention to the need for updated federal mobile source regulations.

## Contacts:

Contacts included staff and House Members throughout the CA delegation, especially the authors of priority legislation, Senate offices, members of the South Coast House delegation, and members of key committees. We have also been in touch with Administration staff.

###



**Carmen Group**  
I N C O R P O R A T E D

**To:** South Coast AQMD Legislative Committee

**From:** Carmen Group

**Date:** January 27, 2022

**Re:** Federal Update -- Executive Branch

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**FY22 Appropriations:** With Congress facing a self-imposed Feb. 18<sup>th</sup> deadline to complete the current-year appropriations process, there remains considerable uncertainty as to how -- and even whether -- the FY 22 spending stalemate will be resolved. At stake, among many things, is critical funding for an array of energy, environment and infrastructure programs and initiatives, including highly anticipated spending increases for DERA, Targeted Airshed Grants, Clean Air Act and Infrastructure Law funding of special importance to South Coast AQMD. If agreements cannot be reached to clear an Omnibus bill, spending levels for the rest of FY 22 could be left largely based on priorities set during the previous administration. Complicating this year's process is the deep partisan divide in Congress exacerbated by the fast-approaching Midterm elections. Sharp deal-breaking disputes over policy riders and defense spending have remained largely intractable for many months with, so far, no apparent progress toward resolution.

**Reconciliation:** Closed-door negotiations among Senate Democrats are continuing in an effort to salvage some remnant of the Build Back Better (BBB) reconciliation bill which fell apart in December when it became clear the bill did not have the needed 51 votes. The fate of the energy and climate-related provisions of the BBB bill remains uncertain. In late January, President Biden hosted a White House meeting with several corporate CEOs (including those of Ford, GM and Cummins) who expressed support for the bill and especially for the subsidies to incentivize the purchase of electric vehicles, hydrogen fuel and clean trucks. Meanwhile over 250 companies, saying they are committed to building "America's clean energy future," signed a Jan. 24<sup>th</sup> letter to Democratic Congressional leaders urging passage of the BBB bill.

**Infrastructure Law Implementation:** Below are several significant developments over the past month surrounding the implementation of the Bipartisan Infrastructure Law that could be of special interest to SCAQMD:

- **Appropriations Snag:** In January, a coalition of over 60 highway and transit groups wrote to Congressional leaders in both parties urging quick action to complete the FY 22 appropriations bills, saying that the full benefits of the Infrastructure Law -- including a 20 percent increase in highway funding, a 30 percent increase in transit funding, and the launch of new programs such as those for Carbon Reduction and PROTECT grants -- could not be realized without the necessary new appropriations.

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- **Disputes Erupt Over Administration’s Highway “Policy Guidance”:** In January, State Departments of Transportation and several Republican Governors and Members of Congress took vocal exception to the Biden Administration’s aggressive attempts to place its strongly partisan “Build a Better America” policy stamp on the way federal highway dollars would be distributed and permitted (or “encouraged”) to be used under the new Bipartisan Infrastructure Law. At issue is how much flexibility and discretion states will have to spend federal highway funds as they see fit. To the extent there may be less flexibility allowed than there has been previously and traditionally, there is bound to be push-back and a robust discussion about what the new law actually requires. In a Jan. 19<sup>th</sup> letter to the Federal Highway Administration (FHWA), the American Association of State Highway and Transportation Officials (AASHTO) raised concerns about the FHWA’s Dec. 16<sup>th</sup> policy guidance memo which seemed to be discouraging new highway capacity improvements in favor of confined repairs to existing roads and smaller bike-and-pedestrian-type improvements, coupled with special deference to “climate” and “equity” policy prescriptions. At the same time, 16 Republican Governors wrote to White House Infrastructure Czar Mitch Landrieu about similar concerns they had with Landrieu’s Jan. 4<sup>th</sup> memo to Governors and Members of Congress. Meanwhile, the ranking member of the House Transportation & Infrastructure Committee, Rep. Sam Graves (R-MO), urged Landrieu to voluntarily testify before the Committee and answer questions on these issues in a timely manner.
- **Infrastructure Czar Offers Tips for Cities Seeking Grants:** Speaking at the January Winter Meeting of the U.S. Conference of Mayors in Washington, DC, White House Infrastructure Coordinator Mitch Landrieu said there are immediate steps cities can take that could help them compete for grants that federal agencies will award under the infrastructure law. “You don’t have to wait,” he said. 1) Make sure your proposed road and bridge projects are part of the regional planning organization’s transportation improvement plan; 2) Predetermine where you’d like to install electric vehicle chargers; 3) Map and inventory lead pipes that need to be replaced; 4) Work with states to identify broadband gaps; 5) For grant applications, make sure to loop in congressional representatives as allies—even those lawmakers who voted against the infrastructure legislation. “Even those who voted no, still want the dough,” he quipped; 6) For major funding streams that go to states, not directly to cities, “you’ve got to do your work on that level to make that happen and to make your case,” before the money can “trickle down to your community.”
- **U.S. Army Corps of Engineers Announces Project Investments:** In January, the U.S. Army Corps of Engineers announced that it will invest more than \$14 billion of Infrastructure Law funding for port and waterway infrastructure in FY 22 for over 500 projects across 52 states and territories, [including \\$8 million to help expand capacity at what it called “one of the nation’s fastest growing ports, the Port of Long Beach.”](#)



- **FHWA FAQs on Electric Vehicle (EV) Charging:** [https://www.fhwa.dot.gov/real\\_estate/right-of-way/corridor\\_management/ev\\_charging\\_faq.cfm](https://www.fhwa.dot.gov/real_estate/right-of-way/corridor_management/ev_charging_faq.cfm)
- **DOE Launches “Clean Energy Corps” Hiring Campaign:** The Department of Energy announced in January that it is ready to recruit an additional 1,000 employees (the largest staff expansion at DOE since its establishment in 1977) “using special hiring authority included in the Bipartisan Infrastructure Law to help implement the Law’s historic infusion of \$62 billion in funding and accelerate the nation’s drive to a clean energy future.” DOE is apparently referring to a provision in the law allowing for the hiring of staff to carry out the work of the newly created Office of Clean Energy Demonstrations. The law makes no mention of a “Clean Energy Corps” or of the number “1000 employees.”
- **DOE Announces “Building a Better Grid” Initiative:** In January, the Department of Energy announced the launch of this initiative to catalyze the development of new and upgraded high-capacity electric transmission lines as enabled under the Infrastructure Law that are deemed critical to reaching President Biden’s goal of 100% clean electricity by 2035 and a zero-emission economy by 2050.
- **Key Meetings Reinforce Commitments to Administration Priorities:** On January 20, President Biden met with his Infrastructure Implementation Task Force, chaired by Mitch Landrieu. On January 22, Landrieu and other top White House staff met with leaders of 17 civil rights groups. Both meetings reinforced commitments to implement the Infrastructure Law with special attention to the President’s broader priorities including “to ensure investments advance equity and racial justice and bolster the nation’s resilience to climate change.”

## **Environmental Protection Agency**

**EPA Announces Bold Actions in Pursuit of Environmental Justice:** In January, EPA Administrator Michael Regan announced the first in a series of actions responding directly to concerns he detected in his recent “Journey to Justice” Tour of communities historically and disproportionately impacted by pollution, “communities that are marginalized, underserved, and overburdened by pollution.” These actions include 1) Aggressive use of unannounced inspections of suspected non-compliant facilities; 2) Expanded air monitoring capacity, using planes, vehicles, and inspectors to enhance enforcement; 3) Investments in community air monitoring; 4) Pressing state and local officials to better protect overburdened communities; 5) Holding companies more accountable for pollution in overburdened communities; and 6) Applying the best science to agency policymaking to safeguard public health.

**EPA Extends Deadline for Air Quality Monitoring Grants:** In response to requests, the EPA announced a 30-day extension of the grant application deadline for eligible entities seeking funding for ambient air monitoring projects in communities with

environmental and health disparities stemming from pollution and the COVID-19 pandemic. The new deadline is March 25, 2022.

## **Department of Transportation**

### **Port Envoy Holding Weekly Meetings with Port Officials Across the Country:**

According to a White House statement on the Strong Partnership Between Federal and Local Government: *“The Administration is working closely with mayors and local governments across the country to mitigate supply chain blockages and ensure shelves are stocked. The Administration’s port envoy has held weekly meetings with city-owned ports, including the Ports of Los Angeles and Long Beach, to identify ways to reduce congestion and move toward 24/7 operations, which reduces emissions and traffic in communities.”*

**Bose Confirmed as FRA Administrator:** On January 12, Amit Bose was confirmed by the U.S. Senate to be Administrator of the Federal Railroad Administration. He had been serving as Deputy Administrator. DOT notes he is the first person of South-Asian descent to lead FRA.

## **Federal Emergency Management Agency**

### **Notable Appointment:**

**Alice Hill**, Deputy Administrator for Resilience  
CFR; Obama WH, DHS; EDF Board; Judge, LA Superior Court; LA US Attorney’s Office

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**Outreach:** Contacts included the Department of Transportation Office of Intergovernmental Affairs on port air quality issues and members of our business coalition group on the EPA’s Ultra-Low NOx rulemaking process.

###



To: South Coast Air Quality Management District  
From: Cassidy & Associates  
Date: January 27, 2021  
Re: January Report

## HOUSE/SENATE

Both the House and the Senate are not in session this week. They will return to normal session on January 31.

When Congress returns in February it will face a new set of challenges. House Democrats will unveil their version of USICA (the U.S. Innovation and Competition Act, which passed the Senate in June 2021), rebranded as the America COMPETES Act, this week, and the bill could hit the House floor as soon as next week. The legislation is aimed at jumpstarting high-tech research and manufacturing – especially semiconductor chips and AI – in the United States to counter China’s growing prowess in these areas. If this bill passes the House the two chambers will need to conference to resolve any differences between their respective bills.

The two immediate dates on the calendar to watch are February 18 and March 1. The Continuing Resolution (CR) to fund the government expires on February 18. The bipartisan leaders of the House and Senate appropriations committee began negotiations last week to try and finalize a full year omnibus appropriations bill. Republicans do not want the Defense Department to operate under a CR. A full year appropriation would provide additional funding and flexibility for the Pentagon. Democrats, on the other hand, would have to deal with Trump-negotiated lower omnibus levels for domestic spending if they extend the CR. Instead of this scenario they want higher domestic spending levels for the social program priorities.

Both sides want to try to get a deal. But difficult issues remain including the Hyde amendment and other policy riders. Beyond that, appropriators made very little progress throughout last year – the Senate did not pass a single funding bill. Democrats also want the expanded childcare tax credit extended and to include an additional COVID relief package. So, the House and Senate still have work to do on the substance of what would be a massive omnibus bill.

March 1 is the date for President Biden’s State of the Union speech – an unusually late date for the annual event. Congressional Democrats had hoped to enact the President’s economic and social agenda before the State of the Union – and make those accomplishments the center piece of the speech. With the prospects of those legislative accomplishments greatly diminished, the White House must now decide what message to deliver to the American people.

#### *EPA*

The EPA has extended its deadline for enhanced air quality monitoring for community grant applications through March 25, 2022. The grant program will provide funding for ambient air monitoring projects in communities with environmental and health outcome disparities stemming from pollution and the COVID-19 pandemic. Through the American Rescue Plan, the total estimated funding for this competitive opportunity is approximately \$20,000,000. Approximately \$2 million will be awarded to Tribal governments, and \$2 million will be awarded to eligible community-based organizations under a community-based organization set-aside. The EPA anticipates awarding a total of approximately 50-70 assistance agreements (cooperative agreements or grants). Further information can be found [here](#).

Cassidy and Associates support in January:

- Tracked Capitol Hill intelligence related to Build Back Better.
- Provided guidance to SCAQMD on implementation of the Infrastructure Investment and Jobs Act.
- Secured EPA and CEQ Meetings for SCAQMD virtual DC visit.
- Participated in weekly strategy sessions.

## *IMPORTANT LEGISLATIVE DATES*

### **February 18, 2022**

Expiration of the current CR

## **PANDEMIC RESPONSE PROGRAMS AND AUTHORITIES**

### **End Date/Program**

#### ***March 27, 2025***

Special inspector General for Pandemic Recovery

**Sept. 30, 2025**

Pandemic Response Accountability Committee, Congressional Oversight Commission

## AGENCY RESOURCES

USA.gov is cataloging all U.S. government activities related to coronavirus. From actions on health and safety, travel, immigration, transportation and education, find pertinent actions [here](#). Each Federal Agency has also established a dedicated coronavirus website, where you can find important information and guidance. They include: Health and Human Services ([HHS](#)), Centers of Medicare and Medicaid ([CMS](#)), Food and Drug Administration ([FDA](#)), Department of Education ([DoED](#)), Department of Agriculture ([USDA](#)), Small Business Administration ([SBA](#)), Department of Labor ([DOL](#)), Department of Homeland Security ([DHS](#)), Department of State ([DOS](#)), Department of Veterans Affairs ([VA](#)), Environmental Protection Agency ([EPA](#)), Department of the Interior ([DOI](#)), Department of Energy ([DOE](#)), Department of Commerce ([DOC](#)), Department of Justice ([DOJ](#)), Department of Housing and Urban Development ([HUD](#)), Department of the Treasury ([USDT](#)), Office of the Director of National Intelligence ([ODNI](#)), and U.S. Election Assistance Commission ([EAC](#)).

### Helpful Agency Contact Information:

U.S. Department of Health and Human Services – Darcie Johnston (Office – 202-853-0582 / Cell – 202-690-1058 / Email – [darcie.johnston@hhs.gov](mailto:darcie.johnston@hhs.gov))

U.S. Department of Homeland Security – Cherie Short (Office – 202-441-3103 / Cell – 202-893-2941 / Email – [Cherie.short@hq.dhs.gov](mailto:Cherie.short@hq.dhs.gov))

U.S. Department of State – Bill Killion (Office – 202-647-7595 / Cell – 202-294-2605 / Email – [killionw@state.gov](mailto:killionw@state.gov))

U.S. Department of Transportation – Sean Poole (Office – 202-597-5109 / Cell – 202-366-3132 / Email – [sean.poole@dot.gov](mailto:sean.poole@dot.gov))



**Joe A. Gonsalves & Son**

**Anthony D. Gonsalves**

**Jason A. Gonsalves**

**Paul A. Gonsalves**

PROFESSIONAL LEGISLATIVE REPRESENTATION

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Email: gonsalves@gonsalvi.com

**TO:** South Coast Air Quality Management District

**FROM:** Anthony, Jason & Paul Gonsalves

**SUBJECT:** Legislative Update – January 2022

**DATE:** Thursday, January 27, 2022

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The Legislature returned to start the 2022 legislative session on January 3. Redistricting maps have caused musical chairs in districts throughout the state, which caused various legislators to resign, choose to not seek re-election, or look for other possible positions within the new boundaries.

In addition, the start of the second year of a 2-year session means all 2-year bills must be out of their house of origin by January 31, 2022. All new bills this year must be introduced by February 18, 2022, with policy committee hearings to start in mid-March. Budget subcommittees have already started holding hearings to review the Governor's January Budget proposal, released on January 10, 2022.

All of this, coupled with the wide-spread impacts from the Omicron variant, has led to a busy start for 2022 in Sacramento. The following will provide you with updates of interest to the District:

### **RESPONSE TO COVID-19 PANDEMIC**

As previously mentioned, the Omicron variant has continued to cause interruptions in Sacramento. In an effort to provide flexibility at all levels of government, on January 5, Governor Newsom signed an executive order to extend the sunset of AB 361. The Governor signed AB 361 in September 2021 to extend the flexibilities provided in a prior executive order, enabling public agencies to meet remotely during the Covid-19 emergency. Under the Order, state bodies are permitted to continue holding public meetings via teleconference through March 31, 2022.

On January 8, Governor Newsom's Administration unveiled a proposed \$2.7 billion COVID-19 Emergency Response Package – including a \$1.4 billion emergency appropriation request – to bolster testing capacity, accelerate vaccination and booster efforts, support frontline workers, strengthen the health care system and battle misinformation.

Governor Newsom's overall package includes:

#### \$1.2 BILLION: BOLSTER TESTING

Expand hours and capacity at testing sites throughout the state to help slow the spread. Distribute millions of COVID-19 antigen tests to local health departments, community clinics and county offices of education and schools. This is critical to the state's operational readiness and continued efforts to combat COVID-19, and it includes a \$1.4 billion emergency appropriation request to the Legislature for California's immediate needs.

Support the state's testing facilities, including specimen collection and expanding capacity in order to meet demand.

Support state departments in testing their staff and congregate populations

#### \$583 MILLION: GET MORE CALIFORNIANS VACCINATED & BOOSTED, COMBAT MISINFORMATION

Continue the "Vaccinate all 58" public education campaign to provide reliable information and build vaccine confidence while combating misinformation, all of which is in partnership with 250 ethnic media outlets.

Continue a robust community outreach and direct appointment assistance campaign by conducting door-to-door canvassing, phone banking and texting with over 700 CBOs and community partners in partnership with philanthropy.

In-home vaccination and testing programs to meet Californians where they're at. Provide free transportation to vaccination appointments throughout the state to help get more Californians vaccinated and boosted.

#### \$614 MILLION: SUPPORT OUR FRONTLINE WORKERS AND HEALTH CARE SYSTEMS

Support and distribution of critical personnel resources for health care systems to help protect frontline workers, patient care and hospital surge capacity as well as additional staffing for vaccination sites.

#### \$200 MILLION: SUPPORT STATE RESPONSE OPERATIONS

Resources to enhance the state's emergency response and public health capacities, including staffing and information technology at California Department of Public Health, Office of Emergency Services and Emergency Medical Services Authority.

## **\$110 MILLION: SUPPORT VULNERABLE POPULATIONS AND BOLSTER CONTACT TRACING EFFORTS**

Increased public health and humanitarian efforts at the California-Mexico border to keep migrants safe, including vaccinations, testing and isolation and quarantine services. Expanded statewide contact tracing activities to help keep Californians safe and slow the spread.

The Governor's budget also calls for new legislation to implement supplemental paid sick leave policies given the current situation being driven by the Omicron variant to better protect our frontline workers.

On January 25, Governor Gavin Newsom, Senate President pro Tempore Toni G. Atkins and Assembly Speaker Anthony Rendon announced that they have reached an agreement on a framework to ensure employees continue to have access to COVID-19 supplemental paid sick leave through September 30, 2022.

Early budget actions will also include restoring business tax credits, including research and development credits and net operating losses, that were limited during the COVID-19 recession. The proposal will also include tax relief for recipients of federal relief grants for restaurants and shuttered venues and additional funding for the Small Business Covid-19 Relief Grant Program. The framework includes significant funding to bolster testing capacity, accelerate vaccination and booster efforts, support frontline workers, strengthen the health care system, and battle misinformation.

## **California Blueprint Investments in State's Infrastructure and Clean Transportation Future**

On January 13, Governor Newsom unveiled his California Blueprint's major investments in transportation and infrastructure, highlighting the plan's \$9.1 billion in funding for climate-friendly clean transit projects that will create thousands of jobs. The Blueprint also includes \$2.3 billion to support ports and goods movement throughout the state and an additional \$6.1 billion to accelerate the state's transition to zero-emission vehicles (ZEVs) – creating a total package of \$10 billion that will invest in affordable cars, clean trucks and buses.

The California Blueprint includes a proposed \$9.1 billion package to advance clean transit initiatives that support the state's climate and public health goals, promote equity and bolster the green economy, including \$4.9 billion for transit and rail projects to improve connectivity, climate adaptation, bicycle and pedestrian safety and more locally driven initiatives. In addition, the Blueprint proposes a \$4.2 billion investment in California's High-Speed Rail project, which will eventually share the electrified Caltrain corridor, as well as funding for projects that encourage active modes of transportation and improve equity and safety, including converting underutilized highways into corridors that better serve residents. The Blueprint positions California to take advantage of additional federal infrastructure investments.



The California Blueprint also furthers the Administration's ongoing work to support ports and build supply chain resilience, outlining a \$2.3 billion package that includes \$1.2 billion for port-related infrastructure projects that increase goods movement capacity and additional funding for zero-emission port equipment, drayage trucks and infrastructure. The Governor in October issued an executive order directing state agencies to help identify additional ways to alleviate congestion at California ports and announced a state-federal partnership to help kick-start infrastructure projects designed to improve goods movement. In addition, the Governor has launched a multi-agency Supply Chain Task Force working to find opportunities to lease state and privately-owned land for container storage space, Caltrans has issued temporary truck weight exemptions on State Highways to keep goods moving efficiently and the Department of Motor Vehicles has worked to nearly double its capacity to conduct commercial driving tests.

The Blueprint also builds on the California Comeback Plan's \$3.9 billion ZEV package with an additional \$6.1 billion in proposed investment to accelerate the transition. The additional funding will add thousands of affordable clean cars, zero-emission trucks and transit buses, support school transportation programs and electrify our school bus fleet, expand equitable access to ZEV charging infrastructure and fund equity-focused clean transportation community projects.

## **\$10 BILLION ZEV PACKAGE**

On January 26, Governor Newsom outlined his \$10 billion ZEV package to accelerate the transition to ZEVs and fight climate change. This package is a critical part of the Governor's overall plan to cement California's status as a world leader in forging an oil-free future.

This \$10 billion ZEV package builds on the Governor's action to shift the automotive industry entirely to all electric by 2035, utilizing California's market dominance to accelerate the transition to ZEVs across the world and dramatically reduce the state's reliance on fossil fuels. Electric vehicles have become one of the state's top exports, and California represents half of the U.S. ZEV market.

Building upon last year's \$3.9 billion investment in ZEVs, the Governor is proposing another \$6.1 billion to accelerate this transition – a total \$10 billion ZEV package that will help make these vehicles more affordable and convenient for all Californians, while building out the infrastructure and charging stations needed to facilitate this transition. Significant investments include:

### **Low-income zero-emission vehicles and infrastructure:**

\$256 million for low-income consumer purchases, and \$900 million to expand affordable and convenient ZEV infrastructure access in low-income neighborhoods. These investments will focus on planning and deploying a range of charging options to support communities, including grid-friendly high-power fast chargers and at-home charging.

#### Heavy-duty zero-emission vehicles and supporting infrastructure:

\$935 million to add 1,000 zero-emission short-haul (drayage) trucks and 1,700 zero-emission transit buses; \$1.5 billion in Proposition 98 funds to support school transportation programs, including advancing electric school buses in a coordinated effort between educational, air pollution, and energy agencies; \$1.1 billion for zero-emission trucks, buses and off-road equipment and fueling infrastructure; and \$400 million to enable port electrification.

#### Zero-emission mobility:

\$419 million to support sustainable community-based transportation equity projects that increase access to zero-emission mobility in low-income communities. This includes supporting clean mobility options, sustainable transportation and equity projects, and plans that have already been developed by communities that address mobility. These locally-driven projects continue to be a direct response to critical mobility needs identified by community-based organizations and residents working on the front lines to lift up priority populations.

#### Emerging opportunities:

\$200 million to invest in demonstration and pilot projects in high carbon-emitting sectors, such as maritime, aviation, rail and other off-road applications, as well as support for vehicle grid integration at scale. These investments will help maintain California's role as the hub of ZEV market creation and innovation, creating economic development opportunities while accelerating zero-emission solutions in the hardest-to-reach segments of the transportation system.

## **CAP-AND-TRADE EXPENDITURE PLAN**

The Governor's January proposed budget assumes cap-and-trade auction revenue of \$3.6 billion in 2021-22. Based on this revenue estimate, there would be roughly \$600 million in carryover funding available to be allocated in 2022-23, plus an estimated \$2.3 billion in revenue collected in 2022-23. About \$1.5 billion would go to continuously appropriated programs in 2022-23, \$239 million would go to other existing spending commitments, and \$979 million would go to proposed discretionary spending. Also, based on these revenue assumptions, there would be a roughly \$200 million reserve balance at the end of 2022-23.

Almost all of the proposed discretionary spending would support existing programs that have received GGRF allocations in past years. Specifically, \$676 million would support ZEV programs at the California Air Resources Board (CARB) and \$240 million would go to continued implementation of AB 617, (C. Garcia, 2017). The proposed expenditure plan also provides \$33 million in discretionary funding for safe and affordable drinking water.

The only new major spending proposed in the discretionary spending package is \$30 million one time for expanded community-level air monitoring. Mobile monitors would be

used to provide a one-time snapshot of air pollution at the local level. According to the Administration, the data would be integrated into CARB tools that help visualize local pollution, and potentially inform future AB 617 activities to reduce community pollution in disadvantaged communities. The budget also includes several proposals to continue or increase staff and resources to administer GGRF programs. Some of these proposals are related to implementing recently enacted legislation. Funding would support staff at CARB, the Office of Planning and Research, the Coastal Commission, and the Office of Environmental Health Hazard and Assessment.

## **2022 LEGISLATIVE DEADLINES**

January 1: Statutes take effect

January 3: Legislature reconvenes

January 10: Budget must be submitted by Governor

January 14: Last day for policy committees to hear and report to fiscal committees' fiscal bills introduced in their house in the odd-numbered year.

January 21: Last day for any committee to hear and report to the floor bills introduced in that house in the odd-numbered year. Last day to submit bill requests to the Office of Legislative Counsel.

January 31: Last day for each house to pass bills introduced in that house in the odd-numbered year.

February 18: Last day for bills to be introduced

# RESOLUTE<sup>\*</sup>

## South Coast Air Quality Management District Legislative and Regulatory Update – January 2022

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### ❖ Important Dates

- Jan. 10 – Budget must be submitted by Governor.
- Jan. 14 – Last day for policy committees to hear and report to fiscal committees the fiscal bills introduced in their house in the previous Session.
- Jan. 21 – Last day for any committee to hear and report to the floor bills introduced in that house in the previous Session.
- Jan. 21 – Last day to submit bill requests to the Office of Legislative Counsel.
- Jan. 31 – Last day for each house to pass bills introduced in that house in the previous Session.
- Feb. 18 – Last day for bills to be introduced.
- Feb. 20 – Last day for the state and legislative maps drawn by the California Redistricting Commission to be challenged in court.
- Apr. 7 – Spring Recess begins upon adjournment of session.

### ❖ RESOLUTE Actions on Behalf of South Coast AQMD. RESOLUTE partners David Quintana, Jarrell Cook, and Alfredo Arredondo continued their representation of SCAQMD before the State’s Legislative and Executive branches. Selected highlights of our recent advocacy include:

- Assisted South Coast staff in orchestrating and conducting a briefing of Transportation Committee Chair Senator Lena Gonzalez on South Coast’s budget needs and policy priorities for 2022.
- Contacted the Los Angeles, Latino, Black, and Women’s Legislative Caucuses to schedule briefings by South Coast staff.
- Represented South Coast’s position on AB 365 (O’Donnell) to members of the Assembly Revenue & Taxation Committee and the Assembly Appropriations Committee.

### ❖ Senate Transportation Committee to Hold an Informational Hearing on Medium and Heavy-Duty Vehicle Emissions. On February 15, the Senate Transportation Committee is scheduled to hold an informational hearing on ‘Sustainable Transportation: Reducing Greenhouse Gas Emissions from Medium-Duty, Heavy-Duty and Non-Road Vehicles.’

Tentatively, consultants setting the agenda for the hearing have indicated that it will focus on two issues: (1) fuel sourcing and (2) the state of zero and near-zero emission technology. The Chair, Senator Lena Gonzalez, has expressed her intention to have a discussion on the state of current emissions reduction programs and what we should do going forward. Senator Gonzalez has also previously expressed to RESOLUTE that she intends to carry information garnered from this hearing into legislation—her [SB 726](#) remains on the inactive file in the Assembly.

Invitees include representatives from the ZEV and near-zero emission vehicle industries, the trucking industry, regulators, and members of the environmental justice community.

### ❖ Governor Newsom Releases January 2022-23 Budget. Governor Gavin Newsom released his proposed state budget for the 2022-23 fiscal year. The Governor’s January budget includes \$286.5 billion in total funds. Notable proposals for South Coast include:

- \$6.1 billion for zero-emission vehicles and infrastructure investment, including support for electrification of drayage trucks, school buses, and other large vehicles.
- \$750 million for active transportation projects to decarbonize the state’s active transportation networks.
- \$400 million for climate adaptation projects that support climate resiliency and reduce infrastructure risk.
- \$240 million to support the Community Air Protection Program (AB 617)
- \$210 million for grants to accelerate industrial sector decarbonization.
- \$100 million to advance the use and production of green hydrogen.
- \$85 million to food producers to accelerate the adoption of renewable energy and energy efficient technologies.
- \$30 million for local and real-time air pollution and emissions monitoring in disadvantaged communities across the state.
- \$7.6 million to continue the Heavy-Duty Vehicle Inspection and Maintenance Program.
- \$1.8 million to establish the new Office of Racial Equity at the Air Resources Board.

### Zero-Emission Vehicle Investments

(Dollars in Millions)

| Investment Category | Program  | 2021 ZEV Package Multi-Year Investment | 2022 ZEV Package Multi-Year Investment | ZEV Package Totals |
|---------------------|--|--|--|--------------------|
| Passenger Vehicles  | Clean Vehicle Rebate Project   | \$525                                  | \$0                                    | \$525              |
|                     | Clean Cars 4 All & Other Equity Projects                                       | \$400                                  | \$256                                  | \$656              |
|                     | ZEV Fueling Infrastructure Grants  | \$300                                  | \$600                                  | \$900              |
|                     | Equitable At-home Charging   | \$0                                    | \$300                                  | \$300              |
| Big ZEVs            | Drayage Trucks & Infrastructure  | \$470                                  | \$475                                  | \$945              |
|                     | Drayage Trucks & Infrastructure Pilot Project                                  | \$65                                   | \$0                                    | \$65               |
|                     | Transit Buses & Infrastructure   | \$290                                  | \$460                                  | \$750              |
|                     | School Buses & Infrastructure  | \$450                                  | \$1,500                                | \$1,950            |
|                     | Clean Trucks, Buses and Off-Road Equipment                                     | \$700                                  | \$1,100                                | \$1,800            |
|                     | Ports  | \$0                                    | \$400                                  | \$400              |
|                     | Near-Zero Heavy Duty Trucks  | \$45                                   | \$0                                    | \$45               |
| Other               | ZEV Consumer Awareness   | \$5                                    | \$0                                    | \$5                |
|                     | ZEV Manufacturing Grants   | \$250                                  | \$0                                    | \$250              |
|                     | Community-Based Plans, Projects and Support / Sustainable Community Strategies | \$0                                    | \$419                                  | \$419              |
|                     | Emerging Opportunities   | \$0                                    | \$200                                  | \$200              |
|                     | Transportation Package ZEV   | \$407                                  | \$383                                  | \$790              |
| <b>Totals</b>       |  | <b>\$3,907</b>                         | <b>\$6,093</b>                         | <b>\$10,000</b>    |

## Energy Package

(Dollars in Millions)

| Department                      | Program   | Fiscal Year<br>2022-23 | Fiscal Year<br>2023-24 | Two-Year<br>Total |
|---------------------------------|---|------------------------|------------------------|-------------------|
| California Energy<br>Commission | Incentives for Long Duration Storage Projects   | \$140                  | \$240                  | \$380             |
|                                 | Green Hydrogen Grants for Green Electrolytic Hydrogen   | \$100                  |                        | \$100             |
|                                 | Industrial Decarbonization  | \$110                  | \$100                  | \$210             |
|                                 | Food Production Investment Program  | \$85                   |                        | \$85              |
|                                 | Equitable Building Decarbonization  | \$322.6                | \$599.8                | \$922.4           |
|                                 | Offshore Wind Infrastructure  | \$45                   |                        | \$45              |
|                                 | Energy Modeling to Support California's Energy Transition   | \$7                    |                        | \$7               |
| Air Resources Board             | Equitable Building Decarbonization - Accelerating Adoption of Ultra-Low Global Warming Potential Refrigerants | \$20                   | \$20                   | \$40              |
| Department of Water Resources   | Oroville Pump Storage   | \$100                  | \$140                  | \$240             |
| Various                         | Resources to Support Offshore Wind Generation and Energy Reliability  | \$8.2                  | \$1.5                  | \$9.7             |
| <b>Total</b>                    |   | <b>\$937.8</b>         | <b>\$1,101.3</b>       | <b>\$2,039.1</b>  |

The Governor’s budget will be revised in May to account for any differences between the revenue the Governor projects will be available, and the actual revenue generated from Californians filing their taxes in April.

- ❖ **The California Air Resources Board Responds to Environmental Justice Community’s Petition on Biomethane.** On January 26, CARB responded to a petition submitted in October 2021 by Vermont Law School on behalf of the Association of Irrigated Residents (AIR), Leadership Counsel for Justice & Accountability, Food & Water Watch, and Animal Legal Defense Fund. The petition requested that CARB amend the Low Carbon Fuel Standard (LCFS) to “exclude all fuels derived from biomethane from dairy and swine manure from the LCFS, or, in the alternative, to reform the LCFS treatment of those fuels to account for additional greenhouse gas (GHG) emissions.”

In its letter, CARB Executive Officer Richard Corey rejects the petition as “premature.” He notes that CARB is currently updating its Scoping Plan, thus amending the LCFS should wait until after that “process has informed how the state’s portfolio approach to climate mitigation may be best structured to deliver cost-effective, technologically feasible, and direct emissions reductions across various sources.”

Notably, Corey writes favorably of biomethane based fuels, “the current LCFS crediting regime for biomethane derived from animal manure is delivering the significant benefits it was designed to achieve. Specifically, the current LCFS crediting incentive for manure methane capture for transportation fuel use appears to be spurring the development of new digester projects. CARB staff estimates that those projects will significantly reduce methane emissions associated with the animal agriculture sector in California and beyond. . . . CARB staff estimate that these new digesters, in addition to providing local odor and other air quality benefits, will reduce methane emissions by approximately 75 percent during the lifetimes of these projects. The current LCFS regulatory scheme in effect has supported replacement of diesel heavy duty vehicles with natural gas vehicles, which reduces GHG emissions and decreases criteria air pollutant emissions from transportation.”

The petition and CARB’s response is notable in part because it reveals renewed interest by the environmental justice community to prioritize a fight against biofuels and natural gas vehicles. We expect to see a push by environmental advocates to have members of the Legislature, as well as California’s regulators, to take on measures that would limit or exclude biomethane based fuels in the upcoming years.

- ❖ **General Motors Recognizes California's Authority to Set Vehicle Emission Standards under the Clean Air Act.** Automaker General Motors officials sent a letter to Governor Gavin Newsom early January stating that the company will recognize California's authority to set vehicle emission standards under the Clean Air Act. As a result, GM's vehicles will now be eligible for government fleet purchases by the state. This is a reversal of GM's position three years ago, when the company supported federal efforts to ban California from making its own emissions rules. As a result, Governor Newsom announced the state would not buy GM vehicles.

Governor Newsom released a statement in response to this shift: “GM is joining California in our fight for clean air and emission reduction as part of the company's pursuit of a zero-emissions future. This agreement will help accelerate California's nation-leading commitment to tackling the climate crisis. We welcome GM in our clean vehicle revolution.”

- ❖ **Mary Nichols Participates in a Panel on ‘Air Quality Inequality.’** On January 27, former CARB chair Mary Nichols is scheduled to [participate in a panel](#), sponsored by Zocalo Public Square, to discuss “What would it take for the more privileged parts of California to reduce air pollution that disproportionately affects low-income and rural communities around the state? What political and economic strategies have succeeded in improving air quality locally and statewide? And can people and organizations fighting for clean air find inspiration from coalition-building and organizing efforts in other arenas?”

Nichols is joined on the panel by Central Valley Air Quality Coalition Executive Director Catherine Garoupa White and USC sociology professor Manuel Pastor.



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# CALIFORNIA ADVISORS, LLC

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South Coast AQMD Report  
California Advisors, LLC  
February 11, 2022 Legislative Committee Hearing

## **Legislative Update**

As the Legislature closes out the month of January and the deadline to move “two-year” bills out of their house of origin has passed, the Legislature will shift its attention to the state budget and introducing new legislative proposals for the upcoming year. The deadline to introduce bills is February 18.

In the first month legislators were back in Sacramento, they faced many of the same challenges from the previous two years. The January surge of COVID-19 cases also hit state lawmakers. Several legislators tested positive, and this forced others to quarantine. The Senate had active discussions about shutting down for a couple of weeks. Ultimately, it was determined that the Senate would continue their work and any senator that was under a quarantine directive would be able to participate remotely. In committees, all quarantined Senators were able to participate and vote remotely. The Assembly has not announced similar policies.

In terms of staffers, the Senate Rules Committee announced that they would limit the number of staff in the Capitol, the new swing space, and the Legislative Office Building. Specifically, the memo stated, “Effective, Friday, January 7<sup>th</sup>, Member offices and Committee offices will be limited to one (1) staff person per day to support essential functions. All other staff should work remotely from home.” On the Assembly side, for staff, a Temporary Flexible Work Program was reinstated until February 14.

Additionally, Senate President pro Tempore Atkins announced several changes to Senate Leadership positions. Specifically, Senator Bob Hertzberg (D-Van Nuys) was moved from serving as Majority Leader of the Senate to Majority Leader Emeritus. Senator Mike McGuire (D-Healdsburg), who was serving as Assistant Majority Leader, became Majority Leader. Further, Atkins appointed Senator Susan Talamantes Eggman (D-Stockton) as Assistant Majority Leader for the Senate.

As Majority Leader Emeritus, Hertzberg will lead Senate negotiations on pending ballot measures, working with the respective policy chairs. He played a significant role in the development of SB 1253 (Steinberg), enacted in 2014, which allows proponents of ballot initiatives to withdraw measures even after signature verification, as long as the Secretary of State has not finally certified the ballot. In recent years, this has meant that proponents and opponents of measures have come to the Legislature to seek alternative policy solutions. Senator Hertzberg was one of the chief negotiators when it came to the landmark privacy initiative that was pulled off the ballot in 2018. There are also many high-profile propositions that are moving forward this year, include one tax increase that would help fund clean air activity.



## **Budget Update**

On January 25, Governor Gavin Newsom, Senate President pro Tempore Toni G. Atkins, and Assembly Speaker Anthony Rendon announced that they reached an agreement on COVID-19 supplemental paid sick leave. The framework seeks to ensure employees continue to have access to time off through September 30, 2022.

In a statement they said, “California’s ability to take early budget action will protect workers and provide real relief to businesses reeling from this latest surge. Throughout this pandemic, we have come together to address the immediate impacts COVID-19 continues to have on millions of California families, both at home and at work. By extending sick leave to frontline workers with COVID and providing support for California businesses, we can help protect the health of our workforce, while also ensuring that businesses and our economy are able to thrive. We will continue to work to address additional needs of small businesses through the budget – they are the backbone of our communities and continue to be impacted by COVID-19.”

In addition to this, other early budget actions could include restoring business tax credits, including research and development credits and net operating losses, that were limited during the COVID-19 recession; tax relief for recipients of federal relief grants for restaurants and shuttered venues; and additional funding for the Small Business Covid-19 Relief Grant Program.

## **Lawmakers Form Vaccine Working Group**

A group of lawmakers have announced the formation of a Vaccine Working Group. According to the press release, the group seeks to develop evidence-based policies to strengthen the state’s ability to stop the spread of COVID-19 and other diseases, while battling misinformation. Further, the group will examine data, hear from experts, and engage stakeholders to determine the best approaches to promote vaccines.

Specifically, the group includes Senator Richard Pan (D-Sacramento), a pediatrician and Chair of the Senate Health Committee, as well as Senators Scott Wiener (D-San Francisco), Josh Newman (D-Fullerton), Assemblymembers Akilah Weber (D-San Diego), Buffy Wicks (D-Oakland), Cecilia Aguiar-Curry (D-Winters), and Evan Low (D-Campbell).

The Working Group has already put forward two pieces of legislation on the topic and more is expected. This comes in the aftermath of the Supreme Court blocking President Biden’s vaccine mandate. Observers are watching this group closely to see which direction California will move when it comes to vaccines.

BOARD MEETING DATE: March 4, 2022

AGENDA NO. 24

REPORT: Mobile Source Committee

SYNOPSIS: The Mobile Source Committee held a hybrid meeting on Friday, February 18, 2022. The following is a summary of the meeting.

RECOMMENDED ACTION:  
Receive and file.

Gideon Kracov, Chair  
Mobile Source Committee

SLR:ak

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### **Committee Members**

Present: Board Member Gideon Kracov/Chair  
Supervisor Sheila Kuehl/Vice Chair  
Mayor Pro Tem Larry McCallon  
Supervisor V. Manuel Perez  
Mayor Pro Tem Carlos Rodriguez

Absent: Council Member Nithya Raman

### **Call to Order**

Chair Kracov called the meeting to order at 9:00 a.m.

### **INFORMATIONAL ITEM:**

#### **1. 2022 Air Quality Management Plan Overview**

Dr. Sarah Rees, Deputy Executive Officer/Planning, Rule Development and Area Sources presented on the 2022 AQMP.

Supervisor Kuehl commented on the fragmented jurisdictional authority of various agencies, South Coast AQMD's limited ability to control all sources and noted the importance to do everything within our authority. She inquired about the need to electrify existing residential and commercial buildings, especially with potentially significant costs for low-income communities. She also asked if there are other emission sources that can achieve greater emission reductions. Dr. Rees responded that emissions from buildings are significant and acknowledged the challenges and costs

related to the conversion to zero emission technologies in the building sector. Dr. Rees also responded that emissions from federal and international sources are significant contributors and must be controlled for attainment.

Adrian Martinez, Earthjustice, expressed concerns over the reliance on ‘black box’ reductions and supported the approach of zero emission technologies. He further commented that incentives should be used to deploy zero emission technologies with emphasis on low-income communities.

Harvey Eder, Public Solar Power Coalition, expressed concerns on the impacts of climate change.

David Rothbart, Southern California Alliance of Publicly Owned Treatment Works, commented that mobile and federal sources are the main sources of emissions in the South Coast Air Basin, and expressed concerns about the structure of the Clean Air Act applying penalties on stationary sources for failure to attain air quality standards.

Chris Chavez, Coalition of Clean Air, expressed concerns over the reliance on black box measures for attainment in 2031 and 2037. He commented that stronger actions are needed for ISR and building decarbonization, with emphasis to address environmental impacts in communities near pollution sources.

Kimberly Orbe, Sierra Club, supported regulatory approaches for zero emissions technologies and prioritization of incentive programs in low-income communities. She suggested to establish equity working groups to engage local community groups, affordable housing groups, and environmental justice stakeholders in the development and implementation of the 2022 AQMP.

Mark Abramowitz, Community Environmental Services, commented on the need to consider state standards, and cost feasibility and possible infrastructure upgrades should be considered.

Mayor Rodriguez acknowledged the significant challenges to achieve air quality goals throughout the region. He inquired about the strategy on building electrification and expressed concerns over the economic impacts on low-income households and disadvantaged communities. He asked staff to provide the committee with more information on the cost effectiveness and cost impacts of the control measures for buildings. Wayne Natri, Executive Officer, responded that staff is looking at all feasible measures, will provide a socioeconomic analysis on all proposed measures and will provide the committee with more information in upcoming months.

Mayor McCallon commented that the white papers in the 2016 AQMP were helpful and asked if white papers are being pursued for the 2022 AQMP. Dr. Rees responded that in this cycle multiple working group meetings are being held to discuss key topics for this AQMP. Mr. Nastri added that staff could provide more information to Board Members. Mayor McCallon further commented that the Inland Empire experienced high levels of ozone that are above the federal ozone air quality standards, with little air quality progress. He expressed concerns that a NOx-focused control strategy may not work. Dr. Rees presented various modeling scenarios demonstrating a NOx-focus control strategy with limited VOC reduction will demonstrate attainment in 2037, while a VOC-only strategy will not. Mayor McCallon asked that this topic be brought back to the Mobile Source Committee.

Chair Kracov asked about the strategy to reduce emissions from federal sources for which South Coast AQMD has no direct authority. Mr. Nastri responded that there are multiple ongoing discussions to bring the resources and actions necessary to address emissions from federal sources. He emphasized that staff is continuing to press in all levels of the government including federal, state, Congress, and legislatures, as well as on the international level.

Chair Kracov inquired about the implementation of 2016 AQMP and whether the recent ambient ozone levels are consistent with the modeling predictions. Dr. Rees responded that the air quality model still predicts accurately, however recent meteorology has been conducive to higher ozone formation. The 2016 AQMP relied heavily on incentive funding which has not been fully materialized, but significant regulatory actions have been taken. However, similar progress has not been observed for federal sources. Chair Kracov inquired on CARB's progress towards their commitment. Dr. Rees responded that CARB is moving forward but expressed concerns over the lack of emission reductions near term. Chair Kracov asked about the impact of climate change on modeling. Dr. Rees responded that U.S. EPA's guidelines do not require the incorporation of climate change impact because of the shorter time scale for the AQMP compared to climate change, and studies are ongoing to evaluate the impacts of climate change on ozone levels. Lastly, Chair Kracov asked whether the 2022 AQMP would address different types of fuels used in the future. Dr. Rees answered that Clean Air Act "black box" measures provide the flexibility needed to address the uncertainty associated with different types of fuel use as part of the 2022 AQMP.

### **WRITTEN REPORTS:**

#### **2. Rule 2305 Implementation Status Report: Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program**

This item was received and filed.

**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 to report.

**6. Public Comment Period**

Mr. Eder expressed the need for a total solar conversion.

**7. Next Meeting Date**

The next regular Mobile Source Committee meeting is scheduled for Friday, March 18, 2022.

**Adjournment**

The meeting adjourned at 10:30 a.m.

**Attachments**

1. Attendance Record
2. Rule 2305 Implementation Status Report
3. Rule 2202 Activity Report – Written Report
4. 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 18, 2022**

|                                     |  |
|-------------------------------------|--|
| Board Member Gideon Kracov.....     | South Coast AQMD Board Member            |
| Supervisor Sheila Kuehl .....       | South Coast AQMD Board Member            |
| Mayor Pro Tem Larry McCallon .....  | South Coast AQMD Board Member            |
| Supervisor V. Manuel Perez .....    | South Coast AQMD Board Member            |
| Mayor Pro Tem Carol Rodriguez ..... | South Coast AQMD Board Member            |
|                                     |  |
| Genevieve Amsalem .....             | Board Consultant (Kracov)                |
| Matthew Holder .....                | Board Consultant (Rodriguez)             |
| Loraine Lundquist.....              | Board Consultant (Kuehl)                 |
| Debra Mendelsohn .....              | Board Consultant (Rutherford)            |
| Josh Nuni .....                     | Board Consultant (Raman)                 |
| Ross Zelen.....                     | Board Consultant (Kracov)                |
|                                     |  |
| Mark Abramowitz.....                | Hydrogen Business Council                |
| Chris Chavez.....                   | Coalition for Clean Air                  |
| Curtis Coleman .....                | Southern California Air Quality Alliance |
| Ramine Cromartie.....               | Public Member                            |
| Timothy DeMoss .....                | Port of Los Angeles                      |
| Harvey Eder .....                   | Public Solar Power Coalition             |
| Ariel Fideldy .....                 | CARB                                     |
| Priscilla Hamilton .....            | So Cal Gas                               |
| Jason Henderson .....               | CCEEB                                    |
| Frank Lopez .....                   | So Cal Gas                               |
| Jennifer Lu .....                   | So Cal Gas                               |
| Bill La Marr .....                  | California Small Business Alliance       |
| Leah Louis-Prescott .....           | RMI                                      |
| Adrian Martinez .....               | EarthJustice                             |
| Dan McGivney.....                   | So Cal Gas                               |
| Kimberly Orbe .....                 | Sierra Club                              |
| Bethmarie Quiamboia .....           | Southern California Edison               |
| David Rothbart.....                 | LACSD                                    |
| John Ungvarsky .....                | U.S. EPA                                 |
| Janet Whittick .....                | CCEEB                                    |
| Peter Whittingham .....             | Whittingham Public Affairs Advisors      |
|                                     |  |
| Derrick Alatorre.....               | South Coast AQMD Staff                   |
| Jason Aspell .....                  | South Coast AQMD Staff                   |
| Barbara Baird.....                  | South Coast AQMD Staff                   |
| Lawrence Brown.....                 | South Coast AQMD Staff                   |
| Philip Crabbe .....                 | South Coast AQMD Staff                   |

Scott Epstein ..... South Coast AQMD Staff  
Bayron Gilchrist..... South Coast AQMD Staff  
Sheri Hanizavareh..... South Coast AQMD Staff  
Anissa Heard-Johnson ..... South Coast AQMD Staff  
Mark Henninger ..... South Coast AQMD Staff  
Kathryn Higgins..... South Coast AQMD Staff  
Jeff Inabinet ..... South Coast AQMD Staff  
Sujata Jain ..... South Coast AQMD Staff  
Aaron Katzenstein..... South Coast AQMD Staff  
Angela Kim..... South Coast AQMD Staff  
Michael Krause ..... South Coast AQMD Staff  
Sang-Mi Lee..... South Coast AQMD Staff  
Ian MacMillan..... South Coast AQMD Staff  
Matt Miyasato ..... South Coast AQMD Staff  
Ron Moskowitz..... South Coast AQMD Staff  
Susan Nakamura ..... South Coast AQMD Staff  
Wayne Nastri ..... South Coast AQMD Staff  
Sarah Rees..... South Coast AQMD Staff  
Mary Reichert ..... South Coast AQMD Staff  
Lijin Sun..... South Coast AQMD Staff  
Lisa Tanaka O'Malley ..... South Coast AQMD Staff  
Anthony Tang ..... South Coast AQMD Staff  
Jill Whynot..... South Coast AQMD Staff  
Vicki White..... South Coast AQMD Staff  
Paul Wright ..... South Coast AQMD Staff  
Victor Yip ..... South Coast AQMD Staff



**Rule 2305 Implementation Status Report:**  
**Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program**

*November 1, 2021 to January 31, 2022*

**1. Implementation and Outreach Activities:**

| Activity   | Past Three Months | Since Rule Adoption |
|--|-------------------|---------------------|
| Calls and Emails to WAIRE Program Hotline (909 396-3140) and Helpdesk ( <a href="mailto:waire-program@aqmd.gov">waire-program@aqmd.gov</a> ) | 171               | 869                 |
| Views of Compliance Training Videos (outside of webinars)  | 110               | 1,357               |
| Emails Sent with Information About WAIRE Program Resources*  | 7,050             | ~18,550             |
| Visits to <a href="http://www.aqmd.gov/waire">www.aqmd.gov/waire</a>   | 3,556             | ~8,500              |
| Presentations to Stakeholders  | 9**               | 58                  |

*\*Including responses to media inquiries.*

*\*\*Western Pallet Association, IEC/OC, Rawlings Consulting, Prologis, Distribution Management Association, GEODIS, JLL, WAIRE-FIND Working Group, and Training Webinar #5*

**2. Highlights of Recent Compliance Activities**

On November 17, 2021, staff held a second working group meeting to discuss the types of WAIRE Program data that could be available on the Facility Information Detail (F.I.N.D.) online tool. Staff presented a preliminary proposal of WAIRE Program data that could be made available on the F.I.N.D tool, including considerations for the business confidentiality of reported data, and discussed the next steps for the working group series. There were approximately 90 people participating in the virtual working group meeting. Questions were asked about WAIRE program data and the timeline of release of this information on the F.I.N.D. tool. Additional discussions on the potential confidentiality of data would take place at the next working group meeting.

The fifth WAIRE Program training webinar was held on December 15, 2021 with a focus on the Early Annual WAIRE Report and WAIRE Program Online Portal. Staff presented training videos on how to submit an Early Annual WAIRE Report using the WAIRE Program Online Portal (WAIRE POP). Staff provided an overview of the WAIRE program data collection required for the Early Action Annual WAIRE Report. There were approximately 120 people participating in the training webinar. Questions were asked about WAIRE program compliance deadlines and other WAIRE Program warehouse-related information that may be required for reporting.



Warehouse owners were required to submit the Warehouse Operations Notification through the WAIRE Program Online Portal (POP). Staff is continuing to process, validate, and analyze submitted data, and is concurrently contacting to warehouse owners whose submitted reports need corrections or updates.

Staff is continuing to work on expanding the WAIRE POP to allow submission of Early Annual WAIRE Reports and Initial Site Information Reports. The voluntary early action submittal due date was extended to March 31, 2022, to allow time to complete development of the online reporting module. A form has also been made available to submit data before this date. An invitation to test the new WAIRE POP functionality before it goes live was also sent to the WAIRE Program listserv and posted on the WAIRE Program website.

Staff continued to conduct informational presentations to various organizations to broaden outreach and respond to questions on the WAIRE Program.

### **3. Anticipated Activity in February**

- Continue outreach to Phase 1 warehouse operators to advise of Rule 2305 requirements to track truck trips and earn WAIRE Points, as well as outreach to warehouse owners to update their submissions.
- Continue to analyze data submitted in reports to date.
- Continue to work with utilities as warehouses pursue installing ZE infrastructure. As an example, SCE recently presented information showing that warehouses make up 26 percent of all their Charge Ready Transport Program sites actively pursuing electrification for medium/heavy duty vehicles.
- Prepare for the third working group meeting on Public Access to WAIRE Program Data.



# 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, 2022 – January 31, 2022

| Employee Commute Reduction Program (ECRP) |    |
|---|----|
| # of Submittals:                          | 75 |

| Emission Reduction Strategies (ERS) |   |
|-------------------------------------|---|
| # of Submittals:                    | 5 |

| Air Quality Investment Program (AQIP) Exclusively |                 |             |
|---|-----------------|-------------|
| County  | # of Facilities | \$ Amount   |
| Los Angeles                                       | 0               | \$ 0        |
| Orange  | 0               | \$ 0        |
| Riverside   | 0               | \$ 0        |
| San Bernardino                                    | 0               | \$ 0        |
| <b>TOTAL:</b>                                     | <b>0</b>        | <b>\$ 0</b> |

| ECRP w/AQIP Combination |                 |             |
|-------------------------|-----------------|-------------|
| County                  | # of Facilities | \$ Amount   |
| Los Angeles             | 0               | \$ 0        |
| Orange                  | 0               | \$ 0        |
| Riverside               | 0               | \$ 0        |
| San Bernardino          | 0               | \$ 0        |
| <b>TOTAL:</b>           | <b>0</b>        | <b>\$ 0</b> |

### Total Active Sites as of January 31, 2022

| ECRP (AVR Surveys) |                   |                  | TOTAL<br>Submittals<br>w/Surveys | AQIP  | ERS    | TOTAL             |
|--------------------|-------------------|------------------|----------------------------------|-------|--------|-------------------|
| ECRP <sup>1</sup>  | AQIP <sup>2</sup> | ERS <sup>3</sup> |                                  |       |        |                   |
| 507                | 8                 | 133              | 648                              | 107   | 571    | 1,326             |
| 38.24%             | 0.60%             | 10.03%           | 48.87%                           | 8.07% | 43.06% | 100% <sup>4</sup> |

### Total Peak Window Employees as of January 31, 2022

| ECRP (AVR Surveys) |                   |                  | TOTAL<br>Submittals<br>w/Surveys | AQIP   | ERS     | TOTAL             |
|--------------------|-------------------|------------------|----------------------------------|--------|---------|-------------------|
| ECRP <sup>1</sup>  | AQIP <sup>2</sup> | ERS <sup>3</sup> |                                  |        |         |                   |
| 392,624            | 2,588             | 49,631           | 444,843                          | 15,070 | 226,419 | 686,332           |
| 57.20%             | 0.38%             | 7.23%            | 64.81%                           | 2.20%  | 32.99%  | 100% <sup>4</sup> |

- 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.

BOARD MEETING DATE: March 4, 2022

AGENDA NO.

REPORT: Lead Agency Projects and Environmental Documents Received

SYNOPSIS: This report provides a listing of CEQA documents received by South Coast AQMD between January 1, 2022 and January 31, 2022, and those projects for which South Coast AQMD is acting as lead agency pursuant to CEQA.

COMMITTEE: Mobile Source, February 18, 2022, Reviewed

RECOMMENDED ACTION:  
Receive and file.

Wayne Natri  
Executive Officer

SR:MK:MM:LS:MC

---

**CEQA Document Receipt and Review Logs (Attachments A and B)** – Each month, 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, 2022 to January 31, 2022 is included in Attachment A. A list of active projects for which South Coast AQMD staff is continuing to evaluate or prepare comments for the November and December reporting periods is included as Attachment B. A total of 27 CEQA documents were received during this reporting period and 11 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 South Coast AQMD has been contacted regarding potential air quality-related environmental justice concerns. 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 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 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 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 of January 1, 2022 to January 31, 2022, South Coast AQMD received 27 CEQA documents. Of the 42 documents listed in Attachments A and B:

- 11 comment letters were sent;
- 17 documents were reviewed, but no comments were made;
- 14 documents are currently under review;
- 0 documents did not require comments (e.g., public notices);
- 0 documents were not reviewed; and
- 0 document was screened without additional review.

(The above statistics are from January 1, 2022 to January 31, 2022 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 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, 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 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 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.

Attachment C to this report summarizes the active projects for which South Coast AQMD is lead agency and is currently preparing or has prepared environmental documentation. As noted in Attachment C, South Coast AQMD continued working on the CEQA documents for three 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, 2022 to January 31, 2022**

| SOUTH COAST AQMD LOG-IN NUMBER<br>PROJECT TITLE  | PROJECT DESCRIPTION  | TYPE OF DOC.   | LEAD AGENCY         | COMMENT STATUS  |
|--|--|--|---------------------|---|
| <b>Warehouse &amp; Distribution Centers</b><br>RVC220107-02<br>First Harley Knox Industrial                        | The project consists of construction of a 154,250 square foot warehouse on 1.22 acres. The project is located on the northwest corner of Harley Knox Boulevard and Redlands Avenue.<br><br>Comment Period: 1/5/2022 - 2/4/2022      Public Hearing: N/A  | Notice of Intent to Adopt a Mitigated Negative Declaration | City of Perris      | Document reviewed - No comments sent for this document received |
| <b>Warehouse &amp; Distribution Centers</b><br>RVC220111-02<br>Plot Plan No. 200002 Revision No. 1                 | The project consists of demolition of a 255,685 square foot warehouse and construction of a trailer parking yard on 11.28 acres. The project is located on the northwest corner of Placentia Avenue and Harvill Avenue in the community of Mead Valley.<br><br>Comment Period: 1/4/2022 - 1/20/2022      Public Hearing: N/A | Site Plan  | County of Riverside | Document reviewed - No comments sent for this document received |
| <b>Warehouse &amp; Distribution Centers</b><br>RVC220119-01<br>Phelan Warehouse at W Nance/ N Webster              | The project consists of construction of a 109,229 square foot warehouse on 4.99 acres. The project is located on the southeast corner of West Nance Street and North Webster Avenue.<br><br>Comment Period: 1/19/2022 - 2/17/2022      Public Hearing: N/A   | Notice of Intent to Adopt a Mitigated Negative Declaration | City of Perris      | ** Under review, may submit written comments                    |
| <b>Warehouse &amp; Distribution Centers</b><br>RVC220119-06<br>Duke Warehouse at Patterson Avenue and Nance Street | The project consists of construction of a 769,668 square foot warehouse on 35.7 acres. The project is located near the southwest corner of Harley Knox Boulevard and Nevada Avenue.<br><br>Comment Period: 1/19/2022 - 2/17/2022      Public Hearing: 2/2/2022   | Notice of Preparation                                      | City of Perris      | ** Under review, may submit written comments                    |

\*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, 2022 to January 31, 2022**

| SOUTH COAST AQMD LOG-IN NUMBER<br>PROJECT TITLE  | PROJECT DESCRIPTION  | TYPE OF DOC.  | LEAD AGENCY                            | COMMENT STATUS  |
|--|--|---|--|---|
| <b>Warehouse &amp; Distribution Centers</b><br>SBC220111-04<br>Mission Boulevard and Ramona Avenue Business Park Project | The project consists of construction of eight buildings totaling 514,269 square feet for warehouse and manufacturing activities on 27.74 acres. The project is located on the northwest corner of Mission Boulevard and Ramona Avenue.<br>Reference SBC210105-04<br><br>Comment Period: 1/10/2022 - 2/22/2022      Public Hearing: N/A   | Notice of Availability of a Draft Environmental Impact Report | City of Montclair                      | Document reviewed - No comments sent for this document received |
| <b>Industrial and Commercial</b><br>SBC220105-02<br>TEC Equipment  | The project consists of construction of a 5,950 square foot truck sales and repair facility with 189 truck parking spaces on 7.08 acres. The project is located at 776 West Mill Street on the northeast corner of Interstate 215 and West Mill Street in the designated AB 617 San Bernardino, Muscoy community.<br><br>Comment Period: 12/21/2021 - 1/20/2022      Public Hearing: 1/26/2022   | Notice of Intent to Adopt a Mitigated Negative Declaration    | City of San Bernardino                 | Document reviewed - No comments sent for this document received |
| <b>Waste and Water-related</b><br>LAC220111-01<br>SBD Real Estate Four, LLC  | Staff provided comments on the Draft Removal Action Workplan for the project, which can be accessed at: <a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2021/november/LAC211026-07.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2021/november/LAC211026-07.pdf</a> . The project consists of development of cleanup actions to excavate, remove, and dispose top 24 inches of soil contaminated with volatile organic compounds, and installation of a soil vapor barrier on 0.28 acres. The project is located at 1341 West Gardena Boulevard near the northeast corner of West Gardena Boulevard and Normandie Avenue in the City of Gardena.<br>Reference LAC211026-07<br><br>Comment Period: N/A      Public Hearing: N/A | Response to Comments  | Department of Toxic Substances Control | Document reviewed - No comments sent for this document received |
| <b>Utilities</b><br>LAC220125-04<br>Grayson Repowering Project   | Staff provided comments on the Partially Recirculated Environmental Impact Report for the project, which can be accessed at: <a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2021/november/LAC210819-11.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2021/november/LAC210819-11.pdf</a> . The project consists of construction of a power generation facility with a capacity of 260 megawatts on 13.29 acres. The project is located at 800 Air Way on the southeast corner of Air Way and Flower Street.<br>Reference LAC210819-11, LAC180313-06, LAC170919-02, and LAC161220-09<br><br>Comment Period: N/A      Public Hearing: 1/31/2022  | Notice of Availability of a Final Environmental Impact Report | City of Glendale                       | ** Under review, may submit written comments                    |

# - 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, 2022 to January 31, 2022**

| SOUTH COAST AQMD LOG-IN NUMBER<br>PROJECT TITLE   | PROJECT DESCRIPTION  | TYPE OF DOC.   | LEAD AGENCY                             | COMMENT STATUS  |
|---|--|--|---|---|
| <b>Transportation</b><br>RVC220107-01<br>Interstate 10/Cherry Valley Boulevard Interchange Project                          | The project consists of construction of 4,700 linear feet of auxiliary lanes and roadway improvements along Interstate 10 (I-10) between the I-10 and Singleton Road interchange [Post Mile (PM) R2.1] and the I-10 and Oak Valley Parkway interchange (PM R3.8) in the City of Calimesa.<br><br>Comment Period: 12/23/2021 - 1/24/2022      Public Hearing: N/A                     | Notice of Intent to Adopt a Mitigated Negative Declaration/ Environmental Assessment | California Department of Transportation | Document reviewed - No comments sent for this document received |
| <b>Institutional (schools, government, etc.)</b><br>RVC220125-03<br>West Side Fire Station Project                          | The project consists of construction of a 10,760 square foot fire station on 1.59 acres. The project is located on the northeast corner of State Route 60 and Potrero Boulevard.<br><br>Comment Period: 1/21/2022 - 2/22/2022      Public Hearing: 3/1/2022  | Notice of Intent to Adopt a Mitigated Negative Declaration                           | City of Beaumont                        | Document reviewed - No comments sent for this document received |
| <b>Institutional (schools, government, etc.)</b><br>SBC220105-01<br>Big Bear High School Football and Track Stadium Project | The project consists of construction of a sports stadium with a 1,000 seating capacity on seven acres. The project is located on the northwest corner of Maple Lane and Baldwin Lane in the community of Sugarloaf within San Bernardino County.<br><br>Comment Period: 12/30/2021 - 1/29/2022      Public Hearing: N/A  | Notice of Intent to Adopt a Mitigated Negative Declaration                           | Bear Valley Unified School District     | Document reviewed - No comments sent for this document received |
| <b>Retail</b><br>LAC220113-01<br>North Hollywood Self Storage Project   | The project consists of demolition of a 14,300 square foot structure, and construction of a 100,757 square foot self storage facility on 30,000 square feet. The project is located on the southeast corner of North Vineland Avenue and Weddington Street in the community of North Hollywood-Valley Village.<br><br>Comment Period: 1/13/2022 - 2/14/2022      Public Hearing: N/A | Mitigated Negative Declaration   | City of Los Angeles                     | Document reviewed - No comments sent for this document 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.  
A-3

**ATTACHMENT A  
INCOMING CEQA DOCUMENTS LOG  
January 1, 2022 to January 31, 2022**

| SOUTH COAST AQMD LOG-IN NUMBER<br>PROJECT TITLE                                    | PROJECT DESCRIPTION  | TYPE OF DOC.  | LEAD AGENCY           | COMMENT STATUS  |
|--|--|---|-----------------------|---|
| <b>Retail</b><br>RVC220111-03<br>MA21054   | The project consists of construction of 18,800 square feet of retail uses and two restaurants totaling 5,910 square feet on 5.18 acres. The project is located on the southwest corner of Sierra Avenue and Armstrong Road.<br>Reference RVC210623-04<br><br>Comment Period: 1/5/2022 - 1/24/2022      Public Hearing: N/A   | Notice of Intent to Adopt a Mitigated Negative Declaration              | City of Jurupa Valley | Document reviewed - No comments sent for this document received |
| <b>Retail</b><br>RVC220119-02<br>Arco AM/PM Service Station Project                | The project consists of construction of a 5,123 square foot convenience store, 1,200 square feet of retail uses, a fueling service station with 14 gasoline pumps and two diesel pumps, and two fueling canopies totaling 8,701 square feet on a 2.4 acre portion of 6.9 acres. The project is located on the southwest corner of Redlands Boulevard and Hemlock Avenue.<br>Reference RVC211228-03<br><br>Comment Period: 1/14/2022 - 2/14/2022      Public Hearing: N/A   | Notice of Intent to Adopt a Recirculated Mitigated Negative Declaration | City of Moreno Valley | ** Under review, may submit written comments                    |
| <b>Retail</b><br>RVC220125-01<br>Walmart Fuel                                      | The project consists of construction of a 440 square foot structure, a gasoline service station with 16 pumps, and a 5,700 square foot fueling canopy on 1.29 acres. The project is located at 1540 East Second Street near the northwest corner of Highland Springs Avenue and East Second Street.<br>Reference RVC201117-12<br><br>Comment Period: 1/25/2022 - 2/10/2022      Public Hearing: N/A  | Site Plan   | City of Beaumont      | Document reviewed - No comments sent for this document received |
| <b>General Land Use (residential, etc.)</b><br>LAC220104-01<br>670 Mesquit Project | The project consists of demolition of existing structures, and construction of a 1,792,103 square foot building with 208 residential units, 236 hotel rooms, and subterranean parking on 5.45 acres. The project is located on the southeast corner of Mesquit Street and South Santa Fe Avenue in the community of Central City North within the designated AB 617 East Los Angeles, Boyle Heights, West Commerce community.<br>Reference LAC170426-01<br><br>Comment Period: 12/30/2021 - 2/14/2022      Public Hearing: N/A | Notice of Availability of a Draft Environmental Impact Report           | City of Los Angeles   | ** Under review, may submit written comments                    |

# - 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.  
A-4

**ATTACHMENT A  
INCOMING CEQA DOCUMENTS LOG  
January 1, 2022 to January 31, 2022**

| SOUTH COAST AQMD LOG-IN NUMBER<br>PROJECT TITLE  | PROJECT DESCRIPTION  | TYPE OF DOC.  | LEAD AGENCY            | COMMENT STATUS  |
|--|--|---|------------------------|---|
| <i>General Land Use (residential, etc.)</i><br><b>LAC220107-04</b><br>North Paramount Gateway Specific Plan      | The project consists of construction 5,055 residential units and 31,171 square feet of retail and office uses on 279 acres. The project is located on the northwest corner of Rosecrans Avenue and Anderson Street.<br><br>Comment Period: 1/6/2022 - 2/5/2022      Public Hearing: 1/20/2022  | Notice of Preparation   | City of Paramount      | ** Under review, may submit written comments                    |
| <i>General Land Use (residential, etc.)</i><br><b>LAC220118-01</b><br>River Park Residential Development Project | The project consists of construction of 226 residential units and five acres of open space on 20 acres. The project is located on the northwest corner of West Wardlow Road and Golden Avenue in the designated AB 617 Wilmington, Carson, West Long Beach community. Reference LAC210225-01<br><br>Comment Period: 1/18/2022 - 3/21/2022      Public Hearing: N/A   | Notice of Availability of a Draft Environmental Impact Report | City of Long Beach     | ** Under review, may submit written comments                    |
| <i>General Land Use (residential, etc.)</i><br><b>LAC220119-04</b><br>Starlite Residential Development           | The project consists of construction of 207 residential units on 12.3 acres. The project is located at 2540 Rosemead Boulevard near the southwest corner of Fern Street and Chico Avenue.<br><br>Comment Period: 1/14/2022 - 2/14/2022      Public Hearing: N/A  | Notice of Intent to Adopt a Mitigated Negative Declaration    | City of South El Monte | Document reviewed - No comments sent for this document received |
| <i>General Land Use (residential, etc.)</i><br><b>LAC220119-07</b><br>Affinity Project                           | The project consists of demolition of 45,912 square feet of existing structures, and construction of a 154,000 square foot building for medical uses and a 184,376 square foot assisted living facility with 95 rooms and subterranean parking on 3.3 acres. The project is located on the northwest corner of South Arroyo Parkway and East California Boulevard. Reference LAC210819-03<br><br>Comment Period: 1/18/2022 - 3/3/2022      Public Hearing: N/A | Draft Environmental Impact Report                             | City of Pasadena       | ** Under review, may submit written comments                    |

# - 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.  
A-5

**ATTACHMENT A  
INCOMING CEQA DOCUMENTS LOG  
January 1, 2022 to January 31, 2022**

| SOUTH COAST AQMD LOG-IN NUMBER<br>PROJECT TITLE  | PROJECT DESCRIPTION   | TYPE OF DOC.   | LEAD AGENCY           | COMMENT STATUS  |
|--|---|--|-----------------------|---|
| <i>General Land Use (residential, etc.)</i><br><b>ORC220107-03</b><br>Mission Viejo Garden Plaza Redevelopment Project | The project consists of demolition of 46,148 square feet of existing buildings, and construction of 234 residential units totaling 275,891 square feet and 51,120 square feet of retail uses on 6.5 acres. The project is located at 27001 La Paz Road on the northwest corner of La Paz Road and Marguerite Parkway.<br><br>Comment Period: 1/7/2022 - 2/7/2022      Public Hearing: 1/24/2022 | Notice of Preparation                                      | City of Mission Viejo | ** Under review, may submit written comments                    |
| <i>General Land Use (residential, etc.)</i><br><b>ORC220113-03</b><br>Lincoln Colony Apartments Development            | The project consists of demolition of 5,338 square feet of existing structures and construction of a 92,264 square foot building with 43 residential units on 0.75 acres. The project is located near the southwest corner of West Lincoln Avenue and South Ohio Street.<br><br>Comment Period: 1/13/2022 - 2/14/2022      Public Hearing: 2/28/2022  | Notice of Intent to Adopt a Mitigated Negative Declaration | City of Anaheim       | Document reviewed - No comments sent for this document received |
| <i>General Land Use (residential, etc.)</i><br><b>RVC220119-05</b><br>2700 East Alejo Road Project                     | The project consists of construction of eight residential units on 2.53 acres. The project is located on the northeast corner of East Alejo Road and North Juanita Drive.<br><br>Comment Period: 1/14/2022 - 2/3/2022      Public Hearing: 2/23/2022  | Negative Declaration                                       | City of Palms Springs | Document reviewed - No comments sent for this document received |
| <i>General Land Use (residential, etc.)</i><br><b>RVC220125-02</b><br>Tentative Track No. 38346                        | The project consists of construction of 162 residential units on 9.5 acres. The project is located on the northwest corner of Rouse Road and Menifee Road.<br><br>Comment Period: 1/25/2022 - 2/8/2022      Public Hearing: N/A   | Site Plan  | City of Menifee       | Document reviewed - No comments sent for this document 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.  
A-6



**ATTACHMENT A  
INCOMING CEQA DOCUMENTS LOG  
January 1, 2022 to January 31, 2022**

| SOUTH COAST AQMD LOG-IN NUMBER<br>PROJECT TITLE  | PROJECT DESCRIPTION  | TYPE OF DOC.                                     | LEAD AGENCY                    | COMMENT STATUS  |
|--|--|--|--------------------------------|---|
| <b>Plans and Regulations</b><br><b>ALL220106-01</b><br>Amendments to the Chromium Plating and Chromic Acid Anodizing Facilities Regulation | The project consists of development of statewide requirements to phase out the use of hexavalent chromium at electroplating and chromic acid anodizing facilities. The project includes six designated AB 617 communities: 1) East Los Angeles, Boyle Heights, West Commerce, 2) Eastern Coachella Valley, 3) San Bernardino, Muscoy, 4) Southeast Los Angeles, 5) South Los Angeles, and 6) Wilmington, Carson, West Long Beach.<br><br>Comment Period: 1/10/2022 - 2/9/2022      Public Hearing: 1/20/2022 | Notice of Preparation                            | California Air Resources Board | ** Under review, may submit written comments                    |
| <b>Plans and Regulations</b><br><b>LAC220113-02</b><br>The City of Agoura Hills Climate Action and Adaptation Plan                         | The project consists of development of citywide policies, strategies, and programs to reduce greenhouse gas emissions and enhance climate resilience. The project encompasses 7.82 square miles and is bounded by unincorporated areas of Los Angeles to the north and the south, City of Calabasas to the east, and Ventura County to the west.<br><br>Comment Period: 1/14/2022 - 2/14/2022      Public Hearing: N/A   | Notice of Intent to Adopt a Negative Declaration | City of Agoura Hills           | Document reviewed - No comments sent for this document received |
| <b>Plans and Regulations</b><br><b>LAC220119-03</b><br>2021-2029 Housing Element Update and Safety Element Update                          | The project consists of updates to the City's General Plan to develop policies, goals, and programs to comply with state, regional, and local housing and safety requirements with a planning horizon of 2029. The project encompasses 2.99 square miles and is bounded by City of Rolling Hills Estate to the north and unincorporated areas of Los Angeles County to the east, the south, and the west.<br><br>Comment Period: 1/13/2022 - 2/12/2022      Public Hearing: N/A                              | Notice of Intent to Adopt a Negative Declaration | City of Rolling Hills          | Document reviewed - No comments sent for this document 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.

A-7

**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<br>PROJECT TITLE  | PROJECT DESCRIPTION   | TYPE OF DOC.   | LEAD AGENCY                           | COMMENT STATUS                                |
|--|---|--|---------------------------------------|---|
| <b>Goods Movement</b><br><b>LAC211118-01</b><br>Berth 148-151 (Philips 66) Marine Oil Terminal Wharf Improvements Project# | The project consists of seismic and structural improvements to an existing wharf, an increase in annual throughput by 6,065,472 barrels from 7,658,573 barrels to 13,724,000 barrels, and an issuance of a 20 year lease on 13.8 acres. The project is located near the southwest corner of Pier A Street and Pier A Place within the Port of Los Angeles in the designated AB 617 Wilmington, Carson, West Long Beach community.<br><br>Comment Period: 11/18/2021 - 2/18/2022      Public Hearing: N/A  | Notice of Intent to Adopt a Mitigated Negative Declaration               | City of Los Angeles Harbor Department | **Under review, may submit written comments   |
| <b>Warehouse &amp; Distribution Centers</b><br><b>LAC211110-02</b><br>Fifth and Lomitas Warehouse Project                  | The project consists of demolition of 70,905 square feet of existing structures and construction of a 134,349 square foot warehouse on six acres. The project is located on the northeast corner of Lomitas Avenue and Fifth Avenue in the community of Avocado Heights.<br><br>Comment Period: N/A      Public Hearing: N/A  | Initial Project Consultation   | County of Los Angeles                 | **Under review, may submit written comments   |
| <b>Warehouse &amp; Distribution Centers</b><br><b>RVC211221-10</b><br>Perris Valley Commerce Center Specific Plan          | The project consists of construction of a 347,918 square foot warehouse on 16 acres. The project is located on the southeast corner of Ramona Expressway and Indian Avenue.<br>Reference RVC210504-09<br><br>Comment Period: 12/22/2021 - 2/7/2022      Public Hearing: N/A   | Notice of Availability of a Draft Environmental Impact Report            | City of Perris                        | **Under review, may submit written comments   |
| <b>Industrial and Commercial</b><br><b>LAC211209-02</b><br>AltAir Renewable Fuels Conversion Project                       | The project consists of conversion of existing 50,000 barrels per day crude oil refinery to a 25,000 barrels per day renewable fuels production facility, installation of pre-treatment, processing, and recovery units, and construction of rail loading and unloading racks and pipelines on 66 acres. The project is located at 14700 Downey Avenue near the northwest corner of Somerset Boulevard and Lakewood Boulevard.<br>Reference LAC200623-07<br><br>Comment Period: 12/6/2021 - 2/3/2022      Public Hearing: N/A   | Notice of Availability of a Draft Subsequent Environmental Impact Report | City of Paramount                     | **Under review, may submit written comments   |
| <b>Goods Movement</b><br><b>LAC211216-01</b><br>John S. Gibson Container Parking Lot Project                               | The project consists of construction of a shipping container parking lot with a capacity of 393 stalls on 18.66 acres. The project is located at 1599 West John Gibson Boulevard near the northwest corner of John S. Gibson Boulevard and West Harry Bridges Boulevard adjacent to the Port of Los Angeles in the designated AB 617 Wilmington, Carson, West Long Beach community.<br><br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/LAC211216-01.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/LAC211216-01.pdf</a><br>Comment Period: 12/16/2021 - 1/31/2022      Public Hearing: N/A | Notice of Intent to Adopt a Negative Declaration                         | City of Los Angeles Harbor Department | South Coast AQMD staff commented on 1/11/2022 |

\*Sorted by Comment Status, followed by Land Use, then 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

**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<br>PROJECT TITLE   | PROJECT DESCRIPTION   | TYPE OF DOC.                   | LEAD AGENCY           | COMMENT STATUS                                |
|---|---|--------------------------------|-----------------------|---|
| <b>Warehouse &amp; Distribution Centers</b><br>LAC211209-09<br>ENV-2021-4571: 12772 San Fernando Road                             | The project consists of demolition of 135,250 square feet of existing structures and construction of a 155,446 square foot building for warehouse and manufacturing activities on 6.48 acres. The project is located near the northeast corner of North San Fernando Road and Oswald Street in the community of Sylmar.<br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/LAC211209-09.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/LAC211209-09.pdf</a><br>Comment Period: 12/9/2021 - 1/10/2022 Public Hearing: N/A     | Mitigated Negative Declaration | City of Los Angeles   | South Coast AQMD staff commented on 1/4/2022  |
| <b>Warehouse &amp; Distribution Centers</b><br>RVC211201-01<br>Northern Gateway Commerce Centers I and II#                        | The project consists of construction of two warehouses totaling 2,487,626 square feet on 130.1 acres. The project is located near the southeast corner of Ethanac Road and Byers Street. Reference RVC210819-18 and RVC210819-17<br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/RVC211201-01.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/RVC211201-01.pdf</a><br>Comment Period: 11/24/2021 - 1/7/2022 Public Hearing: 12/7/2021  | Notice of Preparation          | City of Menifee       | South Coast AQMD staff commented on 1/4/2022  |
| <b>Warehouse &amp; Distribution Centers</b><br>RVC211221-03<br>First March Logistics Project                                      | The project consists of construction of two buildings totaling 559,005 square feet for warehouse and industrial activities on 27.26 acres. The project is located near the northeast corner of Interstate 215 and Nandina Avenue.<br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/RVC211221-03.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/RVC211221-03.pdf</a><br>Comment Period: 12/22/2021 - 1/20/2022 Public Hearing: 1/19/2022  | Notice of Preparation          | City of Perris        | South Coast AQMD staff commented on 1/11/2022 |
| <b>Warehouse &amp; Distribution Centers</b><br>RVC211223-03<br>Agua Mansa Commerce Park Specific Plan Amendment                   | The project consists of construction of an 855,750 square foot cold storage warehouse on 281 acres. The project is located on the southeast corner of Rubidoux Boulevard and Agua Mansa Road. Reference RVC181219-07, RVC181023-01, RVC180509-01, RVC180503-05, RVC171128-09, RVC170705-15, RVC161216-03, and RVC161006-06<br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/RVC211223-03.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/RVC211223-03.pdf</a><br>Comment Period: 12/22/2021 - 1/11/2022 Public Hearing: N/A | Site Plan                      | City of Jurupa Valley | South Coast AQMD staff commented on 1/11/2022 |
| <b>Warehouse &amp; Distribution Centers</b><br>SBC211207-05<br>Cypress and Slover Warehouse (Industrial Commerce Center) Project# | The project consists of construction of a 625,500 square foot warehouse on 28.8 acres. The project is located on the northeast corner of Slover Avenue and Oleander Avenue.<br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/SBC211207-05.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/SBC211207-05.pdf</a><br>Comment Period: 12/3/2021 - 1/6/2022 Public Hearing: 12/16/2021   | Notice of Preparation          | City of Fontana       | South Coast AQMD staff commented on 1/4/2022  |

# - Project has potential environmental justice concerns due to the nature and/or location of the project.  
\*\* Disposition may change prior to Governing Board Meeting

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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<br>PROJECT TITLE   | PROJECT DESCRIPTION  | TYPE OF DOC.          | LEAD AGENCY  | COMMENT STATUS                                |
|---|--|-----------------------|--|---|
| <b>Warehouse &amp; Distribution Centers</b><br>SBC211221-02<br>Speedway Commerce Center II#               | The project consists of construction of 6,600,000 square feet of warehouses, 261,360 square feet of commercial uses, 78 acres of parking uses, 33.2 acres of roadways and infrastructure, and 10.2 acres of open space on 432.1 acres. The project is located on the southwest corner of Whittam Avenue and Cherry Avenue in the City of Fontana.<br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/SBC211221-02.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/SBC211221-02.pdf</a><br>Comment Period: 12/13/2021 - 1/13/2022 Public Hearing: 1/11/2022           | Notice of Preparation | County of San Bernardino                                 | South Coast AQMD staff commented on 1/11/2022 |
| <b>Warehouse &amp; Distribution Centers</b><br>SBC211223-05<br>Slover and Alder Avenue Industrial Project | The project consists of construction of a 259,481 square foot warehouse on 13.23 acres. The project is located on the southeast corner of Slover Avenue and Alder Avenue in the community of Bloomington.<br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/SBC211223-05.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/SBC211223-05.pdf</a><br>Comment Period: 12/22/2021 - 1/21/2022 Public Hearing: 1/18/2022   | Notice of Preparation | County of San Bernardino                                 | South Coast AQMD staff commented on 1/11/2022 |
| <b>Transportation</b><br>LAC211201-13<br>Sepulveda Transit Corridor Project                               | The project consists of construction of a 16.2 mile public transit system with up to nine stations. The project is located along Interstate 405 (I-405) between the Sepulveda Boulevard and Roscoe Boulevard intersection in the community of Van Nuys to the north and the I-405 and Pico Boulevard interchange in the community of Westwood to the south.<br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/LAC211201-13.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/LAC211201-13.pdf</a><br>Comment Period: 11/30/2021 - 2/11/2022 Public Hearing: 12/7/2021 | Notice of Preparation | Los Angeles County Metropolitan Transportation Authority | South Coast AQMD staff commented on 1/4/2022  |
| <b>General Land Use (residential, etc.)</b><br>RVC211208-01<br>Villagio Villas                            | The project consists of construction of 24 residential units totaling 22,588 square feet on a 0.82 acre portion of seven acres. The project is located at 28377 Encanto Drive near the southeast corner of Encanto Drive and El Pico Street.<br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/RVC211208-01.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/RVC211208-01.pdf</a><br>Comment Period: 12/8/2021 - 1/4/2022 Public Hearing: 1/4/2022   | Site Plan             | City of Menifee  | South Coast AQMD staff commented on 1/4/2022  |
| <b>General Land Use (residential, etc.)</b><br>RVC211228-06<br>MA21347                                    | The project consists of construction of 208 residential units and 4,544 square feet of recreational uses on 8.3 acres. The project is located on the northwest corner of 68th Street and Pats Ranch Road.<br><a href="http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/RVC211228-06.pdf">http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2022/january/RVC211228-06.pdf</a><br>Comment Period: 12/28/2021 - 1/18/2022 Public Hearing: N/A   | Site Plan             | City of Jurupa Valley                                    | South Coast AQMD staff commented on 1/11/2022 |

# - Project has potential environmental justice concerns due to the nature and/or location of the project.  
\*\* Disposition may change prior to Governing Board Meeting

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**ATTACHMENT C**  
**ACTIVE SOUTH COAST AQMD LEAD AGENCY**  
**PROJECTS THROUGH JANUARY 31, 2022**

| PROJECT DESCRIPTION   | PROPONENT  | TYPE OF DOCUMENT                  | STATUS  | CONSULTANT          |
|---|------------|-----------------------------------|---|---------------------|
| Matrix Oil is proposing to: 1) install one new flare with a maximum rating of 39 million British thermal units per hour (MMBtu/hr) at Site 3 of the Sansinena Oil Field; and 2) increase the throughput of the existing flare at Site 9 from the previous permit limit of 13.65 million standard cubic feet over a 30-day period (MMSCF/30 days) to the maximum rating of 39 MMBtu/hr which is equivalent to 25.39 MMSCF/30 days.   | Matrix Oil | Mitigated Negative Declaration    | The consultant provided a preliminary draft Mitigated Negative Declaration and South Coast AQMD staff has provided comments which are being addressed by the consultant.  | Yorke Engineering   |
| 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. | Quemetco   | Environmental Impact Report (EIR) | Two CEQA scoping meetings were held on September 13, 2018 and October 11, 2018 in the community on the Notice of Preparation/Initial Study (NOP/IS) and 153 oral comments were received. Responses to the comment letters and oral comments relative to the NOP/IS and CEQA scoping meetings have been prepared and are included in Appendix B of the Draft EIR. The Draft EIR was initially released for a 61-day public review and comment period from October 14, 2021 to December 14, 2021, but after receiving several requests seeking a longer review period, staff extended the public review and comment period by an additional 63 days to February 15, 2022.<br><br>On November 10, 2021, staff held a public meeting which presented an overview of the proposed project, the CEQA process, detailed analysis of the potentially significant environmental topic areas, and the existing regulatory safeguards. Written comments submitted relative to the Draft EIR and oral comments made at the public meeting, along with responses will be included in the Final EIR. An additional community meeting has been scheduled for February 9, 2022. | Trinity Consultants |

C-1

| PROJECT DESCRIPTION   | PROPONENT                | TYPE OF DOCUMENT                              | STATUS   | CONSULTANT    |
|---|--------------------------|---|--|---------------|
| Sunshine Canyon Landfill is proposing to modify its South Coast AQMD permits for its active landfill gas collection and control system to accommodate the increased collection of landfill gas. The proposed project will: 1) install two new low emissions flares with two additional 300-hp electric blowers; and 2) increase the landfill gas flow limit of the existing flares. | Sunshine Canyon Landfill | Subsequent Environmental Impact Report (SEIR) | South Coast AQMD staff reviewed and provided comments on the preliminary air quality analysis and health risk assessment (HRA), which have been addressed by the consultant and incorporated into a Preliminary Draft SEIR which is undergoing staff review. | SCS Engineers |

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BOARD MEETING DATE: March 4, 2022

AGENDA NO. 25

REPORT: Stationary Source Committee

SYNOPSIS: The Stationary Source Committee held a meeting remotely on Friday, February 18, 2022. The following is a summary of the meeting.

RECOMMENDED ACTION:  
Receive and file.

Ben J. Benoit, Chair  
Stationary Source Committee

JA:cr

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### **Committee Members**

Present: Mayor Ben J. Benoit (Chair)  
Supervisor Sheila Kuehl (Vice Chair)  
Board Member Veronica Padilla-Campos  
Senator Vanessa Delgado (Ret.)  
Supervisor Janice Rutherford

Absent: Vice Mayor Rex Richardson

### **Call to Order**

Chair Benoit called the meeting to order at 10:31 a.m.

### **INFORMATIONAL ITEM:**

#### **1. Summary of Proposed Amended Rule 1147 - NO<sub>x</sub> Reductions from Miscellaneous Sources**

Michael Krause, Assistant Deputy Executive Officer/Planning Rules Development and Implementation, provided a summary of Proposed Amended Rule including proposed emission limits, periodic monitoring requirements and the implementation schedule.

There were no committee or public comments.

**2. Summary of Proposed Rule 1147.2 - NOx Reductions from Metal Melting and Heating Furnaces**

Michael Morris, Planning and Rules Manager/Planning Rules Development and Implementation, provided a summary on Proposed Rule 1147.2 including proposed emission limits, periodic monitoring requirements and implementation schedule.

Harvey Eder, Public Solar Power Coalition, commented that South Coast AQMD should include solar power technologies as part of the BARCT assessment.

**3. Update on Implementation of Rule 415 - Odors from Rendering Facilities**

Terrence Mann, Deputy Executive Officer/Compliance & Enforcement, presented an update on the implementation of Rule 415, the status of ongoing facility installations of enclosures, overview of Rule 402 and ongoing outreach and enforcement efforts. Statutory penalties for violations of air quality rules and potential improvement by legislative action were also discussed.

Board Member Padilla-Campos asked staff whether statutory penalty issues could be brought to the Legislative Committee. Executive Officer Wayne Nastri responded that the item could be brought before the Legislative Committee next month, as well as to members of the California Legislature now for a possible spot bill. Chair Benoit commented he would be meeting with the State Senator and would raise the issue.

Board Member Padilla-Campos asked whether six website complaints were needed for action or if complaint thresholds included both phone and website complaints. Mr. Mann clarified that the key is how many complaints can be verified in the field with community members.

Senator Delgado encouraged the committee to strengthen statutory penalties and expressed support in working to do so at the State level.

Chair Benoit asked if remote video monitoring would be helpful, such as through a recording requirement established by rulemaking. Chair Benoit asked if the next version of the South Coast AQMD Mobile App could include geotags for complaints. Mr. Nastri to report back on both inquires.

Senator Delgado asked whether a complaint from school administrative staff superseded the general requirement for six verified complaints. Mr. Mann confirmed that a teacher, administrator, or maintenance staff member could serve as a proxy for all students at a school, and a single verified complaint by that school employee would be sufficient to establish a public nuisance.

Curtis Coleman expressed concerns about seeking higher penalties. He commented that pushback is expected from industry stakeholders and recommended that any consideration of increased penalties be limited to public nuisance actions.

**4. Annual RECLAIM Audit Report for 2020 Compliance Year**

Jason Aspell, Deputy Executive Officer/Engineering and Permitting, presented an overview of the RECLAIM NO<sub>x</sub> and SO<sub>x</sub> Annual Report for Compliance Year 2020, and the actions required under Rule 2002 - Allocations for Oxides of Nitrogen (NO<sub>x</sub>) and Oxides of Sulfur (SO<sub>x</sub>) and Rule 2015 - Backstop Provisions resulting from NO<sub>x</sub> RECLAIM Trading Credits (RTC) price increases reflected in this most recent report. He indicated that the annual report continued to show programmatic and high individual facility compliance for annual emission rates for both NO<sub>x</sub> and SO<sub>x</sub> and met all other requirements.

Supervisor Kuehl requested clarification on the Board's role relative to actions required under Rule 2002 and Rule 2015. Staff clarified that if a report is required to be submitted to CARB and EPA, any decisions would be presented to the Board.

Board Member Padilla-Campos requested clarification on the review of health risks under RECLAIM. Staff clarified that RECLAIM does not supersede the health protective requirements under separate toxic rules and regulations including Regulation XIV - Toxics and Other Non-Criteria Pollutants and AB2588 - Toxics Hot Spots.

There were no public comments.

**WRITTEN REPORTS:**

**5. Monthly Update of Staff's Work with U.S. EPA and CARB on New Source Review Issues for the Transition of RECLAIM Facilities to a Command and-Control Regulatory Program**

The report was acknowledged by the committee.

**6. Notice of Violation Penalty Summary**

The report was acknowledged by the committee.

**OTHER MATTERS:**

**7. Other Business**

There was no other business to report.

**8. Public Comment Period**

Mr. Eder expressed concern about the health of workers at rendering plants and that the numbers of premature deaths from emissions in South Coast AQMD are under reported in the socioeconomic plan.

Rita Loof, RadTech, commented on the Rule 1115 amendments. She expressed concern that the proposal does not reflect the current state of their technology. She asked that staff incorporate past Board decisions that were made on other rules, such as graphic arts and adhesives into this amendment. She requested adding a definition for energy curable materials, providing incentives to businesses who voluntarily convert to lower emitting materials that would go above and beyond the rule's requirements, and specifying a test method for their materials.

**9. Next Meeting Date**

The next Stationary Source Committee meeting is scheduled for Friday, March 18, 2022 at 10:30 a.m.

**Adjournment**

The meeting was adjourned at 11:45 a.m.

**Attachments**

1. Attendance Record
2. Monthly Update of Staff's Work with U.S. EPA and CARB on New Source Review Issues for the Transition of RECLAIM Facilities to a Command and-Control Regulatory Program
3. Notice of Violation Penalty Summary

**ATTACHMENT 1**

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
STATIONARY SOURCE COMMITTEE**

**Attendance –February 18, 2022**

|   |  |
|---|--|
| Mayor Ben J. Benoit .....                 | South Coast AQMD Board                   |
| Senator Delgado (Ret.) .....              | South Coast AQMD Board                   |
| Supervisor Sheila Kuehl .....             | South Coast AQMD Board                   |
| Board Member Veronica Padilla-Campos..... | South Coast AQMD Board                   |
| Supervisor Janice Rutherford .....        | South Coast AQMD Board                   |
|   |  |
| Teresa Acosta .....                       | Board Consultant (Delgado)               |
| Ruthanne Taylor Berger .....              | Board Consultant (Benoit)                |
| Tom Gross .....                           | Board Consultant (Benoit)                |
| Matthew Hamlett .....                     | Board Consultant (Richardson)            |
| Loraine Lundquist .....                   | Board Consultant (Kuehl)                 |
| Debra Mendelsohn.....                     | Board Consultant (Rutherford)            |
| Mark Taylor.....                          | Board Consultant (Rutherford)            |
| Amy Wong .....                            | Board Consultant (Padilla-Campos)        |
| Ross Zelen .....                          | Board Consultant (Kracov)                |
|   |  |
| Mark Abramowitz .....                     | Community Environmental Services         |
| Ramine Cromartie .....                    | WSPA                                     |
| Curtis Coleman.....                       | Southern California Air Quality Alliance |
| Chris Chavez .....                        | Coalition for Clean Air                  |
| Harvey Eder.....                          | Public Solar Power Coalition             |
| Bill Lamarr .....                         | California Small Business Alliance       |
| Rita Loof.....                            | RadTech                                  |
| Bethmarie Quiambao.....                   | Southern California Edison               |
| Craig Sakamoto .....                      | PBF                                      |
| Janet Whittick.....                       | CCEEB                                    |
| Jason Henderson.....                      | CCEEB                                    |
| Peter Whittingham.....                    | Whittingham Public Affairs Advisors      |
|   |  |
| Jason Aspell.....                         | South Coast AQMD staff                   |
| Derrick Alatorre.....                     | South Coast AQMD staff                   |
| Barbara Baird.....                        | South Coast AQMD staff                   |
| Bayron Gilchrist .....                    | South Coast AQMD staff                   |
| Anissa Heard-Johnson .....                | South Coast AQMD staff                   |
| Mark Henninger.....                       | South Coast AQMD staff                   |
| Aaron Katzenstein .....                   | South Coast AQMD staff                   |
| Michael Krause.....                       | South Coast AQMD staff                   |
| Terrence Mann.....                        | South Coast AQMD staff                   |
| Matt Miyasato.....                        | South Coast AQMD staff                   |
| Michael Morris .....                      | South Coast AQMD staff                   |
| Ron Moskowitz .....                       | South Coast AQMD staff                   |
| Wayne Nastri .....                        | South Coast AQMD staff                   |
| Susan Nakamura.....                       | South Coast AQMD staff                   |
| Lisa Tanaka O’Malley .....                | South Coast AQMD staff                   |
| Sarah Rees .....                          | South Coast AQMD staff                   |
| Jill Whynot .....                         | South Coast AQMD staff                   |
| Jillian Wong.....                         | South Coast AQMD staff                   |
| Paul Wright.....                          | South Coast AQMD staff                   |
| Victor Yip.....                           | South Coast AQMD staff                   |



## February 2022 Update on Work with U.S. EPA and CARB on New Source Review Issues for the RECLAIM Transition

At the October 5, 2018 Board meeting, the Board directed staff to provide the Stationary Source Committee with a monthly update of staff's work with U.S. EPA regarding resolving NSR issues for the transition of facilities from RECLAIM to a command-and-control regulatory structure. The table below summarizes key activities with U.S. EPA and CARB since the last report.

| Item   | Discussion  |
|--|---|
| Video Conference with U.S. EPA and CARB – February 3, 2022             | <ul style="list-style-type: none"><li>• Reviewed presentations for the February RECLAIM and Regulation XIII working group meetings</li></ul>  |
| RECLAIM and Regulation XIII Working Group Meetings – February 10, 2022 | <ul style="list-style-type: none"><li>• Provided updates on rulemakings for the RECLAIM transition</li><li>• Reported NOx RTC threshold exceedances</li><li>• Discussed Rule 2002 and Rule 2015 procedures to address NOx RTC prices</li><li>• Discussed ensuring the availability of offsets post-RECLAIM</li><li>• Presented concepts of Minor and Major Source Banks</li></ul> |

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
General Counsel's Office**

**Settlement Penalty Report (01/01/2022 - 01/31/2022)**

**Total Penalties**

Civil Settlement:     \$175,308.00  
MSPAP Settlement:     \$12,750.00  
Hearing Board Settlement:     \$10,000.00  
  
**Total Cash Settlements:**     \$198,058.00

**Fiscal Year through 01/31/2022 Cash Total:**     \$2,466,592.35

| <b>Fac ID</b>                                       | <b>Company Name</b>                   | <b>Rule Number</b>                                | <b>Settled Date</b> | <b>Init</b> | <b>Notice Nbrs</b>     | <b>Total Settlement</b> |
|---|---------------------------------------|---|---------------------|-------------|------------------------|-------------------------|
| <b>Civil</b>  |                                       |   |                     |             |                        |                         |
| 800088  | 3M COMPANY                            | 1155, 2004, 3002(c)(1)                            | 01/13/2022          | DH          | P66058, P66065, P66071 | \$30,000.00             |
| 187522  | ACE ROOFING SYSTEMS                   | 1403, 40 CFR 61.145                               | 01/20/2022          | NS          | P66710                 | \$25,000.00             |
| 73339   | MID VALLEY ANODIZING                  | 203   | 01/13/2022          | DH          | P66438                 | \$9,000.00              |
| 143050  | OLD MASTERS                           | 1113(C)(1)  | 01/13/2022          | JL          | P69061                 | \$15,808.00             |
| 7427  | OWENS-BROCKWAY GLASS CONTAINER<br>INC | 2004, 2011(c)(3)(A),<br>2012(c)(3)(A), 3002(c)(1) | 01/13/2022          | BT          | P66921, P66931, P66937 | \$92,000.00             |
| 173108  | SILVER CREEK INDUSTRIES, INC          | 3002  | 01/14/2022          | VT          | P69108                 | \$1,000.00              |
| 62617   | WILLARD MARINE INC                    | 3003, 3004  | 01/05/2022          | VT          | P68906                 | \$2,500.00              |
| <b>Total Civil Settlements: \$175,308.00</b>        |                                       |   |                     |             |                        |                         |
| <b>Hearing Board</b>                                |                                       |   |                     |             |                        |                         |
| 104234  | SCAQMD v. Mission Foods               | 202, 203(b), 1153.1, 1303                         | 01/20/2022          | KCM         | 5400-4                 | \$10,000.00             |
| <b>Total Hearing Board Settlements: \$10,000.00</b> |                                       |   |                     |             |                        |                         |

| Fac ID                                      | Company Name                 | Rule Number                 | Settled Date | Init | Notice Nbrs            | Total Settlement |
|---|------------------------------|-----------------------------|--------------|------|------------------------|------------------|
| <b>MSPAP</b>                                |                              |                             |              |      |                        |                  |
| 176130                                      | A AND B LONG BEACH INC       | 461(c)(3)(Q)                | 01/12/2022   | GC   | P67695                 | \$300.00         |
| 176237                                      | ATLANTIC RETAIL, INC         | 461(c)(3)(Q)                | 01/12/2022   | GC   | P67696                 | \$300.00         |
| 189580                                      | BROCO RANKIN                 | 203(a)                      | 01/12/2022   | GC   | P69363                 | \$800.00         |
| 180458                                      | GRAND PETRO, INC.            | 203(b)                      | 01/12/2022   | GC   | P69609                 | \$800.00         |
| 129728                                      | NEW LIFE SERVICE CO. INC.    | 1151                        | 01/12/2022   | TCF  | P65897                 | \$500.00         |
| 182054                                      | R. J. AUTO BODY & DETAIL     | 109, 1151(e)(1), 1171(c)(1) | 01/12/2022   | TCF  | P68616                 | \$2,400.00       |
| 175834                                      | RICHARD MAINTENANCE          | 461                         | 01/20/2022   | TCF  | P66387, P66391, P68137 | \$1,400.00       |
| 190939                                      | SHOLES, LUTILLER B TR        | 1403                        | 01/12/2022   | TCF  | P69747                 | \$250.00         |
| 159348                                      | TOP GUN PAINT AND BODY       | 1151, 1171                  | 01/20/2022   | TCF  | P65394                 | \$2,000.00       |
| 165287                                      | VICKERS CONSTRUCTION COMPANY | 1403                        | 01/12/2022   | TCF  | P69736                 | \$800.00         |
| 176325                                      | WAYNE PERRY, INC             | 221, 1166                   | 01/20/2022   | TCF  | P70408                 | \$3,200.00       |
| <b>Total MSPAP Settlements: \$12,750.00</b> |                              |                             |              |      |                        |                  |

**SOUTH COAST AQMD'S RULES AND REGULATIONS INDEX  
FOR JANUARY 2022 PENALTY REPORT**

**REGULATION I - GENERAL PROVISIONS**

Rule 109 Recordkeeping for Volatile Organic Compound Emissions

**REGULATION II - PERMITS**

Rule 202 Temporary Permit to Operate

Rule 203 Permit to Operate

Rule 221 Plans

**REGULATION IV - PROHIBITIONS**

Rule 461 Gasoline Transfer and Dispensing

**REGULATION XI - SOURCE SPECIFIC STANDARDS**

Rule 1113 Architectural Coatings

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 1155 Particulate Matter Control Devices

Rule 1166 Volatile Organic Compound Emissions from Decontamination of Soil

Rule 1171 Solvent Cleaning Operations

**REGULATION XIII - NEW SOURCE REVIEW**

Rule 1303 Requirements

**REGULATION XIV - TOXICS**

Rule 1403 Asbestos Emissions from Demolition/Renovation Activities

**REGULATION XX REGIONAL CLEAN AIR INCENTIVES MARKET (RECLAIM)**

Rule 2004 Requirements

Rule 2011 Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SO<sub>x</sub>) Emissions

Rule 2012 Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NO<sub>x</sub>) Emissions

**REGULATION XXX - TITLE V PERMITS**

Rule 3002 Requirements for Title V Permits

Rule 3003 Applications

Rule 3004 Permit Types and Content

**CODE OF FEDERAL REGULATIONS**

40 CFR 61.145 Standard for Demolition and Renovation

[↑ Back to Agenda](#)

BOARD MEETING DATE: March 4, 2022

AGENDA NO. 26

REPORT: Technology Committee

SYNOPSIS: The Technology Committee held a meeting remotely on Friday, February 18, 2022. The following is a summary of the meeting.

RECOMMENDED ACTION:  
Receive and file.

Rex Richardson, Chair  
Technology Committee

MMM:psc

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### **Committee Members**

Present: Board Member Gideon Kracov  
Mayor Larry McCallon  
Board Member Veronica Padilla-Campos  
Vice Mayor Rex Richardson, Chair  
Mayor Carlos Rodriguez

Absent: Supervisor Andrew Do

### **Call to Order**

Chair Richardson called the meeting to order at 12:00 p.m.

### **ACTION ITEMS:**

**1. Renew Membership in California Fuel Cell Partnership, Execute Contract, Receive and File California Fuel Cell Partnership Executive Board Meeting Agendas and Activity Updates**

South Coast AQMD has been a member of the California Fuel Cell Partnership (CaFCP) since 2000. These actions are to renew South Coast AQMD's membership in the CaFCP for Calendar Year 2022, execute a contract from the Clean Fuels Program Fund (31) with Frontier Energy, Inc., acting on behalf of the CaFCP in an amount not to exceed \$40,000 and receive and file the CaFCP Executive Board

Meeting Agendas for March 30, 2021, and October 20, 2021; and Activity Updates for 2021.

Board Member Kracov commented that he does not have a financial interest but is required to identify for the record that he is a Board Member of the California Air Resources Board which is a member of the California Fuel Cell Partnership and California Natural Gas Vehicle Partnership, which is involved in this item.

Mayor Rodriguez commented that he is looking forward to participating in the new non-profit structure, which will support inclusion of all hydrogen related entities and enable the organization to grow beyond passenger cars and beyond California. He thanked Sandy Berg of CARB and the leadership team for their work in transitioning to the new non-profit, noting that membership has grown to 55 members and reduced government agency fees. A significant accomplishment in 2021 was the Fuel Cell Electric Truck Vision, which identified the ambitious goals of 70,000 fuel cell trucks and 200 heavy-duty hydrogen stations by 2035.

Mayor McCallon mentioned that SoCalGas is launching their Angeles Link to bring a green hydrogen pipeline to Southern California, to help foster the growth of the fuel cell industry.

Ranji George, a member of the public, expressed his disappointment that domestic manufacturers are no longer on CaFCP Executive Board. He urged the Board members to push for more hydrogen stations in the eastern part of the region.

Harvey Eder, Public Solar Power Coalition, expressed his concerns about hydrogen from natural gas and the lack of solar generation in CARB's Scoping Plan.

Adrian Martinez, Earth Justice, encouraged the new leadership of the Technology Committee to focus on zero emissions only.

Vice Mayor Richardson agreed with the need to expand access to hydrogen and noted that there is only one hydrogen station in Long Beach, which often has a long line of cars waiting to refuel. He encouraged the Fuel Cell organization to increase hydrogen access.

Moved by Rodriguez; seconded by McCallon; unanimously approved.

Ayes: Kracov, McCallon, Padilla-Campos, Richardson, Rodriguez  
Noes: None  
Abstain: None  
Absent: Do

**2. Recognize California Natural Gas Vehicle Partnership as a Nonprofit Corporation and Transfer Funds, Contracts and Administrative Activities to this Nonprofit**

The Board established the California Natural Gas Vehicle Partnership (CNGVP) and the Natural Gas Vehicle Partnership Fund (Fund 40) in 2002 to promote greater deployment of natural gas vehicles in California. To provide the CNGVP with greater autonomy and help reduce South Coast AQMD's administrative responsibilities, the CNGVP is registering as a California nonprofit corporation. These actions are to: 1) recognize the CNGVP as a California nonprofit corporation; 2) close all CNGVP contracts; 3) transfer all unspent funds of up to \$290,000 from the Natural Gas Vehicle Partnership Fund (Fund 40) to CNGVP nonprofit corporation; 4) close the Natural Gas Vehicle Partnership Fund (Fund 40); and 5) discontinue administrative activities on behalf of the CNGVP.

Board Member Kracov commented that he does not have a financial interest but is required to identify for the record that he is a Board Member of the California Air Resources Board which is a member of the California Fuel Cell Partnership and California Natural Gas Vehicle Partnership, which is involved in this item.

Mr. Eder expressed concerns about the tax implications and limitations for solar and renewable non-profit organizations.

Mr. Martinez expressed the need to understand the continued financial involvement and support from the South Coast AQMD. He stated that the agency should be focused on shifting to zero emissions approaches as identified by the recent AQMP strategy.

Board Member Padilla Campos asked if this action would result in any impacts to South Coast AQMD. Staff responded that the transition of the CNGVP to a non-profit will benefit the South Coast AQMD, as it will relieve staff resources associated with the development and administration of contracts, administration of invoice payments and provide budget oversight responsibilities. Board Member Padilla Campos inquired about the difference in the non-profit organizations, i.e., 501(c)6 vs. 501(c)3. Staff indicated that it has been determined the 501(c)6 is established to promote a common business interest, whereas a 501(c)3 is tax exempt and prohibited from lobbying.

Moved by McCallon; seconded by Rodriguez; unanimously approved.

Ayes: Kracov, McCallon, Padilla-Campos, Richardson, Rodriguez

Noes: None

Abstain: None

Absent: Do

### **3. Amend Contracts to Deploy Trucks for Volvo Low Impact Green Heavy Transport Solutions Project**

In November 2018, the Board approved execution of contracts for the Volvo Low Impact Green Heavy Transport Solutions (LIGHTS) project. CARB approved reallocation of up to \$1,044,854 of administrative funding to project costs and extend the project to September 2022, to deploy up to five trucks at freight handling facilities. This action is to amend a contract with Volvo Group North America, LLC in an amount not to exceed \$1,044,854 from the GHG Reduction Projects Special Revenue Fund (67) to deploy up to five trucks and amend a contract with Green Paradigm Consulting, Inc. in an amount not to exceed \$14,000 from the GHG Reduction Projects Special Revenue Fund (67) to provide project implementation assistance.

Board Member Kracov commented that he does not have a financial interest but is required to identify for the record that he is a Board Member of the California Air Resources Board which is a member of the California Fuel Cell Partnership and California Natural Gas Vehicle Partnership, which is involved in this item.

Vice Mayor Richardson commented that he does not have a financial interest or conflict of interest but is required to identify for the record that he is the Vice Mayor for the City of Long Beach, which is involved in this item.

Board Member Kracov asked how many trucks are funded by the Volvo LIGHTS project. Staff responded that this project has developed and deployed 23 battery electric trucks but is also funding the development and demonstration of an entire system, which includes battery electric cargo handling equipment as well as infrastructure for the trucks and equipment.

Mr. George recommended that the truck batteries be properly disposed of after the demonstration.

Moved by Kracov; seconded by McCallon; unanimously approved.

Ayes: Kracov, McCallon, Padilla-Campos, Richardson, Rodriguez

Noes: None

Abstain: None

Absent: Do



**4. Approve and Adopt Technology Advancement Office Clean Fuels Program 2021 Annual Report and 2022 Plan Update, Resolution and Membership Changes for Clean Fuels Advisory Group**

Each year by March 31, 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 2021 and 2022 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.

Board Member Kracov commented that he does not have a financial interest but is required to identify for the record that he is a Board Member of the California Air Resources Board which is a member of the California Fuel Cell Partnership and California Natural Gas Vehicle Partnership, which is involved in this item.

Mr. Martinez inquired why investments in compressed natural gas, compressed methane gas and biomethane are being pursued and suggested consideration for investments in zero emission technologies. He urged staff to engage with stakeholders, in particular San Joaquin Valley, who have concerns about dairy biomethane and environmental justice implications. Finally, he recommended that South Coast AQMD partner with other technology coalitions.

Mr. Eder commented on the funding amount allocated towards the proposed programs and suggested funds should be allocated towards solar.

Mr. George commented on the disparity in funding between battery electric and hydrogen technologies and recommended treating all technologies equal.

Board Member Padilla-Campos inquired about the emissions benefit timeframe. Staff confirmed the emission reductions cover five years. She also asked about the two advisory committee member transitions. Staff noted it was due to movement within their organization and interest on who would like to participate. She recommended removal of investments in natural gas and encouraged the committee to engage more in innovative zero emission technologies.

Moved by McCallon; seconded by Rodriguez; unanimously approved.

Ayes: Kracov, McCallon, Richardson, Rodriguez  
Noes: None  
Abstain: Padilla-Campos  
Absent: Do

**OTHER MATTERS:**

**5. Other Business**

There was no other business to report.

**6. Public Comment Period**

Mr. George commented on the importance of hydrogen fuels and technologies.

Mr. Eder commented on the usage of alcohol fuels.

**7. Next Meeting Date**

The next regular Technology Committee meeting is scheduled for Friday, March 18, 2022, at noon.

**Adjournment**

The meeting adjourned at 1:15 p.m.

**Attachment**

Attendance Record

**ATTACHMENT**

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
TECHNOLOGY COMMITTEE MEETING  
Attendance Record – February 18, 2022**

|  |                                   |
|--|-----------------------------------|
| Board Member Gideon Kracov .....           | South Coast AQMD Board Member     |
| Mayor Larry McCallon .....                 | South Coast AQMD Board Member     |
| Board Member Veronica Padilla-Campos ..... | South Coast AQMD Board Member     |
| Vice Mayor Rex Richardson .....            | South Coast AQMD Board Member     |
| Mayor Carlos Rodriguez .....               | South Coast AQMD Board Member     |
| <br>                                       |                                   |
| Matthew Hamlett .....                      | Board Consultant (Richardson)     |
| Mathew Holder .....                        | Board Consultant (Rodriguez)      |
| Amy Wong .....                             | Board Consultant (Padilla-Campos) |
| Ross Zelen .....                           | Board Consultant (Kracov)         |
| <br>                                       |                                   |
| Mark Abramowitz .....                      | Public Member                     |
| Ramine Cromartie .....                     | Public Member                     |
| Harvey Eder .....                          | Public Solar Power Coalition      |
| Fernando Gaytan .....                      | Earth Justice                     |
| Ranji George .....                         | Public Member                     |
| Kristen Gifford .....                      | Public Member                     |
| Cal Jacobs .....                           | Public Member                     |
| Roupen Karakouzian .....                   | Public Member                     |
| Adrian Martinez .....                      | Earth Justice                     |
| David Rothbart .....                       | Public Member                     |
| Bethmarie Quiambao .....                   | SCE                               |
| James Simonelli .....                      | Public Member                     |
| Tom Swenson .....                          | Public Member                     |
| <br>                                       |                                   |
| Derrick Alatorre .....                     | South Coast AQMD Staff            |
| Jason Aspell .....                         | South Coast AQMD Staff            |
| Phil Barroca .....                         | South Coast AQMD Staff            |
| Penny Shaw Cedillo .....                   | South Coast AQMD Staff            |
| Anissa Heard-Johnson .....                 | South Coast AQMD Staff            |
| Philip Crabbe .....                        | South Coast AQMD Staff            |
| Josephine Gonzales .....                   | South Coast AQMD Staff            |
| Mark Henninger .....                       | South Coast AQMD Staff            |
| Aaron Katzenstein .....                    | South Coast AQMD Staff            |
| Patricia Kwon .....                        | South Coast AQMD Staff            |
| Ruby Laity .....                           | South Coast AQMD Staff            |
| Lisa Mirisola .....                        | South Coast AQMD Staff            |

Matt Miyasato.....South Coast AQMD Staff  
Ron Moskowitz .....South Coast AQMD Staff  
Susan Nakamura.....South Coast AQMD Staff  
Wayne Natri.....South Coast AQMD Staff  
Sarah Rees .....South Coast AQMD Staff  
Walter Shen .....South Coast AQMD Staff  
Anthony Wang .....South Coast AQMD Staff  
Lisa Tanaka .....South Coast AQMD Staff  
Donna Vernon .....South Coast AQMD Staff  
Mei Wang .....South Coast AQMD Staff  
Jill Whynot .....South Coast AQMD Staff

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BOARD MEETING DATE: March 4, 2022

AGENDA NO. 27

REPORT: Mobile Source Air Pollution Reduction Review Committee

SYNOPSIS: The Mobile Source Air Pollution Reduction Review Committee held a meeting remotely on Thursday, February 17, 2022. The following is a summary of the meeting.

RECOMMENDED ACTION:  
Receive and file.

Ben J. Benoit  
South Coast AQMD Representative  
to MSRC

MMM:AK:CR:av

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### **MSRC Contract Modifications**

Staff presented the MSRC-TAC's recommendation, as originally recommended by their Scope Changes Subcommittee, to authorize the MSRC Contracts Administrator to approve initial extensions up to 18 months, up from one year. The MSRC-TAC further recommended that the Contracts Administrator be granted the flexibility and responsibility to deny contract extension requests, with the provision that a contractor whose request is denied would have the option to request review by the MSRC. The MSRC approved the recommendation with suggested edits to the policy, including keeping the initial 12-month extension authorization by the MSRC Contracts Administrator and incorporating a checklist into the process.

### **FYs 2021-24 Work Program**

Staff provided an update on the MSRC-TAC Work Program Development Subcommittee progress. The MSRC-TAC recommends approval of a potential partnership to pursue state and federal funding opportunities and to authorize the development of a Major Event Center Programs RFP. The MSRC approved the recommendations.

### **Contract Modification Requests**

The MSRC considered five contract modification requests and took the following actions:

1. Riverside County Transportation Commission, Contract #MS14059, which provides \$1,250,000 to implement various signal synchronization projects), approval of a 12-month term extension;
2. San Bernardino County Transportation Authority (SBCTA), Contract #MS14072, which provides \$1,250,000 to implement various signal synchronization projects, approval of a two-year term extension with the condition that SBCTA check in to show progress after one year;
3. City of Yucaipa, Contract #ML18129, which provides \$63,097 to install EV charging infrastructure, approval of a three-year term extension with the condition that the City submit reports showing progress consistent with the schedule in the request letter;
4. 4 Gen Logistics, LLC, Contract #MS21013 (proposed), which provides \$7,000,000 to deploy 40 zero emission trucks; approval to reduce Inland Empire operational requirement; and
5. Cathedral City, Contract #ML16006, which provides \$25,000 to conduct bicycle-related outreach, approval of a 12-month term extension.

### **Contracts Administrator's Report**

The MSRC AB 2766 Contracts Administrator's report provides a written status report on all open contracts from FY 2007-08 to the present. The Contracts Administrator's Report for January 6 through January 26, 2022 is attached (*Attachment 1*).

### **Attachment**

January 6 through January 26, 2022 Contracts Administrator's Report

MSRC Agenda Item No. 2

**DATE:** February 17, 2022

**FROM:** Cynthia Ravenstein

**SUBJECT:** AB 2766 Contracts Administrator's Report

**SYNOPSIS:** This report covers key issues addressed by MSRC staff, status of open contracts, and administrative scope changes from January 6 to 26, 2022.

**RECOMMENDATION:** Receive and file report

**WORK PROGRAM IMPACT:** None

**Contract Execution Status**

**2018-21 Work Program**

On April 5, 2019, the SCAQMD Governing Board approved an award under the Major Event Center Transportation Program. This contract is executed.

On September 6, 2019, the SCAQMD Governing Board approved an award under the Major Event Center Transportation Program. This contract is executed.

On December 6, 2019, the SCAQMD Governing Board approved an award under the Major Event Center Transportation Program. This contract is executed.

On September 4, 2020, the SCAQMD Governing Board approved an award under the Last Mile component of the MSRC's Regional Goods Movement Program. This contract is executed.

On April 2, 2021, the SCAQMD Governing Board approved five awards under the Zero and Near-Zero Emission Cargo Handling Equipment at Warehouse, Distribution and Intermodal Facilities in Riverside and San Bernardino Counties Program and ten awards under the Zero and Near-Zero Emission Trucking to Warehouse, Distribution and Intermodal Facilities in Riverside and San Bernardino Counties Program. These contracts are under development, undergoing internal review, with the prospective contractor for signature, or executed.

On June 4, 2021, the SCAQMD Governing Board approved an award under the Major Event Center Transportation Program. This contract is with the prospective contractor for signature.

**Work Program Status**

Contract Status Reports for Work Program years with open and/or pending contracts are attached.

***FY 2010-11 Work Program Contracts***

One contract from this Work Program year is open; and 2 are in “Open/Complete” status, having completed all obligations except operations.

***FY 2010-11 Invoices Paid***

No invoices were paid during this period.

***FY 2011-12 Work Program Contracts***

4 contracts from this Work Program year are open, and 7 are in “Open/Complete” status.

***FY 2011-12 Invoices Paid***

No invoices were paid during this period.

***FYs 2012-14 Work Program Contracts***

7 contracts from this Work Program year are open, and 17 are in “Open/Complete” status.

***FYs 2012-14 Invoices Paid***

No invoices were paid during this period.

***FYs 2014-16 Work Program Contracts***

25 contracts from this Work Program year are open, and 31 are in “Open/Complete” status.

***FYs 2014-16 Invoices Paid***

No invoices were paid during this period.

***FYs 2016-18 Work Program Contracts***

83 contracts from this Work Program year are open, and 54 are in “Open/Complete” status.

***FYs 2016-18 Invoices Paid***

No invoices were paid during this period.

***FYs 2018-21 Work Program Contracts***

9 contracts from this Work Program year are open.

***FYs 2018-21 Invoices Paid***

No invoices were paid during this period.

***Administrative Scope Changes***

No administrative scope changes were initiated during the period from January 6 to 26, 2022.

***Attachments***

- FY 2007-08 through FYs 2018-21 (except FY 2009-10) Contract Status Reports





## FYs 2008-09 Through 2018-21 AB2766 Contract Status Report

2/10/2022

| Cont.#                                     | Contractor                            | Start Date | Original End Date | Amended End Date | Contract Value | Remitted     | Project Description                          | Award Balance | Billing Complete? |
|--|---------------------------------------|------------|-------------------|------------------|----------------|--------------|--|---------------|-------------------|
| <b><i>FY 2008-2009 Contracts</i></b>       |                                       |            |                   |                  |                |              |  |               |                   |
| <b><i>Declined/Cancelled Contracts</i></b> |                                       |            |                   |                  |                |              |  |               |                   |
| ML09017                                    | County of San Bernardino Public Wo    | 1/28/2010  | 7/27/2016         |                  | \$200,000.00   | \$0.00       | 8 Nat. Gas Heavy-Duty Vehicles               | \$200,000.00  | No                |
| ML09018                                    | Los Angeles Department of Water an    | 7/16/2010  | 9/15/2012         |                  | \$850,000.00   | \$0.00       | Retrofit 85 Off-Road Vehicles w/DECS         | \$850,000.00  | No                |
| ML09019                                    | City of San Juan Capistrano Public    | 12/4/2009  | 11/3/2010         |                  | \$10,125.00    | \$0.00       | Remote Vehicle Diagnostics/45 Vehicles       | \$10,125.00   | No                |
| ML09022                                    | Los Angeles County Department of P    |            |                   |                  | \$8,250.00     | \$0.00       | Remote Vehicle Diagnostics/15 Vehicles       | \$8,250.00    | No                |
| ML09025                                    | Los Angeles County Department of P    | 10/15/2010 | 12/14/2012        | 6/14/2013        | \$50,000.00    | \$0.00       | Remote Vehicle Diagnostics/85 Vehicles       | \$50,000.00   | No                |
| ML09028                                    | Riverside County Waste Manageme       |            |                   |                  | \$140,000.00   | \$0.00       | Retrofit 7 Off-Road Vehicles w/DECS          | \$140,000.00  | No                |
| ML09039                                    | City of Inglewood                     |            |                   |                  | \$310,000.00   | \$0.00       | Purchase 12 H.D. CNG Vehicles and Remot      | \$310,000.00  | No                |
| ML09040                                    | City of Cathedral City                |            |                   |                  | \$83,125.00    | \$0.00       | Purchase 3 H.D. CNG Vehicles and Remote      | \$83,125.00   | No                |
| ML09044                                    | City of San Dimas                     |            |                   |                  | \$425,000.00   | \$0.00       | Install CNG Station and Purchase 1 CNG S     | \$425,000.00  | No                |
| ML09045                                    | City of Orange                        |            |                   |                  | \$125,000.00   | \$0.00       | Purchase 5 CNG Sweepers                      | \$125,000.00  | No                |
| <b>Total: 10</b>                           |                                       |            |                   |                  |                |              |  |               |                   |
| <b><i>Closed Contracts</i></b>             |                                       |            |                   |                  |                |              |  |               |                   |
| ML09007                                    | City of Rancho Cucamonga              | 2/26/2010  | 4/25/2012         |                  | \$117,500.00   | \$62,452.57  | Maintenance Facility Modification            | \$55,047.43   | Yes               |
| ML09008                                    | City of Culver City Transportation De | 1/19/2010  | 7/18/2016         | 7/18/2017        | \$175,000.00   | \$175,000.00 | 8 Nat. Gas Heavy-Duty Vehicles               | \$0.00        | Yes               |
| ML09009                                    | City of South Pasadena                | 11/5/2010  | 12/4/2016         | 3/4/2019         | \$125,930.00   | \$125,930.00 | CNG Station Expansion                        | \$0.00        | Yes               |
| ML09010                                    | City of Palm Springs                  | 1/8/2010   | 2/7/2016          |                  | \$25,000.00    | \$25,000.00  | 1 Nat. Gas Heavy-Duty Vehicle                | \$0.00        | Yes               |
| ML09011                                    | City of San Bernardino                | 2/19/2010  | 5/18/2016         |                  | \$250,000.00   | \$250,000.00 | 10 Nat. Gas Heavy-Duty Vehicles              | \$0.00        | Yes               |
| ML09012                                    | City of Gardena                       | 3/12/2010  | 11/11/2015        |                  | \$25,000.00    | \$25,000.00  | 1 Nat. Gas Heavy-Duty Vehicle                | \$0.00        | Yes               |
| ML09013                                    | City of Riverside Public Works        | 9/10/2010  | 12/9/2011         | 7/31/2013        | \$144,470.00   | \$128,116.75 | Traffic Signal Synchr./Moreno Valley         | \$16,353.25   | Yes               |
| ML09014                                    | City of Riverside Public Works        | 9/10/2010  | 12/9/2011         | 7/31/2013        | \$113,030.00   | \$108,495.94 | Traffic Signal Synchr./Corona                | \$4,534.06    | Yes               |
| ML09015                                    | City of Riverside Public Works        | 9/10/2010  | 12/9/2011         | 7/31/2013        | \$80,060.00    | \$79,778.52  | Traffic Signal Synchr./Co. of Riverside      | \$281.48      | Yes               |
| ML09016                                    | County of San Bernardino Public Wo    | 1/28/2010  | 3/27/2014         |                  | \$50,000.00    | \$50,000.00  | Install New CNG Station                      | \$0.00        | Yes               |
| ML09020                                    | County of San Bernardino              | 8/16/2010  | 2/15/2012         |                  | \$49,770.00    | \$49,770.00  | Remote Vehicle Diagnostics/252 Vehicles      | \$0.00        | Yes               |
| ML09021                                    | City of Palm Desert                   | 7/9/2010   | 3/8/2012          |                  | \$39,450.00    | \$38,248.87  | Traffic Signal Synchr./Rancho Mirage         | \$1,201.13    | Yes               |
| ML09023                                    | Los Angeles County Department of P    | 12/10/2010 | 12/9/2017         |                  | \$50,000.00    | \$50,000.00  | 2 Heavy-Duty Alternative Fuel Transit Vehicl | \$0.00        | Yes               |
| ML09026                                    | Los Angeles County Department of P    | 10/15/2010 | 10/14/2017        | 4/14/2019        | \$150,000.00   | \$80,411.18  | 3 Off-Road Vehicles Repowers                 | \$69,588.82   | Yes               |
| ML09027                                    | Los Angeles County Department of P    | 7/23/2010  | 3/22/2012         | 6/22/2012        | \$150,000.00   | \$150,000.00 | Freeway Detector Map Interface               | \$0.00        | Yes               |
| ML09029                                    | City of Whittier                      | 11/6/2009  | 4/5/2016          |                  | \$25,000.00    | \$25,000.00  | 1 Nat. Gas Heavy-Duty Vehicle                | \$0.00        | Yes               |
| ML09030                                    | City of Los Angeles GSD/Fleet Servi   | 6/18/2010  | 6/17/2011         |                  | \$22,310.00    | \$22,310.00  | Remote Vehicle Diagnostics/107 Vehicles      | \$0.00        | Yes               |
| ML09031                                    | City of Los Angeles Dept of General   | 10/29/2010 | 10/28/2017        |                  | \$825,000.00   | \$825,000.00 | 33 Nat. Gas Heavy-Duty Vehicles              | \$0.00        | Yes               |
| ML09032                                    | Los Angeles World Airports            | 4/8/2011   | 4/7/2018          |                  | \$175,000.00   | \$175,000.00 | 7 Nat. Gas Heavy-Duty Vehicles               | \$0.00        | Yes               |

| Cont.#  | Contractor                           | Start Date | Original End Date | Amended End Date | Contract Value | Remitted       | Project Description                       | Award Balance | Billing Complete? |
|---------|--------------------------------------|------------|-------------------|------------------|----------------|----------------|---|---------------|-------------------|
| ML09033 | City of Beverly Hills                | 3/4/2011   | 5/3/2017          | 1/3/2019         | \$550,000.00   | \$550,000.00   | 10 Nat. Gas Heavy-Duty Vehicles & CNG St  | \$0.00        | Yes               |
| ML09034 | City of La Palma                     | 11/25/2009 | 6/24/2015         |                  | \$25,000.00    | \$25,000.00    | 1 LPG Heavy-Duty Vehicle                  | \$0.00        | Yes               |
| ML09035 | City of Fullerton                    | 6/17/2010  | 6/16/2017         | 6/16/2018        | \$450,000.00   | \$450,000.00   | 2 Heavy-Duty CNG Vehicles & Install CNG   | \$0.00        | Yes               |
| ML09037 | City of Redondo Beach                | 6/18/2010  | 6/17/2016         |                  | \$50,000.00    | \$50,000.00    | Purchase Two CNG Sweepers                 | \$0.00        | Yes               |
| ML09038 | City of Chino                        | 9/27/2010  | 5/26/2017         |                  | \$250,000.00   | \$250,000.00   | Upgrade Existing CNG Station              | \$0.00        | Yes               |
| ML09041 | City of Los Angeles, Bureau of Sanit | 10/1/2010  | 9/30/2017         |                  | \$875,000.00   | \$875,000.00   | Purchase 35 H.D. Nat. Gas Vehicles        | \$0.00        | Yes               |
| ML09042 | Los Angeles Department of Water an   | 12/10/2010 | 12/9/2017         |                  | \$1,400,000.00 | \$1,400,000.00 | Purchase 56 Dump Trucks                   | \$0.00        | Yes               |
| ML09043 | City of Covina                       | 10/8/2010  | 4/7/2017          | 10/7/2018        | \$179,591.00   | \$179,591.00   | Upgrade Existing CNG Station              | \$0.00        | Yes               |
| ML09046 | City of Newport Beach                | 5/20/2010  | 5/19/2016         |                  | \$162,500.00   | \$162,500.00   | Upgrade Existing CNG Station, Maintenance | \$0.00        | Yes               |
| ML09047 | Los Angeles County Department of P   | 8/13/2014  | 8/12/2015         | 11/12/2015       | \$400,000.00   | \$272,924.53   | Maintenance Facility Modifications        | \$127,075.47  | Yes               |

**Total: 29**

**Closed/Incomplete Contracts**

|         |                                    |            |            |           |              |        |                                    |              |    |
|---------|------------------------------------|------------|------------|-----------|--------------|--------|------------------------------------|--------------|----|
| ML09024 | Los Angeles County Department of P | 10/15/2010 | 12/14/2012 | 6/14/2013 | \$400,000.00 | \$0.00 | Maintenance Facility Modifications | \$400,000.00 | No |
|---------|------------------------------------|------------|------------|-----------|--------------|--------|------------------------------------|--------------|----|

**Total: 1**

**Open/Complete Contracts**

|         |                    |          |          |           |              |              |                                       |        |     |
|---------|--------------------|----------|----------|-----------|--------------|--------------|---------------------------------------|--------|-----|
| ML09036 | City of Long Beach | 5/7/2010 | 5/6/2017 | 11/6/2022 | \$875,000.00 | \$875,000.00 | Purchase 35 Natural Gas Refuse Trucks | \$0.00 | Yes |
|---------|--------------------|----------|----------|-----------|--------------|--------------|---------------------------------------|--------|-----|

**Total: 1**

| Cont.#                              | Contractor                          | Start Date | Original End Date | Amended End Date | Contract Value | Remitted     | Project Description                          | Award Balance  | Billing Complete? |
|-------------------------------------|-------------------------------------|------------|-------------------|------------------|----------------|--------------|--|----------------|-------------------|
| <b>FY 2010-2011 Contracts</b>       |                                     |            |                   |                  |                |              |  |                |                   |
| <b>Open Contracts</b>               |                                     |            |                   |                  |                |              |  |                |                   |
| ML11029                             | City of Santa Ana                   | 9/7/2012   | 3/6/2020          | 3/6/2023         | \$262,500.00   | \$75,000.00  | Expansion of Existing CNG Station, Install N | \$187,500.00   | No                |
| <b>Total: 1</b>                     |                                     |            |                   |                  |                |              |  |                |                   |
| <b>Declined/Cancelled Contracts</b> |                                     |            |                   |                  |                |              |  |                |                   |
| ML11038                             | City of Santa Monica                | 5/18/2012  | 7/17/2018         |                  | \$400,000.00   | \$0.00       | Maintenance Facility Modifications           | \$400,000.00   | No                |
| MS11013                             | Go Natural Gas, Inc.                |            |                   |                  | \$150,000.00   | \$0.00       | New CNG Station - Huntington Beach           | \$150,000.00   | No                |
| MS11014                             | Go Natural Gas, Inc.                |            |                   |                  | \$150,000.00   | \$0.00       | New CNG Station - Santa Ana                  | \$150,000.00   | No                |
| MS11015                             | Go Natural Gas, Inc.                |            |                   |                  | \$150,000.00   | \$0.00       | New CNG Station - Inglewood                  | \$150,000.00   | No                |
| MS11046                             | Luis Castro                         |            |                   |                  | \$40,000.00    | \$0.00       | Repower One Heavy-Duty Vehicle               | \$40,000.00    | No                |
| MS11047                             | Ivan Borjas                         |            |                   |                  | \$40,000.00    | \$0.00       | Repower One Heavy-Duty Vehicle               | \$40,000.00    | No                |
| MS11048                             | Phase II Transportation             |            |                   |                  | \$1,080,000.00 | \$0.00       | Repower 27 Heavy-Duty Vehicles               | \$1,080,000.00 | No                |
| MS11049                             | Ruben Caceras                       |            |                   |                  | \$40,000.00    | \$0.00       | Repower One Heavy-Duty Vehicle               | \$40,000.00    | No                |
| MS11050                             | Carlos Arrue                        |            |                   |                  | \$40,000.00    | \$0.00       | Repower One Heavy-Duty Vehicle               | \$40,000.00    | No                |
| MS11051                             | Francisco Vargas                    |            |                   |                  | \$40,000.00    | \$0.00       | Repower One Heavy-Duty Vehicle               | \$40,000.00    | No                |
| MS11053                             | Jose Ivan Soltero                   |            |                   |                  | \$40,000.00    | \$0.00       | Repower One Heavy-Duty Vehicle               | \$40,000.00    | No                |
| MS11054                             | Albino Meza                         |            |                   |                  | \$40,000.00    | \$0.00       | Repower One Heavy-Duty Vehicle               | \$40,000.00    | No                |
| MS11059                             | Go Natural Gas                      |            |                   |                  | \$150,000.00   | \$0.00       | New Public Access CNG Station - Paramou      | \$150,000.00   | No                |
| MS11063                             | Standard Concrete Products          |            |                   |                  | \$310,825.00   | \$0.00       | Retrofit Two Off-Road Vehicles under Showc   | \$310,825.00   | No                |
| MS11070                             | American Honda Motor Company        |            |                   |                  | \$100,000.00   | \$0.00       | Expansion of Existing CNG Station            | \$100,000.00   | No                |
| MS11072                             | Trillium USA Company DBA Californi  |            |                   |                  | \$150,000.00   | \$0.00       | New Public Access CNG Station                | \$150,000.00   | No                |
| MS11077                             | DCL America Inc.                    |            |                   |                  | \$263,107.00   | \$0.00       | Retrofit of 13 Off-Road Diesel Vehicles with | \$263,107.00   | No                |
| MS11083                             | Cattrac Construction, Inc.          |            |                   |                  | \$500,000.00   | \$0.00       | Install DECS on Eight Off-Road Vehicles      | \$500,000.00   | No                |
| MS11084                             | Ivanhoe Energy Services and Develo  |            |                   |                  | \$66,750.00    | \$0.00       | Retrofit One H.D. Off-Road Vehicle Under S   | \$66,750.00    | No                |
| MS11088                             | Diesel Emission Technologies        |            |                   |                  | \$32,750.00    | \$0.00       | Retrofit Three H.D. Off-Road Vehicles Under  | \$32,750.00    | No                |
| MS11089                             | Diesel Emission Technologies        |            |                   |                  | \$9,750.00     | \$0.00       | Retrofit One H.D. Off-Road Vehicle Under S   | \$9,750.00     | No                |
| MS11090                             | Diesel Emission Technologies        |            |                   |                  | \$14,750.00    | \$0.00       | Retrofit One H.D. Off-Road Vehicle Under S   | \$14,750.00    | No                |
| <b>Total: 22</b>                    |                                     |            |                   |                  |                |              |  |                |                   |
| <b>Closed Contracts</b>             |                                     |            |                   |                  |                |              |  |                |                   |
| ML11007                             | Coachella Valley Association of Gov | 7/29/2011  | 7/28/2012         |                  | \$250,000.00   | \$249,999.96 | Regional PM10 Street Sweeping Program        | \$0.04         | Yes               |
| ML11020                             | City of Indio                       | 2/1/2013   | 3/31/2019         | 9/30/2020        | \$15,000.00    | \$9,749.50   | Retrofit one H.D. Vehicles w/DECS, repower   | \$5,250.50     | Yes               |
| ML11021                             | City of Whittier                    | 1/27/2012  | 9/26/2018         | 6/26/2019        | \$210,000.00   | \$210,000.00 | Purchase 7 Nat. Gas H.D. Vehicles            | \$0.00         | Yes               |
| ML11022                             | City of Anaheim                     | 3/16/2012  | 7/15/2018         |                  | \$150,000.00   | \$150,000.00 | Purchase of 5 H.D. Vehicles                  | \$0.00         | Yes               |
| ML11023                             | City of Rancho Cucamonga            | 4/20/2012  | 12/19/2018        | 9/19/2020        | \$260,000.00   | \$260,000.00 | Expand Existing CNG Station, 2 H.D. Vehicl   | \$0.00         | Yes               |
| ML11025                             | County of Los Angeles Department o  | 3/14/2014  | 9/13/2021         |                  | \$150,000.00   | \$150,000.00 | Purchase 5 Nat. Gas H.D. Vehicles            | \$0.00         | Yes               |
| ML11026                             | City of Redlands                    | 3/2/2012   | 10/1/2018         |                  | \$90,000.00    | \$90,000.00  | Purchase 3 Nat. Gas H.D. Vehicles            | \$0.00         | Yes               |

| Cont.#  | Contractor                            | Start Date | Original End Date | Amended End Date | Contract Value | Remitted       | Project Description                          | Award Balance | Billing Complete? |
|---------|---------------------------------------|------------|-------------------|------------------|----------------|----------------|--|---------------|-------------------|
| ML11027 | City of Los Angeles, Dept. of General | 5/4/2012   | 7/3/2015          | 1/3/2016         | \$300,000.00   | \$300,000.00   | Maintenance Facility Modifications           | \$0.00        | Yes               |
| ML11028 | City of Glendale                      | 1/13/2012  | 5/12/2018         |                  | \$300,000.00   | \$300,000.00   | Purchase 10 H.D. CNG Vehicles                | \$0.00        | Yes               |
| ML11030 | City of Fullerton                     | 2/3/2012   | 3/2/2018          |                  | \$109,200.00   | \$109,200.00   | Purchase 2 Nat. Gas H.D. Vehicles, Retrofit  | \$0.00        | Yes               |
| ML11031 | City of Culver City Transportation De | 12/2/2011  | 12/1/2018         |                  | \$300,000.00   | \$300,000.00   | Purchase 10 H.D. Nat. Gas Vehicles           | \$0.00        | Yes               |
| ML11032 | City of Gardena                       | 3/2/2012   | 9/1/2018          | 10/1/2020        | \$102,500.00   | \$102,500.00   | Purchase Heavy-Duty CNG Vehicle, Install S   | \$0.00        | Yes               |
| ML11033 | City of Los Angeles, Bureau of Sanit  | 3/16/2012  | 1/15/2019         |                  | \$1,080,000.00 | \$1,080,000.00 | Purchase 36 LNG H.D. Vehicles                | \$0.00        | Yes               |
| ML11034 | City of Los Angeles Dept of General   | 5/4/2012   | 1/3/2019          |                  | \$630,000.00   | \$630,000.00   | Purchase 21 H.D. CNG Vehicles                | \$0.00        | Yes               |
| ML11035 | City of La Quinta                     | 11/18/2011 | 11/17/2012        |                  | \$25,368.00    | \$25,368.00    | Retrofit 3 On-Road Vehicles w/DECS           | \$0.00        | Yes               |
| ML11036 | City of Riverside                     | 1/27/2012  | 1/26/2019         | 3/26/2021        | \$670,000.00   | \$670,000.00   | Install New CNG Station, Purchase 9 H.D. N   | \$0.00        | Yes               |
| ML11037 | City of Anaheim                       | 12/22/2012 | 12/21/2019        |                  | \$300,000.00   | \$300,000.00   | Purchase 12 Nat. Gas H.D. Vehicles           | \$0.00        | Yes               |
| ML11039 | City of Ontario, Housing & Municipal  | 1/27/2012  | 9/26/2018         |                  | \$180,000.00   | \$180,000.00   | Purchase 6 Nat. Gas H.D. Vehicles            | \$0.00        | Yes               |
| ML11040 | City of South Pasadena                | 5/4/2012   | 1/3/2019          | 1/3/2022         | \$30,000.00    | \$30,000.00    | Purchase 1 Nat. Gas H.D. Vehicle             | \$0.00        | Yes               |
| ML11041 | City of Santa Ana                     | 9/7/2012   | 11/6/2018         | 1/6/2021         | \$265,000.00   | \$244,651.86   | Purchase 7 LPG H.D. Vehicles, Retrofit 6 H.  | \$20,348.14   | Yes               |
| ML11042 | City of Chino                         | 2/17/2012  | 4/16/2018         |                  | \$30,000.00    | \$30,000.00    | Purchase 1 Nat. Gas H.D. Vehicle, Repower    | \$0.00        | Yes               |
| ML11043 | City of Hemet Public Works            | 2/3/2012   | 2/2/2019          |                  | \$60,000.00    | \$60,000.00    | Purchase 2 H.D. Nat. Gas Vehicles            | \$0.00        | Yes               |
| ML11044 | City of Ontario, Housing & Municipal  | 1/27/2012  | 6/26/2019         |                  | \$400,000.00   | \$400,000.00   | Expand Existing CNG Station                  | \$0.00        | Yes               |
| ML11045 | City of Newport Beach                 | 2/3/2012   | 8/2/2018          | 3/2/2021         | \$30,000.00    | \$30,000.00    | Purchase 1 Nat. Gas H.D. Vehicle             | \$0.00        | Yes               |
| MS11001 | Mineral LLC                           | 4/22/2011  | 4/30/2013         | 4/30/2015        | \$111,827.00   | \$103,136.83   | Design, Develop, Host and Maintain MSRC      | \$8,690.17    | Yes               |
| MS11002 | A-Z Bus Sales, Inc.                   | 7/15/2011  | 12/31/2011        | 6/30/2013        | \$1,705,000.00 | \$1,705,000.00 | Alternative Fuel School Bus Incentive Progra | \$0.00        | Yes               |
| MS11003 | BusWest                               | 7/26/2011  | 12/31/2011        | 12/31/2012       | \$1,305,000.00 | \$1,305,000.00 | Alternative Fuel School Bus Incentive Progra | \$0.00        | Yes               |
| MS11004 | Los Angeles County MTA                | 9/9/2011   | 2/29/2012         |                  | \$450,000.00   | \$299,743.34   | Clean Fuel Transit Service to Dodger Stadiu  | \$150,256.66  | Yes               |
| MS11006 | Orange County Transportation Autho    | 10/7/2011  | 2/29/2012         | 8/31/2012        | \$268,207.00   | \$160,713.00   | Metrolink Service to Angel Stadium           | \$107,494.00  | Yes               |
| MS11008 | USA Waste of California, Inc.         | 10/24/2013 | 4/23/2020         |                  | \$125,000.00   | \$125,000.00   | Expansion of Existing LCNG Station           | \$0.00        | Yes               |
| MS11009 | USA Waste of California, Inc.         | 10/24/2013 | 4/23/2020         |                  | \$125,000.00   | \$125,000.00   | Expansion of Existing LCNG Station           | \$0.00        | Yes               |
| MS11010 | Border Valley Trading                 | 8/26/2011  | 10/25/2017        | 4/25/2020        | \$150,000.00   | \$150,000.00   | New LNG Station                              | \$0.00        | Yes               |
| MS11011 | EDCO Disposal Corporation             | 12/30/2011 | 4/29/2019         |                  | \$100,000.00   | \$100,000.00   | New CNG Station - Signal Hill                | \$0.00        | Yes               |
| MS11012 | EDCO Disposal Corporation             | 12/30/2011 | 4/29/2019         |                  | \$100,000.00   | \$100,000.00   | New CNG Station - Buena Park                 | \$0.00        | Yes               |
| MS11016 | CR&R Incorporated                     | 4/12/2013  | 10/11/2019        |                  | \$100,000.00   | \$100,000.00   | New CNG Station - Perris                     | \$0.00        | Yes               |
| MS11017 | CR&R, Inc.                            | 3/2/2012   | 2/1/2018          |                  | \$100,000.00   | \$100,000.00   | Expansion of existing station - Garden Grove | \$0.00        | Yes               |
| MS11018 | Orange County Transportation Autho    | 10/14/2011 | 1/31/2012         |                  | \$211,360.00   | \$211,360.00   | Express Bus Service to Orange County Fair    | \$0.00        | Yes               |
| MS11019 | City of Corona                        | 11/29/2012 | 4/28/2020         |                  | \$225,000.00   | \$225,000.00   | Expansion of Existing CNG Station            | \$0.00        | Yes               |
| MS11052 | Krisda Inc                            | 9/27/2012  | 6/26/2013         |                  | \$120,000.00   | \$120,000.00   | Repower Three Heavy-Duty Vehicles            | \$0.00        | Yes               |
| MS11055 | KEC Engineering                       | 2/3/2012   | 8/2/2018          | 8/2/2019         | \$200,000.00   | \$200,000.00   | Repower 5 H.D. Off-Road Vehicles             | \$0.00        | Yes               |
| MS11056 | Better World Group Advisors           | 12/30/2011 | 12/29/2013        | 12/29/2015       | \$206,836.00   | \$186,953.46   | Programmatic Outreach Services               | \$19,882.54   | Yes               |
| MS11057 | Riverside County Transportation Co    | 7/28/2012  | 3/27/2013         |                  | \$100,000.00   | \$89,159.40    | Develop and Implement 511 "Smart Phone"      | \$10,840.60   | Yes               |
| MS11058 | L A Service Authority for Freeway E   | 5/31/2013  | 4/30/2014         |                  | \$123,395.00   | \$123,395.00   | Implement 511 "Smart Phone" Application      | \$0.00        | Yes               |
| MS11060 | Rowland Unified School District       | 8/17/2012  | 1/16/2019         | 1/16/2020        | \$175,000.00   | \$175,000.00   | New Limited Access CNG Station               | \$0.00        | Yes               |

| Cont.#  | Contractor                            | Start Date | Original End Date | Amended End Date | Contract Value | Remitted     | Project Description                           | Award Balance | Billing Complete? |
|---------|---------------------------------------|------------|-------------------|------------------|----------------|--------------|---|---------------|-------------------|
| MS11061 | Eastern Municipal Water District      | 3/29/2012  | 5/28/2015         |                  | \$11,659.00    | \$1,450.00   | Retrofit One Off-Road Vehicle under Showc     | \$10,209.00   | Yes               |
| MS11062 | Load Center                           | 9/7/2012   | 1/6/2016          | 12/6/2016        | \$175,384.00   | \$169,883.00 | Retrofit Six Off-Road Vehicles under Showc    | \$5,501.00    | Yes               |
| MS11065 | Temecula Valley Unified School Distr  | 8/11/2012  | 1/10/2019         |                  | \$50,000.00    | \$48,539.62  | Expansion of Existing CNG Station             | \$1,460.38    | Yes               |
| MS11066 | Torrance Unified School District      | 11/19/2012 | 9/18/2018         |                  | \$42,296.00    | \$42,296.00  | Expansion of Existing CNG Station             | \$0.00        | Yes               |
| MS11067 | City of Redlands                      | 5/24/2012  | 11/23/2018        | 11/23/2019       | \$85,000.00    | \$85,000.00  | Expansion of Existing CNG Station             | \$0.00        | Yes               |
| MS11068 | Ryder System Inc.                     | 7/28/2012  | 10/27/2018        |                  | \$175,000.00   | \$175,000.00 | New Public Access L/CNG Station (Fontana)     | \$0.00        | Yes               |
| MS11069 | Ryder System Inc.                     | 7/28/2012  | 8/27/2018         |                  | \$175,000.00   | \$175,000.00 | New Public Access L/CNG Station (Orange)      | \$0.00        | Yes               |
| MS11071 | City of Torrance Transit Department   | 12/22/2012 | 1/21/2019         | 1/21/2020        | \$175,000.00   | \$175,000.00 | New Limited Access CNG Station                | \$0.00        | Yes               |
| MS11074 | SunLine Transit Agency                | 5/11/2012  | 7/31/2012         |                  | \$41,849.00    | \$22,391.00  | Transit Service for Coachella Valley Festival | \$19,458.00   | Yes               |
| MS11079 | Bear Valley Unified School District   | 2/5/2013   | 10/4/2019         |                  | \$175,000.00   | \$175,000.00 | New Limited Access CNG Station                | \$0.00        | Yes               |
| MS11080 | Southern California Regional Rail Aut | 4/6/2012   | 7/31/2012         |                  | \$26,000.00    | \$26,000.00  | Metrolink Service to Auto Club Speedway       | \$0.00        | Yes               |
| MS11086 | DCL America Inc.                      | 6/7/2013   | 10/6/2016         |                  | \$500,000.00   | \$359,076.96 | Retrofit Eight H.D. Off-Road Vehicles Under   | \$140,923.04  | Yes               |
| MS11087 | Cemex Construction Material Pacific,  | 10/16/2012 | 2/15/2016         |                  | \$448,766.00   | \$448,760.80 | Retrofit 13 H.D. Off-Road Vehicles Under Sh   | \$5.20        | Yes               |
| MS11092 | Griffith Company                      | 2/15/2013  | 6/14/2016         | 12/14/2017       | \$390,521.00   | \$78,750.00  | Retrofit 17 H.D. Off-Road Vehicles Under Sh   | \$311,771.00  | Yes               |

**Total: 58**

**Closed/Incomplete Contracts**

|         |                                 |           |            |           |              |            |  |              |     |
|---------|---------------------------------|-----------|------------|-----------|--------------|------------|--|--------------|-----|
| MS11064 | City of Hawthorne               | 7/28/2012 | 8/27/2018  | 8/27/2019 | \$175,000.00 | \$0.00     | New Limited Access CNG Station               | \$175,000.00 | No  |
| MS11076 | SA Recycling, LLC               | 5/24/2012 | 9/23/2015  |           | \$424,801.00 | \$0.00     | Retrofit of 13 Off-Road Diesel Vehicles with | \$424,801.00 | No  |
| MS11081 | Metropolitan Stevedore Company  | 9/7/2012  | 1/6/2016   |           | \$45,416.00  | \$0.00     | Install DECS on Two Off-Road Vehicles        | \$45,416.00  | No  |
| MS11082 | Baumot North America, LLC       | 8/2/2012  | 12/1/2015  |           | \$65,958.00  | \$4,350.00 | Install DECS on Four Off-Road Vehicles       | \$61,608.00  | Yes |
| MS11085 | City of Long Beach              | 8/23/2013 | 12/22/2016 |           | \$159,012.00 | \$0.00     | Retrofit Seven H.D. Off-Road Vehicles Unde   | \$159,012.00 | No  |
| MS11091 | California Cartage Company, LLC | 4/5/2013  | 8/4/2016   | 2/4/2018  | \$55,000.00  | \$0.00     | Retrofit Two H.D. Off-Road Vehicles Under    | \$55,000.00  | No  |

**Total: 6**

**Open/Complete Contracts**

|         |                                      |           |           |  |              |              |                                   |        |     |
|---------|--------------------------------------|-----------|-----------|--|--------------|--------------|-----------------------------------|--------|-----|
| ML11024 | County of Los Angeles, Dept of Publi | 12/5/2014 | 6/4/2022  |  | \$90,000.00  | \$90,000.00  | Purchase 3 Nat. Gas H.D. Vehicles | \$0.00 | Yes |
| MS11073 | Los Angeles Unified School District  | 9/11/2015 | 2/10/2022 |  | \$175,000.00 | \$175,000.00 | Expansion of Existing CNG Station | \$0.00 | Yes |

**Total: 2**

| Cont.# | Contractor | Start Date | Original End Date | Amended End Date | Contract Value | Remitted | Project Description | Award Balance | Billing Complete? |
|--------|------------|------------|-------------------|------------------|----------------|----------|---------------------|---------------|-------------------|
|--------|------------|------------|-------------------|------------------|----------------|----------|---------------------|---------------|-------------------|

### **FY 2011-2012 Contracts**

#### **Open Contracts**

|         |                          |           |            |            |              |             |   |              |    |
|---------|--------------------------|-----------|------------|------------|--------------|-------------|---|--------------|----|
| ML12014 | City of Santa Ana        | 11/8/2013 | 8/7/2020   | 2/7/2022   | \$338,000.00 | \$4,709.00  | 9 H.D. Nat. Gas & LPG Trucks, EV Charging | \$333,291.00 | No |
| ML12045 | City of Baldwin Park DPW | 2/14/2014 | 12/13/2020 | 12/13/2026 | \$400,000.00 | \$0.00      | Install New CNG Station                   | \$400,000.00 | No |
| ML12090 | City of Palm Springs     | 10/9/2015 | 10/8/2021  | 9/8/2025   | \$21,163.00  | \$0.00      | EV Charging Infrastructure                | \$21,163.00  | No |
| ML12091 | City of Bellflower       | 10/5/2018 | 10/4/2019  | 6/30/2022  | \$100,000.00 | \$34,759.94 | EV Charging Infrastructure                | \$65,240.06  | No |

**Total: 4**

#### **Declined/Cancelled Contracts**

|         |                                     |           |            |  |              |        |   |              |    |
|---------|-------------------------------------|-----------|------------|--|--------------|--------|---|--------------|----|
| ML12016 | City of Cathedral City              | 1/4/2013  | 10/3/2019  |  | \$60,000.00  | \$0.00 | CNG Vehicle & Electric Vehicle Infrastructure | \$60,000.00  | No |
| ML12038 | City of Long Beach Public Works     |           |            |  | \$26,000.00  | \$0.00 | Electric Vehicle Charging Infrastructure      | \$26,000.00  | No |
| ML12040 | City of Duarte                      |           |            |  | \$30,000.00  | \$0.00 | One Heavy-Duty Nat. Gas Vehicle               | \$30,000.00  | No |
| ML12044 | County of San Bernardino Public Wo  |           |            |  | \$250,000.00 | \$0.00 | Install New CNG Station                       | \$250,000.00 | No |
| ML12048 | City of La Palma                    | 1/4/2013  | 11/3/2018  |  | \$20,000.00  | \$0.00 | Two Medium-Duty LPG Vehicles                  | \$20,000.00  | No |
| ML12052 | City of Whittier                    | 3/14/2013 | 7/13/2019  |  | \$165,000.00 | \$0.00 | Expansion of Existing CNG Station             | \$165,000.00 | No |
| ML12053 | City of Mission Viejo               |           |            |  | \$60,000.00  | \$0.00 | EV Charging Infrastructure                    | \$60,000.00  | No |
| MS12007 | WestAir Gases & Equipment           |           |            |  | \$100,000.00 | \$0.00 | Construct New Limited-Access CNG Station      | \$100,000.00 | No |
| MS12027 | C.V. Ice Company, Inc.              | 5/17/2013 | 11/16/2019 |  | \$75,000.00  | \$0.00 | Purchase 3 Medium-Heavy Duty Vehicles         | \$75,000.00  | No |
| MS12030 | Complete Landscape Care, Inc.       |           |            |  | \$150,000.00 | \$0.00 | Purchase 6 Medium-Heavy Duty Vehicles         | \$150,000.00 | No |
| MS12067 | Leatherwood Construction, Inc.      | 11/8/2013 | 3/7/2017   |  | \$122,719.00 | \$0.00 | Retrofit Six Vehicles w/DECS - Showcase III   | \$122,719.00 | No |
| MS12070 | Valley Music Travel/CID Entertainme |           |            |  | \$99,000.00  | \$0.00 | Implement Shuttle Service to Coachella Mus    | \$99,000.00  | No |

**Total: 12**

#### **Closed Contracts**

|         |                                       |            |            |            |              |              |  |              |     |
|---------|---------------------------------------|------------|------------|------------|--------------|--------------|--|--------------|-----|
| ML12013 | City of Pasadena                      | 10/19/2012 | 3/18/2015  | 9/18/2015  | \$200,000.00 | \$65,065.00  | Electric Vehicle Charging Infrastructure | \$134,935.00 | Yes |
| ML12015 | City of Fullerton                     | 4/25/2013  | 11/24/2020 | 11/24/2021 | \$40,000.00  | \$40,000.00  | HD CNG Vehicle, Expand CNG Station       | \$0.00       | Yes |
| ML12017 | City of Los Angeles, Bureau of Sanit  | 6/26/2013  | 5/25/2020  | 11/25/2021 | \$950,000.00 | \$950,000.00 | 32 H.D. Nat. Gas Vehicles                | \$0.00       | Yes |
| ML12019 | City of Palm Springs                  | 9/6/2013   | 7/5/2015   |            | \$38,000.00  | \$16,837.00  | EV Charging Infrastructure               | \$21,163.00  | Yes |
| ML12020 | City of Los Angeles Dept of General   | 9/27/2012  | 3/26/2019  | 3/26/2020  | \$450,000.00 | \$450,000.00 | 15 H.D. Nat. Gas Vehicles                | \$0.00       | Yes |
| ML12021 | City of Rancho Cucamonga              | 9/14/2012  | 1/13/2020  |            | \$40,000.00  | \$40,000.00  | Four Medium-Duty Nat. Gas Vehicles       | \$0.00       | Yes |
| ML12022 | City of La Puente                     | 12/6/2013  | 6/5/2020   |            | \$110,000.00 | \$110,000.00 | 2 Medium-Duty and Three Heavy-Duty CNG   | \$0.00       | Yes |
| ML12023 | County of Los Angeles Internal Servi  | 8/1/2013   | 2/28/2015  |            | \$250,000.00 | \$192,333.00 | EV Charging Infrastructure               | \$57,667.00  | Yes |
| ML12037 | Coachella Valley Association of Gov   | 3/14/2013  | 3/13/2014  |            | \$250,000.00 | \$250,000.00 | Street Sweeping Operations               | \$0.00       | Yes |
| ML12039 | City of Redlands                      | 2/8/2013   | 10/7/2019  |            | \$90,000.00  | \$90,000.00  | Three Heavy-Duty Nat. Gas Vehicles       | \$0.00       | Yes |
| ML12041 | City of Anaheim Public Utilities Depa | 4/4/2014   | 11/3/2015  | 11/3/2017  | \$68,977.00  | \$38,742.16  | EV Charging Infrastructure               | \$30,234.84  | Yes |
| ML12042 | City of Chino Hills                   | 1/18/2013  | 3/17/2017  |            | \$87,500.00  | \$87,500.00  | Expansion of Existing CNG Station        | \$0.00       | Yes |
| ML12043 | City of Hemet                         | 6/24/2013  | 9/23/2019  | 11/23/2021 | \$30,000.00  | \$30,000.00  | One Heavy-Duty Nat. Gas Vehicles         | \$0.00       | Yes |
| ML12046 | City of Irvine                        | 8/11/2013  | 3/10/2021  |            | \$30,000.00  | \$30,000.00  | One Heavy-Duty Nat. Gas Vehicle          | \$0.00       | Yes |

| Cont.#  | Contractor                             | Start Date | Original End Date | Amended End Date | Contract Value | Remitted     | Project Description                          | Award Balance | Billing Complete? |
|---------|--|------------|-------------------|------------------|----------------|--------------|--|---------------|-------------------|
| ML12047 | City of Orange                         | 2/1/2013   | 1/31/2019         |                  | \$30,000.00    | \$30,000.00  | One Heavy-Duty Nat. Gas Vehicle              | \$0.00        | Yes               |
| ML12049 | City of Rialto Public Works            | 7/14/2014  | 9/13/2015         |                  | \$30,432.00    | \$3,265.29   | EV Charging Infrastructure                   | \$27,166.71   | Yes               |
| ML12050 | City of Baldwin Park                   | 4/25/2013  | 4/24/2014         | 10/24/2014       | \$402,400.00   | \$385,363.00 | EV Charging Infrastructure                   | \$17,037.00   | Yes               |
| ML12054 | City of Palm Desert                    | 9/30/2013  | 2/28/2015         |                  | \$77,385.00    | \$77,385.00  | EV Charging Infrastructure                   | \$0.00        | Yes               |
| ML12055 | City of Manhattan Beach                | 3/1/2013   | 12/31/2018        |                  | \$10,000.00    | \$10,000.00  | One Medium-Duty Nat. Gas Vehicle             | \$0.00        | Yes               |
| ML12056 | City of Cathedral City                 | 3/26/2013  | 5/25/2014         |                  | \$25,000.00    | \$25,000.00  | Regional Street Sweeping Program             | \$0.00        | Yes               |
| ML12057 | City of Coachella                      | 8/28/2013  | 8/27/2019         | 1/27/2022        | \$57,456.00    | \$57,456.00  | Purchase One Nat. Gas H.D. Vehicle/Street    | \$0.00        | Yes               |
| ML12066 | City of Manhattan Beach                | 1/7/2014   | 4/6/2015          |                  | \$5,900.00     | \$5,900.00   | Electric Vehicle Charging Infrastructure     | \$0.00        | Yes               |
| MS12001 | Los Angeles County MTA                 | 7/1/2012   | 4/30/2013         |                  | \$300,000.00   | \$211,170.00 | Clean Fuel Transit Service to Dodger Stadium | \$88,830.00   | Yes               |
| MS12002 | Orange County Transportation Autho     | 9/7/2012   | 4/30/2013         |                  | \$342,340.00   | \$333,185.13 | Express Bus Service to Orange County Fair    | \$9,154.87    | Yes               |
| MS12003 | Orange County Transportation Autho     | 7/20/2012  | 2/28/2013         |                  | \$234,669.00   | \$167,665.12 | Implement Metrolink Service to Angel Stadium | \$67,003.88   | Yes               |
| MS12004 | USA Waste of California, Inc.          | 10/24/2013 | 11/23/2019        |                  | \$175,000.00   | \$175,000.00 | Construct New Limited-Access CNG Station     | \$0.00        | Yes               |
| MS12005 | USA Waste of California, Inc.          | 10/19/2012 | 8/18/2013         |                  | \$75,000.00    | \$75,000.00  | Vehicle Maintenance Facility Modifications   | \$0.00        | Yes               |
| MS12006 | Waste Management Collection & Re       | 10/19/2012 | 8/18/2013         |                  | \$75,000.00    | \$75,000.00  | Vehicle Maintenance Facility Modifications   | \$0.00        | Yes               |
| MS12008 | Bonita Unified School District         | 7/12/2013  | 12/11/2019        | 4/11/2021        | \$175,000.00   | \$175,000.00 | Construct New Limited-Access CNG Station     | \$0.00        | Yes               |
| MS12009 | Sysco Food Services of Los Angeles     | 1/7/2014   | 4/6/2020          |                  | \$150,000.00   | \$150,000.00 | Construct New Public-Access LNG Station      | \$0.00        | Yes               |
| MS12010 | Murrieta Valley Unified School Distric | 4/5/2013   | 9/4/2019          |                  | \$242,786.00   | \$242,786.00 | Construct New Limited-Access CNG Station     | \$0.00        | Yes               |
| MS12011 | Southern California Gas Company        | 6/14/2013  | 6/13/2019         | 5/28/2021        | \$150,000.00   | \$150,000.00 | Construct New Public-Access CNG Station -    | \$0.00        | Yes               |
| MS12012 | Rim of the World Unified School Dist   | 12/20/2012 | 5/19/2014         |                  | \$75,000.00    | \$75,000.00  | Vehicle Maintenance Facility Modifications   | \$0.00        | Yes               |
| MS12024 | Southern California Gas Company        | 6/13/2013  | 12/12/2019        | 11/12/2020       | \$150,000.00   | \$150,000.00 | Construct New Public-Access CNG Station -    | \$0.00        | Yes               |
| MS12025 | Silverado Stages, Inc.                 | 11/2/2012  | 7/1/2018          |                  | \$150,000.00   | \$150,000.00 | Purchase Six Medium-Heavy Duty Vehicles      | \$0.00        | Yes               |
| MS12026 | U-Haul Company of California           | 3/14/2013  | 3/13/2019         |                  | \$500,000.00   | \$353,048.26 | Purchase 23 Medium-Heavy Duty Vehicles       | \$146,951.74  | Yes               |
| MS12028 | Dy-Dee Service of Pasadena, Inc.       | 12/22/2012 | 1/21/2019         |                  | \$45,000.00    | \$40,000.00  | Purchase 2 Medium-Duty and 1 Medium-He       | \$5,000.00    | Yes               |
| MS12029 | Community Action Partnership of Or     | 11/2/2012  | 11/1/2018         |                  | \$25,000.00    | \$14,850.00  | Purchase 1 Medium-Heavy Duty Vehicle         | \$10,150.00   | Yes               |
| MS12031 | Final Assembly, Inc.                   | 11/2/2012  | 11/1/2018         |                  | \$50,000.00    | \$32,446.00  | Purchase 2 Medium-Heavy Duty Vehicles        | \$17,554.00   | Yes               |
| MS12032 | Fox Transportation                     | 12/14/2012 | 12/13/2018        |                  | \$500,000.00   | \$500,000.00 | Purchase 20 Medium-Heavy Duty Vehicles       | \$0.00        | Yes               |
| MS12033 | Mike Diamond/Phace Management          | 12/22/2012 | 12/21/2018        | 6/21/2021        | \$148,900.00   | \$148,900.00 | Purchase 20 Medium-Heavy Duty Vehicles       | \$0.00        | Yes               |
| MS12035 | Disneyland Resort                      | 1/4/2013   | 7/3/2019          |                  | \$25,000.00    | \$18,900.00  | Purchase 1 Medium-Heavy Duty Vehicle         | \$6,100.00    | Yes               |
| MS12036 | Jim & Doug Carter's Automotive/VSP     | 1/4/2013   | 11/3/2018         |                  | \$50,000.00    | \$50,000.00  | Purchase 2 Medium-Heavy Duty Vehicles        | \$0.00        | Yes               |
| MS12058 | Krisda Inc                             | 4/24/2013  | 1/23/2019         |                  | \$25,000.00    | \$25,000.00  | Repower One Heavy-Duty Off-Road Vehicle      | \$0.00        | Yes               |
| MS12059 | Orange County Transportation Autho     | 2/28/2013  | 12/27/2014        |                  | \$75,000.00    | \$75,000.00  | Maintenance Facilities Modifications         | \$0.00        | Yes               |
| MS12060 | City of Santa Monica                   | 4/4/2014   | 8/3/2017          | 8/3/2019         | \$500,000.00   | \$434,202.57 | Implement Westside Bikeshare Program         | \$65,797.43   | Yes               |
| MS12061 | Orange County Transportation Autho     | 3/14/2014  | 3/13/2017         |                  | \$224,000.00   | \$114,240.00 | Transit-Oriented Bicycle Sharing Program     | \$109,760.00  | Yes               |
| MS12062 | Fraser Communications                  | 12/7/2012  | 5/31/2014         |                  | \$998,669.00   | \$989,218.49 | Develop & Implement "Rideshare Thursday"     | \$9,450.51    | Yes               |
| MS12063 | Custom Alloy Light Metals, Inc.        | 8/16/2013  | 2/15/2020         |                  | \$100,000.00   | \$100,000.00 | Install New Limited Access CNG Station       | \$0.00        | Yes               |
| MS12064 | Anaheim Transportation Network         | 3/26/2013  | 12/31/2014        |                  | \$127,296.00   | \$56,443.92  | Implement Anaheim Circulator Service         | \$70,852.08   | Yes               |
| MS12065 | Orange County Transportation Autho     | 7/27/2013  | 11/30/2013        |                  | \$43,933.00    | \$14,832.93  | Ducks Express Service to Honda Center        | \$29,100.07   | Yes               |



| Cont.#  | Contractor                            | Start Date | Original End Date | Amended End Date | Contract Value | Remitted     | Project Description                          | Award Balance | Billing Complete? |
|---------|---------------------------------------|------------|-------------------|------------------|----------------|--------------|--|---------------|-------------------|
| MS12068 | Southern California Regional Rail Aut | 3/1/2013   | 9/30/2013         |                  | \$57,363.00    | \$47,587.10  | Implement Metrolink Service to Autoclub Sp   | \$9,775.90    | Yes               |
| MS12069 | City of Irvine                        | 8/11/2013  | 2/28/2014         |                  | \$45,000.00    | \$26,649.41  | Implement Special Transit Service to Solar   | \$18,350.59   | Yes               |
| MS12071 | Transit Systems Unlimited, Inc.       | 5/17/2013  | 12/16/2018        |                  | \$21,250.00    | \$21,250.00  | Expansion of Existing CNG Station            | \$0.00        | Yes               |
| MS12072 | 99 Cents Only Stores                  | 4/5/2013   | 9/4/2019          |                  | \$100,000.00   | \$100,000.00 | Construct New CNG Station                    | \$0.00        | Yes               |
| MS12073 | FirstCNG, LLC                         | 7/27/2013  | 12/26/2019        |                  | \$150,000.00   | \$150,000.00 | Construct New CNG Station                    | \$0.00        | Yes               |
| MS12074 | Arcadia Unified School District       | 7/5/2013   | 9/4/2019          |                  | \$175,000.00   | \$175,000.00 | Expansion of Existing CNG Infrastructure     | \$0.00        | Yes               |
| MS12076 | City of Ontario, Housing & Municipal  | 3/8/2013   | 4/7/2015          |                  | \$75,000.00    | \$75,000.00  | Maintenance Facilities Modification          | \$0.00        | Yes               |
| MS12078 | Penske Truck Leasing Co., L.P.        | 1/7/2014   | 1/6/2016          |                  | \$75,000.00    | \$73,107.00  | Maintenance Facility Modifications - Vernon  | \$1,893.00    | Yes               |
| MS12080 | City of Pasadena                      | 11/8/2013  | 8/7/2020          | 2/7/2022         | \$225,000.00   | \$225,000.00 | Expansion of Existing CNG Infrastructure     | \$0.00        | Yes               |
| MS12081 | Penske Truck Leasing Co., L.P.        | 1/7/2014   | 1/6/2016          |                  | \$75,000.00    | \$75,000.00  | Maintenance Facility Modifications - Santa A | \$0.00        | Yes               |
| MS12085 | Bear Valley Unified School District   | 4/25/2013  | 6/24/2014         |                  | \$75,000.00    | \$75,000.00  | Maintenance Facility Modifications           | \$0.00        | Yes               |
| MS12086 | SuperShuttle International, Inc.      | 3/26/2013  | 3/25/2019         |                  | \$225,000.00   | \$225,000.00 | Purchase 23 Medium-Heavy Duty Vehicles       | \$0.00        | Yes               |
| MS12087 | Los Angeles County MTA                | 8/29/2013  | 11/28/2015        |                  | \$125,000.00   | \$125,000.00 | Implement Rideshare Incentives Program       | \$0.00        | Yes               |
| MS12088 | Orange County Transportation Autho    | 12/6/2013  | 3/5/2016          |                  | \$125,000.00   | \$18,496.50  | Implement Rideshare Incentives Program       | \$106,503.50  | Yes               |
| MS12089 | Riverside County Transportation Co    | 10/18/2013 | 9/17/2015         |                  | \$249,136.00   | \$105,747.48 | Implement Rideshare Incentives Program       | \$143,388.52  | Yes               |
| MS12Hom | Mansfield Gas Equipment Systems       |            |                   |                  | \$296,000.00   | \$0.00       | Home Refueling Apparatus Incentive Progra    | \$296,000.00  | Yes               |

**Total: 67**

**Closed/Incomplete Contracts**

|         |                                |           |           |          |              |        |  |              |    |
|---------|--------------------------------|-----------|-----------|----------|--------------|--------|--|--------------|----|
| ML12051 | City of Bellflower             | 2/7/2014  | 2/6/2016  | 5/6/2018 | \$100,000.00 | \$0.00 | EV Charging Infrastructure                   | \$100,000.00 | No |
| MS12077 | City of Coachella              | 6/14/2013 | 6/13/2020 |          | \$225,000.00 | \$0.00 | Construct New CNG Station                    | \$225,000.00 | No |
| MS12079 | Penske Truck Leasing Co., L.P. | 1/7/2014  | 1/6/2016  |          | \$75,000.00  | \$0.00 | Maintenance Facility Modifications - Boyle H | \$75,000.00  | No |
| MS12084 | Airport Mobil Inc.             | 12/6/2013 | 5/5/2020  |          | \$150,000.00 | \$0.00 | Install New CNG Infrastructure               | \$150,000.00 | No |

**Total: 4**

**Open/Complete Contracts**

|         |                                      |            |            |           |              |              |  |        |     |
|---------|--------------------------------------|------------|------------|-----------|--------------|--------------|--|--------|-----|
| ML12018 | City of West Covina                  | 10/18/2013 | 10/17/2020 | 8/17/2023 | \$300,000.00 | \$300,000.00 | Expansion of Existing CNG Station        | \$0.00 | Yes |
| MS12034 | Ware Disposal Company, Inc.          | 11/2/2012  | 11/1/2018  | 5/1/2022  | \$133,070.00 | \$133,070.00 | Purchase 8 Medium-Heavy Duty Vehicles    | \$0.00 | Yes |
| MS12075 | CR&R Incorporated                    | 7/27/2013  | 1/26/2021  | 1/26/2022 | \$100,000.00 | \$100,000.00 | Expansion of Existing CNG Infrastructure | \$0.00 | Yes |
| MS12082 | City of Los Angeles, Bureau of Sanit | 11/20/2013 | 2/19/2021  | 2/19/2023 | \$175,000.00 | \$175,000.00 | Install New CNG Infrastructure           | \$0.00 | Yes |
| MS12083 | Brea Olinda Unified School District  | 7/30/2015  | 2/29/2024  |           | \$59,454.00  | \$59,454.00  | Install New CNG Infrastructure           | \$0.00 | Yes |

**Total: 5**



| Cont.# | Contractor | Start Date | Original End Date | Amended End Date | Contract Value | Remitted | Project Description | Award Balance | Billing Complete? |
|--------|------------|------------|-------------------|------------------|----------------|----------|---------------------|---------------|-------------------|
|--------|------------|------------|-------------------|------------------|----------------|----------|---------------------|---------------|-------------------|

### **FY 2012-2014 Contracts**

#### **Open Contracts**

|         |                                     |           |            |           |                |                |   |                |    |
|---------|-------------------------------------|-----------|------------|-----------|----------------|----------------|---|----------------|----|
| ML14012 | City of Santa Ana                   | 2/13/2015 | 10/12/2021 | 4/12/2022 | \$244,000.00   | \$0.00         | EV Charging and 7 H.D. LPG Vehicles         | \$244,000.00   | No |
| ML14021 | Riverside County Regional Park and  | 7/24/2014 | 12/23/2016 | 9/30/2024 | \$250,000.00   | \$0.00         | Bicycle Trail Improvements                  | \$250,000.00   | No |
| ML14027 | County of Los Angeles Dept of Publi | 10/2/2015 | 5/1/2023   | 12/1/2025 | \$492,000.00   | \$0.00         | Construct New CNG Station in Canyon Coun    | \$492,000.00   | No |
| ML14072 | City of Cathedral City              | 8/13/2014 | 1/12/2021  | 7/12/2022 | \$41,000.00    | \$35,089.03    | Install Bicycle Racks & Implement Bicycle E | \$5,910.97     | No |
| MS14057 | Los Angeles County MTA              | 11/7/2014 | 10/6/2019  | 10/6/2023 | \$1,250,000.00 | \$0.00         | Implement Various Signal Synchronization P  | \$1,250,000.00 | No |
| MS14059 | Riverside County Transportation Co  | 9/5/2014  | 3/4/2018   | 4/4/2022  | \$1,250,000.00 | \$899,594.08   | Implement Various Signal Synchronization P  | \$350,405.92   | No |
| MS14072 | San Bernardino County Transportatio | 3/27/2015 | 3/26/2018  | 3/26/2022 | \$1,250,000.00 | \$1,023,566.17 | Implement Various Signal Synchronization P  | \$226,433.83   | No |

**Total: 7**

#### **Declined/Cancelled Contracts**

|         |                                |           |            |           |              |        |   |              |    |
|---------|--------------------------------|-----------|------------|-----------|--------------|--------|---|--------------|----|
| ML14063 | City of Hawthorne              |           |            |           | \$32,000.00  | \$0.00 | Expansion of Existng CNG Infrastructure       | \$32,000.00  | No |
| ML14068 | City of South Pasadena         | 9/12/2014 | 10/11/2015 | 1/11/2020 | \$10,183.00  | \$0.00 | Electric Vehicle Charging Infrastructure      | \$10,183.00  | No |
| ML14069 | City of Beaumont               | 3/3/2017  | 3/2/2025   |           | \$200,000.00 | \$0.00 | Construct New CNG Infrastructure              | \$200,000.00 | No |
| MS14035 | Penske Truck Leasing Co., L.P. |           |            |           | \$75,000.00  | \$0.00 | Vehicle Maint. Fac. Modifications - Sun Valle | \$75,000.00  | No |
| MS14036 | Penske Truck Leasing Co., L.P. |           |            |           | \$75,000.00  | \$0.00 | Vehicle Maint. Fac. Modifications - La Mirad  | \$75,000.00  | No |
| MS14038 | Penske Truck Leasing Co., L.P. |           |            |           | \$75,000.00  | \$0.00 | Vehicle Maint. Fac. Modifications - Fontana   | \$75,000.00  | No |
| MS14043 | City of Anaheim                |           |            |           | \$175,000.00 | \$0.00 | Expansion of Existing CNG Station             | \$175,000.00 | No |
| MS14078 | American Honda Motor Co., Inc. | 9/4/2015  | 8/3/2022   |           | \$150,000.00 | \$0.00 | New Public Access CNG Station                 | \$150,000.00 | No |
| MS14085 | Prologis, L.P.                 |           |            |           | \$100,000.00 | \$0.00 | New Limited Access CNG Station                | \$100,000.00 | No |
| MS14086 | San Gabriel Valley Towing I    |           |            |           | \$150,000.00 | \$0.00 | New Public Access CNG Station                 | \$150,000.00 | No |
| MS14091 | Serv-Wel Disposal              |           |            |           | \$100,000.00 | \$0.00 | New Limited-Access CNG Infrastructure         | \$100,000.00 | No |

**Total: 11**

#### **Closed Contracts**

|         |                                      |           |            |           |              |              |  |              |     |
|---------|--------------------------------------|-----------|------------|-----------|--------------|--------------|--|--------------|-----|
| ML14010 | City of Cathedral City               | 8/13/2014 | 10/12/2015 |           | \$25,000.00  | \$25,000.00  | Street Sweeping Operations                   | \$0.00       | Yes |
| ML14011 | City of Palm Springs                 | 6/13/2014 | 1/12/2016  |           | \$79,000.00  | \$78,627.00  | Bicycle Racks, Bicycle Outreach & Educatio   | \$373.00     | Yes |
| ML14014 | City of Torrance                     | 9/5/2014  | 12/4/2019  |           | \$56,000.00  | \$56,000.00  | EV Charging Infrastructure                   | \$0.00       | Yes |
| ML14015 | Coachella Valley Association of Gov  | 6/6/2014  | 9/5/2015   |           | \$250,000.00 | \$250,000.00 | Street Sweeping Operations                   | \$0.00       | Yes |
| ML14016 | City of Anaheim                      | 4/3/2015  | 9/2/2021   |           | \$380,000.00 | \$380,000.00 | Purchase 2 H.D. Vehicles, Expansion of Exi   | \$0.00       | Yes |
| ML14023 | County of Los Angeles Department o   | 10/2/2015 | 9/1/2017   | 3/1/2021  | \$230,000.00 | \$230,000.00 | Maintenance Fac. Modifications-Westcheste    | \$0.00       | Yes |
| ML14024 | County of Los Angeles Department o   | 10/2/2015 | 9/1/2017   | 9/1/2021  | \$230,000.00 | \$230,000.00 | Maintenance Fac. Modifications-Baldwin Par   | \$0.00       | Yes |
| ML14028 | City of Fullerton                    | 9/5/2014  | 1/4/2022   |           | \$126,950.00 | \$126,950.00 | Expansion of Existing CNG Infrastructure     | \$0.00       | Yes |
| ML14029 | City of Irvine                       | 7/11/2014 | 6/10/2017  |           | \$90,500.00  | \$71,056.78  | Bicycle Trail Improvements                   | \$19,443.22  | Yes |
| ML14030 | County of Los Angeles Internal Servi | 1/9/2015  | 3/8/2018   | 7/30/2021 | \$425,000.00 | \$216,898.02 | Bicycle Racks, Outreach & Education          | \$208,101.98 | Yes |
| ML14031 | Riverside County Waste Manageme      | 6/13/2014 | 12/12/2020 |           | \$90,000.00  | \$90,000.00  | Purchase 3 H.D. CNG Vehicles                 | \$0.00       | Yes |
| ML14032 | City of Rancho Cucamonga             | 1/9/2015  | 1/8/2022   |           | \$113,990.00 | \$104,350.63 | Expansion of Existing CNG Infras., Bicycle L | \$9,639.37   | Yes |

| Cont.#  | Contractor                            | Start Date | Original End Date | Amended End Date | Contract Value | Remitted       | Project Description                          | Award Balance | Billing Complete? |
|---------|---------------------------------------|------------|-------------------|------------------|----------------|----------------|--|---------------|-------------------|
| ML14033 | City of Irvine                        | 7/11/2014  | 2/10/2021         | 2/10/2022        | \$60,000.00    | \$60,000.00    | Purchase 2 H.D. CNG Vehicles                 | \$0.00        | Yes               |
| ML14034 | City of Lake Elsinore                 | 9/5/2014   | 5/4/2021          |                  | \$56,700.00    | \$56,700.00    | EV Charging Stations                         | \$0.00        | Yes               |
| ML14049 | City of Moreno Valley                 | 7/11/2014  | 3/10/2021         |                  | \$105,000.00   | \$101,976.09   | One HD Nat Gas Vehicle, EV Charging, Bicy    | \$3,023.91    | Yes               |
| ML14051 | City of Brea                          | 9/5/2014   | 1/4/2017          | 7/4/2018         | \$450,000.00   | \$450,000.00   | Installation of Bicycle Trail                | \$0.00        | Yes               |
| ML14054 | City of Torrance                      | 11/14/2014 | 4/13/2017         | 7/13/2017        | \$350,000.00   | \$319,908.80   | Upgrade Maintenance Facility                 | \$30,091.20   | Yes               |
| ML14055 | City of Highland                      | 10/10/2014 | 3/9/2018          | 3/9/2019         | \$500,000.00   | \$489,385.24   | Bicycle Lanes and Outreach                   | \$10,614.76   | Yes               |
| ML14056 | City of Redlands                      | 9/5/2014   | 5/4/2016          | 5/4/2018         | \$125,000.00   | \$125,000.00   | Bicycle Lanes                                | \$0.00        | Yes               |
| ML14064 | City of Claremont                     | 7/11/2014  | 7/10/2020         | 1/10/2021        | \$60,000.00    | \$60,000.00    | Purchase Two Heavy-Duty Nat. Gas Vehicle     | \$0.00        | Yes               |
| ML14065 | City of Orange                        | 9/5/2014   | 8/4/2015          |                  | \$10,000.00    | \$10,000.00    | Electric Vehicle Charging Infrastructure     | \$0.00        | Yes               |
| ML14070 | City of Rancho Cucamonga              | 9/3/2016   | 12/2/2018         |                  | \$365,245.00   | \$326,922.25   | Bicycle Trail Improvements                   | \$38,322.75   | Yes               |
| ML14071 | City of Manhattan Beach               | 1/9/2015   | 11/8/2018         |                  | \$22,485.00    | \$22,485.00    | Electric Vehicle Charging Infrastructure     | \$0.00        | Yes               |
| ML14094 | City of Yucaipa                       | 6/9/2017   | 6/8/2018          |                  | \$84,795.00    | \$84,795.00    | Installation of Bicycle Lanes                | \$0.00        | Yes               |
| ML14095 | City of South Pasadena                | 1/10/2019  | 7/9/2019          |                  | \$142,096.00   | \$134,182.09   | Bicycle Trail Improvements                   | \$7,913.91    | Yes               |
| ML14096 | County of Los Angeles Dept of Pub     | 5/3/2019   | 12/2/2019         | 3/2/2020         | \$74,186.00    | \$74,186.00    | San Gabriel BikeTrail Underpass Improveme    | \$0.00        | Yes               |
| ML14097 | County of Los Angeles Internal Servi  | 9/6/2019   | 9/5/2020          | 9/5/2021         | \$104,400.00   | \$104,400.00   | Electric Vehicle Charging Infrastructure     | \$0.00        | Yes               |
| MS14001 | Los Angeles County MTA                | 3/6/2015   | 4/30/2015         |                  | \$1,216,637.00 | \$1,199,512.68 | Clean Fuel Transit Service to Dodger Stadiu  | \$17,124.32   | Yes               |
| MS14002 | Orange County Transportation Autho    | 9/6/2013   | 4/30/2014         |                  | \$576,833.00   | \$576,833.00   | Clean Fuel Transit Service to Orange Count   | \$0.00        | Yes               |
| MS14003 | Orange County Transportation Autho    | 8/1/2013   | 4/30/2014         | 10/30/2014       | \$194,235.00   | \$184,523.00   | Implement Metrolink Service to Angel Stadiu  | \$9,712.00    | Yes               |
| MS14004 | Orange County Transportation Autho    | 9/24/2013  | 4/30/2014         |                  | \$36,800.00    | \$35,485.23    | Implement Express Bus Service to Solar De    | \$1,314.77    | Yes               |
| MS14005 | Transit Systems Unlimited, Inc.       | 4/11/2014  | 2/28/2016         |                  | \$515,200.00   | \$511,520.00   | Provide Expanded Shuttle Service to Hollyw   | \$3,680.00    | Yes               |
| MS14007 | Orange County Transportation Autho    | 6/6/2014   | 4/30/2015         |                  | \$208,520.00   | \$189,622.94   | Implement Special Metrolink Service to Ang   | \$18,897.06   | Yes               |
| MS14008 | Orange County Transportation Autho    | 8/13/2014  | 5/31/2015         |                  | \$601,187.00   | \$601,187.00   | Implement Clean Fuel Bus Service to Orang    | \$0.00        | Yes               |
| MS14009 | A-Z Bus Sales, Inc.                   | 1/17/2014  | 12/31/2014        | 3/31/2015        | \$388,000.00   | \$388,000.00   | Alternative Fuel School Bus Incentive Progra | \$0.00        | Yes               |
| MS14037 | Penske Truck Leasing Co., L.P.        | 4/7/2017   | 6/6/2020          |                  | \$75,000.00    | \$75,000.00    | Vehicle Maint. Fac. Modifications - Carson   | \$0.00        | Yes               |
| MS14039 | Waste Management Collection and       | 7/10/2015  | 4/9/2016          |                  | \$75,000.00    | \$75,000.00    | Vehicle Maint. Fac. Modifications - Irvine   | \$0.00        | Yes               |
| MS14040 | Waste Management Collection and       | 7/10/2015  | 4/9/2016          |                  | \$75,000.00    | \$75,000.00    | Vehicle Maint. Fac. Modifications - Santa An | \$0.00        | Yes               |
| MS14041 | USA Waste of California, Inc.         | 9/4/2015   | 10/3/2021         |                  | \$175,000.00   | \$175,000.00   | Limited-Access CNG Station, Vehicle Maint.   | \$0.00        | Yes               |
| MS14042 | Grand Central Recycling & Transfer    | 6/6/2014   | 9/5/2021          |                  | \$150,000.00   | \$150,000.00   | Expansion of Existing CNG Station            | \$0.00        | Yes               |
| MS14044 | TIMCO CNG Fund I, LLC                 | 5/2/2014   | 11/1/2020         |                  | \$150,000.00   | \$150,000.00   | New Public-Access CNG Station in Santa A     | \$0.00        | Yes               |
| MS14045 | TIMCO CNG Fund I, LLC                 | 6/6/2014   | 12/5/2020         |                  | \$150,000.00   | \$150,000.00   | New Public-Access CNG Station in Inglewoo    | \$0.00        | Yes               |
| MS14047 | Southern California Regional Rail Aut | 3/7/2014   | 9/30/2014         |                  | \$49,203.00    | \$32,067.04    | Special Metrolink Service to Autoclub Speed  | \$17,135.96   | Yes               |
| MS14048 | BusWest                               | 3/14/2014  | 12/31/2014        | 5/31/2015        | \$940,850.00   | \$847,850.00   | Alternative Fuel School Bus Incentive Progra | \$93,000.00   | Yes               |
| MS14052 | Arcadia Unified School District       | 6/13/2014  | 10/12/2020        |                  | \$78,000.00    | \$78,000.00    | Expansion of an Existing CNG Fueling Statio  | \$0.00        | Yes               |
| MS14053 | Upland Unified School District        | 1/9/2015   | 7/8/2021          |                  | \$175,000.00   | \$175,000.00   | Expansion of Existing CNG Infrastructure     | \$0.00        | Yes               |
| MS14058 | Orange County Transportation Autho    | 11/7/2014  | 4/6/2016          | 4/6/2017         | \$1,250,000.00 | \$1,250,000.00 | Implement Various Signal Synchronization P   | \$0.00        | Yes               |
| MS14073 | Anaheim Transportation Network        | 1/9/2015   | 4/30/2017         |                  | \$221,312.00   | \$221,312.00   | Anaheim Resort Circulator Service            | \$0.00        | Yes               |
| MS14074 | Midway City Sanitary District         | 1/9/2015   | 3/8/2021          |                  | \$250,000.00   | \$250,000.00   | Limited-Access CNG Station & Facility Modif  | \$0.00        | Yes               |

| Cont.#  | Contractor                             | Start Date | Original End Date | Amended End Date | Contract Value | Remitted     | Project Description                         | Award Balance | Billing Complete? |
|---------|--|------------|-------------------|------------------|----------------|--------------|---|---------------|-------------------|
| MS14077 | County Sanitation Districts of L.A. Co | 3/6/2015   | 5/5/2021          |                  | \$175,000.00   | \$175,000.00 | New Limited Access CNG Station              | \$0.00        | Yes               |
| MS14081 | CR&R Incorporated                      | 6/1/2015   | 5/30/2021         |                  | \$175,000.00   | \$100,000.00 | Expansion of Existing CNG Infrastructure/Ma | \$75,000.00   | Yes               |
| MS14084 | US Air Conditioning Distributors       | 5/7/2015   | 9/6/2021          |                  | \$100,000.00   | \$100,000.00 | Expansion of Existing CNG Infrastructure    | \$0.00        | Yes               |
| MS14087 | Orange County Transportation Autho     | 8/14/2015  | 4/30/2016         |                  | \$239,645.00   | \$195,377.88 | Implement Special Metrolink Service to Ang  | \$44,267.12   | Yes               |
| MS14088 | Southern California Regional Rail Aut  | 5/7/2015   | 9/30/2015         |                  | \$79,660.00    | \$66,351.44  | Special Metrolink Service to Autoclub Speed | \$13,308.56   | Yes               |
| MS14089 | Top Shelf Consulting, LLC              | 1/18/2017  | 8/4/2016          | 3/31/2017        | \$200,000.00   | \$200,000.00 | Enhanced Fleet Modernization Program        | \$0.00        | Yes               |
| MS14090 | City of Monterey Park                  | 5/7/2015   | 5/6/2021          |                  | \$225,000.00   | \$225,000.00 | Expansion of Existing CNG Infrastructure    | \$0.00        | Yes               |

**Total: 56**

**Closed/Incomplete Contracts**

|         |                                      |           |           |           |              |        |   |              |    |
|---------|--------------------------------------|-----------|-----------|-----------|--------------|--------|---|--------------|----|
| ML14020 | County of Los Angeles Dept of Pub    | 8/13/2014 | 1/12/2018 |           | \$150,000.00 | \$0.00 | San Gabriel BikeTrail Underpass Improveme | \$150,000.00 | No |
| ML14050 | City of Yucaipa                      | 7/11/2014 | 9/10/2015 | 7/1/2016  | \$84,795.00  | \$0.00 | Installation of Bicycle Lanes             | \$84,795.00  | No |
| ML14060 | County of Los Angeles Internal Servi | 10/6/2017 | 1/5/2019  |           | \$104,400.00 | \$0.00 | Electric Vehicle Charging Infrastructure  | \$104,400.00 | No |
| ML14066 | City of South Pasadena               | 9/12/2014 | 7/11/2016 | 2/11/2018 | \$142,096.00 | \$0.00 | Bicycle Trail Improvements                | \$142,096.00 | No |
| ML14093 | County of Los Angeles Dept of Pub    | 8/14/2015 | 1/13/2019 |           | \$150,000.00 | \$0.00 | San Gabriel BikeTrail Underpass Improveme | \$150,000.00 | No |
| MS14092 | West Covina Unified School District  | 9/3/2016  | 12/2/2022 |           | \$124,000.00 | \$0.00 | Expansion of Existing CNG Infrastructure  | \$124,000.00 | No |

**Total: 6**

**Open/Complete Contracts**

|         |                                      |           |            |            |              |              |   |            |     |
|---------|--------------------------------------|-----------|------------|------------|--------------|--------------|---|------------|-----|
| ML14013 | City of Los Angeles, Bureau of Sanit | 10/7/2016 | 2/6/2025   |            | \$400,000.00 | \$400,000.00 | Purchase 14 H.D. Nat. Gas Vehicles          | \$0.00     | Yes |
| ML14018 | City of Los Angeles Dept of General  | 3/6/2015  | 9/5/2021   | 2/5/2026   | \$810,000.00 | \$810,000.00 | Purchase 27 H.D. Nat. Gas Vehicles          | \$0.00     | Yes |
| ML14019 | City of Corona Public Works          | 12/5/2014 | 6/4/2020   | 3/6/2023   | \$111,518.00 | \$111,517.18 | EV Charging, Bicycle Racks, Bicycle Locker  | \$0.82     | Yes |
| ML14022 | County of Los Angeles Department o   | 10/2/2015 | 5/1/2022   |            | \$270,000.00 | \$270,000.00 | Purchase 9 H.D. Nat. Gas Vehicles           | \$0.00     | Yes |
| ML14025 | County of Los Angeles Dept of Publi  | 10/2/2015 | 7/1/2018   | 7/1/2024   | \$300,000.00 | \$300,000.00 | Construct New CNG Station in Malibu         | \$0.00     | Yes |
| ML14026 | County of Los Angeles Dept of Publi  | 10/2/2015 | 5/1/2023   | 5/1/2024   | \$300,000.00 | \$300,000.00 | Construct New CNG Station in Castaic        | \$0.00     | Yes |
| ML14061 | City of La Habra                     | 3/11/2016 | 3/10/2022  |            | \$41,600.00  | \$41,270.49  | Purchase Two Heavy-Duty Nat. Gas Vehicle    | \$329.51   | Yes |
| ML14062 | City of San Fernando                 | 3/27/2015 | 5/26/2021  | 10/31/2023 | \$325,679.00 | \$325,679.00 | Expand Existing CNG Fueling Station         | \$0.00     | Yes |
| ML14067 | City of Duarte                       | 12/4/2015 | 1/3/2023   | 6/3/2024   | \$60,000.00  | \$60,000.00  | Purchase Two Electric Buses                 | \$0.00     | Yes |
| MS14046 | Ontario CNG Station Inc.             | 5/15/2014 | 5/14/2020  | 11/14/2021 | \$150,000.00 | \$150,000.00 | Expansion of Existing CNG Infrastructure    | \$0.00     | Yes |
| MS14075 | Fullerton Joint Union High School Di | 7/22/2016 | 11/21/2023 |            | \$300,000.00 | \$293,442.00 | Expansion of Existing CNG Infrastructure/Ma | \$6,558.00 | Yes |
| MS14076 | Rialto Unified School District       | 6/17/2015 | 2/16/2022  | 6/25/2023  | \$225,000.00 | \$225,000.00 | New Public Access CNG Station               | \$0.00     | Yes |
| MS14079 | Waste Resources, Inc.                | 9/14/2016 | 8/13/2022  | 10/13/2024 | \$100,000.00 | \$100,000.00 | New Limited Access CNG Station              | \$0.00     | Yes |
| MS14080 | CR&R Incorporated                    | 6/1/2015  | 8/31/2021  | 8/31/2022  | \$200,000.00 | \$200,000.00 | Expansion of Existing CNG Infrastructure/Ma | \$0.00     | Yes |
| MS14082 | Grand Central Recycling & Transfer   | 12/4/2015 | 3/3/2023   | 3/3/2024   | \$150,000.00 | \$150,000.00 | Construct New Public Access CNG Station     | \$0.00     | Yes |
| MS14083 | Hacienda La Puente Unified School    | 7/10/2015 | 3/9/2022   | 6/9/2023   | \$175,000.00 | \$175,000.00 | New Limited Access CNG Station              | \$0.00     | Yes |

**Total: 16**

| Cont.# | Contractor | Start Date | Original End Date | Amended End Date | Contract Value | Remitted | Project Description | Award Balance | Billing Complete? |
|--------|------------|------------|-------------------|------------------|----------------|----------|---------------------|---------------|-------------------|
|--------|------------|------------|-------------------|------------------|----------------|----------|---------------------|---------------|-------------------|

## FY 2014-2016 Contracts

### Open Contracts

|         |                                     |            |           |            |                |                |  |                |     |
|---------|-------------------------------------|------------|-----------|------------|----------------|----------------|--|----------------|-----|
| ML16006 | City of Cathedral City              | 4/27/2016  | 4/26/2022 |            | \$25,000.00    | \$0.00         | Bicycle Outreach                               | \$25,000.00    | No  |
| ML16010 | City of Fullerton                   | 10/7/2016  | 4/6/2023  | 4/6/2024   | \$78,222.00    | \$27,896.71    | Install EV Charging Stations                   | \$50,325.29    | No  |
| ML16017 | City of Long Beach                  | 2/5/2016   | 8/4/2023  | 1/4/2026   | \$1,445,400.00 | \$1,375,400.00 | Purchase 50 Medium-Duty, 17 H.D. Nat. Ga       | \$70,000.00    | No  |
| ML16018 | City of Hermosa Beach               | 10/7/2016  | 1/6/2023  |            | \$29,520.00    | \$23,768.44    | Purchase 2 M.D. Nat. Gas Vehicles, Bicycle     | \$5,751.56     | No  |
| ML16022 | Los Angeles Department of Water an  | 5/5/2017   | 3/4/2024  | 9/4/2027   | \$360,000.00   | \$0.00         | Purchase 12 H.D. Nat. Gas Vehicles             | \$360,000.00   | No  |
| ML16025 | City of South Pasadena              | 6/22/2016  | 4/21/2023 | 10/21/2024 | \$160,000.00   | \$0.00         | Purchase H.D. Nat. Gas Vehicle, Expand Exi     | \$160,000.00   | No  |
| ML16038 | City of Palm Springs                | 4/1/2016   | 7/31/2022 | 9/30/2022  | \$170,000.00   | \$60,000.00    | Install Bicycle Lanes & Purchase 2 Heavy-D     | \$110,000.00   | No  |
| ML16039 | City of Torrance Transit Department | 1/6/2017   | 9/5/2022  | 9/5/2023   | \$32,000.00    | \$0.00         | Install EV Charging Infrastructure             | \$32,000.00    | No  |
| ML16047 | City of Fontana                     | 1/6/2017   | 8/5/2019  | 8/5/2022   | \$500,000.00   | \$0.00         | Enhance an Existing Class 1 Bikeway            | \$500,000.00   | No  |
| ML16048 | City of Placentia                   | 3/26/2016  | 5/25/2021 | 12/25/2026 | \$80,000.00    | \$18,655.00    | Install EV Charging Infrastructure             | \$61,345.00    | No  |
| ML16057 | City of Yucaipa                     | 4/27/2016  | 1/26/2019 | 1/26/2023  | \$380,000.00   | \$0.00         | Implement a "Complete Streets" Pedestrian      | \$380,000.00   | No  |
| ML16071 | City of Highland                    | 5/5/2017   | 1/4/2020  | 1/4/2023   | \$264,500.00   | \$0.00         | Implement a "Complete Streets" Pedestrian      | \$264,500.00   | No  |
| ML16075 | City of San Fernando                | 10/27/2016 | 2/26/2019 | 2/26/2022  | \$354,000.00   | \$0.00         | Install a Class 1 Bikeway                      | \$354,000.00   | No  |
| ML16077 | City of Rialto                      | 5/3/2018   | 10/2/2021 | 2/2/2026   | \$463,216.00   | \$158,105.51   | Pedestrian Access Improvements, Bicycle L      | \$305,110.49   | No  |
| ML16083 | City of El Monte                    | 4/1/2016   | 4/30/2021 | 4/30/2023  | \$57,210.00    | \$25,375.60    | Install EV Charging Infrastructure             | \$31,834.40    | No  |
| MS16086 | San Bernardino County Transportatio | 9/3/2016   | 10/2/2021 |            | \$800,625.00   | \$769,021.95   | Freeway Service Patrols                        | \$31,603.05    | Yes |
| MS16094 | Riverside County Transportation Co  | 1/25/2017  | 1/24/2022 | 4/24/2023  | \$1,909,241.00 | \$0.00         | MetroLink First Mile/Last Mile Mobility Strate | \$1,909,241.00 | No  |
| MS16110 | City of Riverside                   | 10/6/2017  | 2/5/2025  | 2/5/2026   | \$300,000.00   | \$71,250.00    | Expansion of Existing CNG Station and Main     | \$228,750.00   | No  |
| MS16115 | City of Santa Monica                | 4/14/2017  | 7/13/2025 |            | \$870,000.00   | \$427,500.00   | Repower 58 Transit Buses                       | \$442,500.00   | No  |
| MS16117 | Omnitrans                           | 4/21/2017  | 6/20/2023 |            | \$175,000.00   | \$175,000.00   | Expansion of Existing CNG Infrastructure       | \$0.00         | No  |
| MS16118 | Omnitrans                           | 4/21/2017  | 6/20/2023 |            | \$175,000.00   | \$175,000.00   | Expansion of Existing CNG Infrastructure       | \$0.00         | No  |
| MS16119 | Omnitrans                           | 4/21/2017  | 8/20/2022 |            | \$150,000.00   | \$0.00         | New Public Access CNG Station                  | \$150,000.00   | No  |
| MS16120 | Omnitrans                           | 4/7/2017   | 5/6/2025  |            | \$945,000.00   | \$826,500.00   | Repower 63 Existing Buses                      | \$118,500.00   | No  |
| MS16121 | Long Beach Transit                  | 11/3/2017  | 4/2/2024  | 11/30/2026 | \$600,000.00   | \$242,250.00   | Repower 39 and Purchase 1 New Transit Bu       | \$357,750.00   | No  |
| MS16123 | Orange County Transportation Autho  | 12/7/2018  | 11/6/2023 |            | \$91,760.00    | \$0.00         | Install La Habra Union Pacific Bikeway         | \$91,760.00    | No  |
| MS16127 | Los Angeles County MTA              | 6/29/2021  |           | 6/28/2022  | \$2,500,000.00 | \$2,500,000.00 | Expansion of the Willowbrook/Rosa Parks Tr     | \$0.00         | No  |

**Total: 26**

### Declined/Cancelled Contracts

|         |                                    |           |           |  |                |        |   |                |    |
|---------|------------------------------------|-----------|-----------|--|----------------|--------|---|----------------|----|
| ML16014 | City of Dana Point                 |           |           |  | \$153,818.00   | \$0.00 | Extend an Existing Class 1 Bikeway          | \$153,818.00   | No |
| ML16065 | City of Temple City                |           |           |  | \$500,000.00   | \$0.00 | Implement a "Complete Streets" Pedestrian   | \$500,000.00   | No |
| ML16067 | City of South El Monte             |           |           |  | \$73,329.00    | \$0.00 | Implement an "Open Streets" Event           | \$73,329.00    | No |
| ML16074 | City of La Verne                   | 7/22/2016 | 1/21/2023 |  | \$365,000.00   | \$0.00 | Install CNG Fueling Station                 | \$365,000.00   | No |
| MS16043 | LBA Realty Company LLC             |           |           |  | \$100,000.00   | \$0.00 | Install Limited-Access CNG Station          | \$100,000.00   | No |
| MS16080 | Riverside County Transportation Co |           |           |  | \$1,200,000.00 | \$0.00 | Passenger Rail Service for Coachella and St | \$1,200,000.00 | No |

| Cont.#  | Contractor                            | Start Date | Original End Date | Amended End Date | Contract Value | Remitted | Project Description                         | Award Balance | Billing Complete? |
|---------|---------------------------------------|------------|-------------------|------------------|----------------|----------|---|---------------|-------------------|
| MS16098 | Long Beach Transit                    |            |                   |                  | \$198,957.00   | \$0.00   | Provide Special Bus Service to Stub Hub Ce  | \$198,957.00  | No                |
| MS16104 | City of Perris                        |            |                   |                  | \$175,000.00   | \$0.00   | Expansion of Existing CNG Infrastructure    | \$175,000.00  | No                |
| MS16106 | City of Lawndale                      | 3/1/2019   | 11/30/2025        |                  | \$175,000.00   | \$0.00   | Expansion of Existing CNG Infrastructure    | \$175,000.00  | No                |
| MS16107 | Athens Services                       |            |                   |                  | \$100,000.00   | \$0.00   | Construct a Limited-Access CNG Station      | \$100,000.00  | No                |
| MS16108 | VNG 5703 Gage Avenue, LLC             |            |                   |                  | \$150,000.00   | \$0.00   | Construct Public-Access CNG Station in Bell | \$150,000.00  | No                |
| MS16109 | Sanitation Districts of Los Angeles C |            |                   |                  | \$275,000.00   | \$0.00   | Expansion of an Existing L/CNG Station      | \$275,000.00  | No                |
| MS16111 | VNG 925 Lakeview Avenue, LLC          |            |                   |                  | \$150,000.00   | \$0.00   | Construct Public Access CNG Station in Pla  | \$150,000.00  | No                |

**Total: 13**

**Closed Contracts**

|         |                                      |            |            |            |              |              |  |             |     |
|---------|--------------------------------------|------------|------------|------------|--------------|--------------|--|-------------|-----|
| ML16009 | City of Fountain Valley              | 10/6/2015  | 2/5/2018   | 5/5/2019   | \$46,100.00  | \$46,100.00  | Install EV Charging Infrastructure           | \$0.00      | Yes |
| ML16015 | City of Yorba Linda                  | 3/4/2016   | 11/3/2017  |            | \$85,000.00  | \$85,000.00  | Install Bicycle Lanes                        | \$0.00      | Yes |
| ML16020 | City of Pomona                       | 4/1/2016   | 2/1/2018   | 8/1/2018   | \$440,000.00 | \$440,000.00 | Install Road Surface Bicycle Detection Syste | \$0.00      | Yes |
| ML16023 | City of Banning                      | 12/11/2015 | 12/10/2021 |            | \$30,000.00  | \$30,000.00  | Purchase 1 H.D. Nat. Gas Vehicle             | \$0.00      | Yes |
| ML16026 | City of Downey                       | 5/6/2016   | 9/5/2017   |            | \$40,000.00  | \$40,000.00  | Install EV Charging Infrastructure           | \$0.00      | Yes |
| ML16028 | City of Azusa                        | 9/9/2016   | 4/8/2018   |            | \$25,000.00  | \$25,000.00  | Enhance Existing Class 1 Bikeway             | \$0.00      | Yes |
| ML16031 | City of Cathedral City               | 12/19/2015 | 2/18/2017  |            | \$25,000.00  | \$25,000.00  | Street Sweeping in Coachella Valley          | \$0.00      | Yes |
| ML16032 | City of Azusa                        | 9/9/2016   | 4/8/2019   | 4/8/2021   | \$474,925.00 | \$474,925.00 | Implement a "Complete Streets" Pedestrian    | \$0.00      | No  |
| ML16033 | Coachella Valley Association of Gov  | 4/27/2016  | 4/26/2018  |            | \$250,000.00 | \$250,000.00 | Street Sweeping Operations in Coachella Va   | \$0.00      | Yes |
| ML16034 | City of Riverside                    | 3/11/2016  | 10/10/2018 | 7/10/2020  | \$500,000.00 | \$500,000.00 | Implement a "Complete Streets" Pedestrian    | \$0.00      | Yes |
| ML16036 | City of Brea                         | 3/4/2016   | 12/3/2018  |            | \$500,000.00 | \$500,000.00 | Install a Class 1 Bikeway                    | \$0.00      | Yes |
| ML16042 | City of San Dimas                    | 4/1/2016   | 12/31/2019 | 12/31/2021 | \$55,000.00  | \$55,000.00  | Install EV Charging Infrastructure           | \$0.00      | No  |
| ML16045 | City of Anaheim                      | 6/22/2016  | 8/21/2019  |            | \$275,000.00 | \$255,595.08 | Maintenance Facility Modifications           | \$19,404.92 | Yes |
| ML16049 | City of Buena Park                   | 4/1/2016   | 11/30/2018 |            | \$429,262.00 | \$429,262.00 | Installation of a Class 1 Bikeway            | \$0.00      | Yes |
| ML16051 | City of South Pasadena               | 2/12/2016  | 1/11/2017  | 12/11/2017 | \$320,000.00 | \$258,691.25 | Implement "Open Streets" Event with Variou   | \$61,308.75 | Yes |
| ML16052 | City of Rancho Cucamonga             | 9/3/2016   | 11/2/2019  | 3/31/2021  | \$315,576.00 | \$305,576.00 | Install Two Class 1 Bikeways                 | \$10,000.00 | No  |
| ML16053 | City of Claremont                    | 3/11/2016  | 7/10/2018  | 12/10/2020 | \$498,750.00 | \$498,750.00 | Implement a "Complete Streets" Pedestrian    | \$0.00      | Yes |
| ML16054 | City of Yucaipa                      | 3/26/2016  | 7/26/2018  | 10/25/2019 | \$120,000.00 | \$120,000.00 | Implement a "Complete Streets" Pedestrian    | \$0.00      | Yes |
| ML16056 | City of Ontario                      | 3/23/2016  | 9/22/2020  | 9/22/2021  | \$106,565.00 | \$106,565.00 | Expansion of an Existing CNG Station         | \$0.00      | Yes |
| ML16060 | City of Cudahy                       | 2/5/2016   | 10/4/2017  |            | \$73,910.00  | \$62,480.00  | Implement an "Open Streets" Event            | \$11,430.00 | Yes |
| ML16061 | City of Murrieta                     | 4/27/2016  | 1/26/2020  |            | \$11,642.00  | \$9,398.36   | Installation of EV Charging Infrastructure   | \$2,243.64  | Yes |
| ML16062 | City of Colton                       | 6/3/2016   | 7/2/2020   |            | \$21,003.82  | \$21,003.82  | Installation of EV Charging Infrastructure   | \$0.00      | Yes |
| ML16064 | County of Orange, OC Parks           | 2/21/2017  | 10/20/2018 |            | \$204,073.00 | \$157,632.73 | Implement "Open Streets" Events with Vario   | \$46,440.27 | Yes |
| ML16066 | City of Long Beach Public Works      | 1/13/2017  | 9/12/2018  |            | \$75,050.00  | \$63,763.62  | Implement an "Open Streets" Event            | \$11,286.38 | Yes |
| ML16068 | Riverside County Dept of Public Heal | 12/2/2016  | 8/1/2018   |            | \$171,648.00 | \$171,648.00 | Implement "Open Streets" Events with Vario   | \$0.00      | Yes |
| ML16069 | City of West Covina                  | 3/10/2017  | 6/9/2021   |            | \$54,199.00  | \$54,199.00  | Installation of EV Charging Infrastructure   | \$0.00      | Yes |
| ML16072 | City of Palm Desert                  | 3/4/2016   | 1/4/2020   | 1/3/2022   | \$56,000.00  | \$56,000.00  | Installation of EV Charging Infrastructure   | \$0.00      | Yes |
| ML16073 | City of Long Beach Public Works      | 1/13/2017  | 7/12/2017  |            | \$50,000.00  | \$50,000.00  | Implement an "Open Streets" Event            | \$0.00      | Yes |

| Cont.#  | Contractor                            | Start Date | Original End Date | Amended End Date | Contract Value | Remitted       | Project Description                           | Award Balance | Billing Complete? |
|---------|---------------------------------------|------------|-------------------|------------------|----------------|----------------|---|---------------|-------------------|
| ML16076 | City of San Fernando                  | 2/21/2017  | 8/20/2021         |                  | \$43,993.88    | \$43,993.88    | Install EV Charging Infrastructure            | \$0.00        | Yes               |
| ML16078 | City of Moreno Valley                 | 5/6/2016   | 11/5/2017         | 5/5/2018         | \$32,800.00    | \$31,604.72    | Install Bicycle Infrastructure & Implement Bi | \$1,195.28    | Yes               |
| ML16079 | City of Yucaipa                       | 4/1/2016   | 3/31/2020         |                  | \$5,000.00     | \$5,000.00     | Purchase Electric Lawnmower                   | \$0.00        | Yes               |
| ML16122 | City of Wildomar                      | 6/8/2018   | 6/7/2019          |                  | \$500,000.00   | \$500,000.00   | Install Bicycle Lanes                         | \$0.00        | Yes               |
| ML16126 | City of Palm Springs                  | 7/31/2019  | 7/30/2020         | 10/30/2020       | \$22,000.00    | \$19,279.82    | Install Bicycle Racks, and Implement Bicycle  | \$2,720.18    | Yes               |
| MS16001 | Los Angeles County MTA                | 4/1/2016   | 4/30/2017         |                  | \$1,350,000.00 | \$1,332,039.84 | Clean Fuel Transit Service to Dodger Stadiu   | \$17,960.16   | Yes               |
| MS16002 | Orange County Transportation Autho    | 10/6/2015  | 5/31/2016         |                  | \$722,266.00   | \$703,860.99   | Clean Fuel Transit Service to Orange Count    | \$18,405.01   | Yes               |
| MS16003 | Special Olympics World Games Los      | 10/9/2015  | 12/30/2015        |                  | \$380,304.00   | \$380,304.00   | Low-Emission Transportation Service for Sp    | \$0.00        | Yes               |
| MS16004 | Mineral LLC                           | 9/4/2015   | 7/3/2017          | 1/3/2018         | \$27,690.00    | \$9,300.00     | Design, Develop, Host and Maintain MSRC       | \$18,390.00   | Yes               |
| MS16029 | Orange County Transportation Autho    | 1/12/2018  | 6/11/2020         |                  | \$836,413.00   | \$567,501.06   | TCM Partnership Program - OC Bikeways         | \$268,911.94  | Yes               |
| MS16030 | Better World Group Advisors           | 12/19/2015 | 12/31/2017        | 12/31/2019       | \$271,619.00   | \$245,355.43   | Programmic Outreach Services to the MSR       | \$26,263.57   | Yes               |
| MS16084 | Transit Systems Unlimited, Inc.       | 5/6/2016   | 2/28/2018         |                  | \$565,600.00   | \$396,930.00   | Implement Special Shuttle Service from Uni    | \$168,670.00  | Yes               |
| MS16085 | Southern California Regional Rail Aut | 3/11/2016  | 9/30/2016         |                  | \$78,033.00    | \$64,285.44    | Special MetroLink Service to Autoclub Spee    | \$13,747.56   | Yes               |
| MS16089 | Orange County Transportation Autho    | 7/8/2016   | 4/30/2017         |                  | \$128,500.00   | \$128,500.00   | Implement Special Bus Service to Angel Sta    | \$0.00        | Yes               |
| MS16092 | San Bernardino County Transportatio   | 2/3/2017   | 1/2/2019          |                  | \$242,937.00   | \$242,016.53   | Implement a Series of "Open Streets" Event    | \$920.47      | Yes               |
| MS16093 | Orange County Transportation Autho    | 9/3/2016   | 3/2/2018          | 9/2/2018         | \$1,553,657.00 | \$1,499,575.85 | Implement a Mobile Ticketing System           | \$54,081.15   | Yes               |
| MS16095 | Orange County Transportation Autho    | 7/22/2016  | 5/31/2017         |                  | \$694,645.00   | \$672,864.35   | Implement Special Bus Service to Orange C     | \$21,780.65   | Yes               |
| MS16096 | San Bernardino County Transportatio   | 10/27/2016 | 12/26/2019        | 6/30/2021        | \$450,000.00   | \$450,000.00   | EV Charging Infrastructure                    | \$0.00        | Yes               |
| MS16099 | Foothill Transit                      | 3/3/2017   | 3/31/2017         |                  | \$50,000.00    | \$50,000.00    | Provide Special Bus Service to the Los Ange   | \$0.00        | Yes               |
| MS16100 | Southern California Regional Rail Aut | 5/5/2017   | 9/30/2017         |                  | \$80,455.00    | \$66,169.43    | Provide Metrolink Service to Autoclub Speed   | \$14,285.57   | Yes               |
| MS16124 | Riverside County Transportation Co    | 12/14/2018 | 12/14/2019        | 5/14/2020        | \$253,239.00   | \$246,856.41   | Extended Freeway Service Patrols              | \$6,382.59    | Yes               |
| MS16125 | San Bernardino County Transportatio   | 9/20/2019  | 11/19/2020        |                  | \$1,000,000.00 | \$1,000,000.00 | Traffic Signal Synchronization Projects       | \$0.00        | Yes               |

**Total: 50**

#### Closed/Incomplete Contracts

|         |                                     |            |           |            |                |              |  |                |    |
|---------|-------------------------------------|------------|-----------|------------|----------------|--------------|--|----------------|----|
| ML16005 | City of Palm Springs                | 3/4/2016   | 10/3/2017 |            | \$40,000.00    | \$0.00       | Install Bicycle Racks, and Implement Bicycle | \$40,000.00    | No |
| ML16035 | City of Wildomar                    | 4/1/2016   | 11/1/2017 |            | \$500,000.00   | \$0.00       | Install Bicycle Lanes                        | \$500,000.00   | No |
| MS16082 | Riverside County Transportation Co  | 9/3/2016   | 8/2/2018  |            | \$590,759.00   | \$337,519.71 | Extended Freeway Service Patrols             | \$253,239.29   | No |
| MS16090 | Los Angeles County MTA              | 10/27/2016 | 4/26/2020 | 10/26/2020 | \$2,500,000.00 | \$0.00       | Expansion of the Willowbrook/Rosa Parks Tr   | \$2,500,000.00 | No |
| MS16091 | San Bernardino County Transportatio | 10/7/2016  | 11/6/2018 |            | \$1,000,000.00 | \$0.00       | Traffic Signal Synchronization Projects      | \$1,000,000.00 | No |

**Total: 5**

#### Open/Complete Contracts

|         |                                       |           |            |           |              |              |   |        |     |
|---------|---------------------------------------|-----------|------------|-----------|--------------|--------------|---|--------|-----|
| ML16007 | City of Culver City Transportation De | 10/6/2015 | 4/5/2023   |           | \$246,000.00 | \$246,000.00 | Purchase 7 H.D. Nat. Gas Vehicles, EV Cha | \$0.00 | No  |
| ML16008 | City of Pomona                        | 9/20/2016 | 11/19/2022 | 5/19/2025 | \$60,000.00  | \$60,000.00  | Purchase 3 Medium-Duty and 1 Heavy-Duty   | \$0.00 | No  |
| ML16011 | City of Claremont                     | 10/6/2015 | 6/5/2022   |           | \$90,000.00  | \$90,000.00  | Purchase 3 Heavy-Duty Nat. Gas Vehicles   | \$0.00 | Yes |
| ML16012 | City of Carson                        | 1/15/2016 | 10/14/2022 |           | \$60,000.00  | \$60,000.00  | Purchase 2 Heavy-Duty Nat. Gas Vehicles   | \$0.00 | Yes |
| ML16013 | City of Monterey Park                 | 12/4/2015 | 7/3/2022   | 7/3/2024  | \$90,000.00  | \$90,000.00  | Purchase 3 Heavy-Duty Nat. Gas Vehicles   | \$0.00 | Yes |
| ML16016 | City of Los Angeles Dept of General   | 2/5/2016  | 12/4/2022  |           | \$630,000.00 | \$630,000.00 | Purchase 21 Heavy-Duty Nat. Gas Vehicles  | \$0.00 | Yes |



| Cont.#  | Contractor                            | Start Date | Original End Date | Amended End Date | Contract Value | Remitted       | Project Description                        | Award Balance | Billing Complete? |
|---------|---------------------------------------|------------|-------------------|------------------|----------------|----------------|--|---------------|-------------------|
| ML16019 | City of Los Angeles, Dept of General  | 1/25/2017  | 3/24/2023         |                  | \$102,955.00   | \$102,955.00   | Install EV Charging Infrastructure         | \$0.00        | Yes               |
| ML16021 | City of Santa Clarita                 | 10/7/2016  | 6/6/2024          |                  | \$49,400.00    | \$49,399.00    | Install EV Charging Infrastructure         | \$1.00        | Yes               |
| ML16024 | City of Azusa                         | 4/27/2016  | 2/26/2022         |                  | \$30,000.00    | \$30,000.00    | Purchase 1 H.D. Nat. Gas Vehicle           | \$0.00        | Yes               |
| ML16027 | City of Whittier                      | 1/8/2016   | 11/7/2022         |                  | \$30,000.00    | \$30,000.00    | Purchase 1 H.D. Nat. Gas Vehicle           | \$0.00        | Yes               |
| ML16037 | City of Rancho Cucamonga              | 2/5/2016   | 11/4/2022         |                  | \$30,000.00    | \$30,000.00    | Purchase One Heavy-Duty Natural Gas Vehi   | \$0.00        | Yes               |
| ML16040 | City of Eastvale                      | 1/6/2017   | 7/5/2022          | 7/5/2026         | \$110,000.00   | \$53,908.85    | Install EV Charging Infrastructure         | \$56,091.15   | No                |
| ML16041 | City of Moreno Valley                 | 9/3/2016   | 1/2/2021          | 4/2/2024         | \$20,000.00    | \$20,000.00    | Install EV Charging Infrastructure         | \$0.00        | Yes               |
| ML16046 | City of El Monte                      | 4/1/2016   | 5/31/2021         | 5/31/2023        | \$20,160.00    | \$14,637.50    | Install EV Charging Infrastructure         | \$5,522.50    | No                |
| ML16050 | City of Westminster                   | 5/6/2016   | 7/5/2020          | 5/5/2022         | \$115,000.00   | \$93,925.19    | Installation of EV Charging Infrastructure | \$21,074.81   | Yes               |
| ML16055 | City of Ontario                       | 5/6/2016   | 5/5/2022          |                  | \$270,000.00   | \$270,000.00   | Purchase Nine Heavy-Duty Natural-Gas Veh   | \$0.00        | Yes               |
| ML16058 | Los Angeles County Department of P    | 10/7/2016  | 4/6/2024          |                  | \$371,898.00   | \$371,898.00   | Purchase 11 H.D. Nat. Gas Vehicles and Ins | \$0.00        | Yes               |
| ML16059 | City of Burbank                       | 4/1/2016   | 2/28/2022         |                  | \$180,000.00   | \$180,000.00   | Purchase 6 H.D. Nat. Gas Vehicles          | \$0.00        | Yes               |
| ML16063 | City of Glendora                      | 3/4/2016   | 4/3/2022          |                  | \$30,000.00    | \$30,000.00    | Purchase One H.D. Nat. Gas Vehicle         | \$0.00        | Yes               |
| ML16070 | City of Beverly Hills                 | 2/21/2017  | 6/20/2023         |                  | \$90,000.00    | \$90,000.00    | Purchase 3 H.D. Nat. Gas Vehicles          | \$0.00        | Yes               |
| MS16081 | EDCO Disposal Corporation             | 3/4/2016   | 10/3/2022         |                  | \$150,000.00   | \$150,000.00   | Expansion of Existing Public Access CNG St | \$0.00        | Yes               |
| MS16087 | Burrtec Waste & Recycling Services,   | 7/8/2016   | 3/7/2023          |                  | \$100,000.00   | \$100,000.00   | Construct New Limited-Access CNG Station   | \$0.00        | Yes               |
| MS16088 | Transit Systems Unlimited, Inc.       | 5/12/2017  | 1/11/2023         |                  | \$17,000.00    | \$17,000.00    | Expansion of Existing CNG Station          | \$0.00        | Yes               |
| MS16097 | Walnut Valley Unified School District | 10/7/2016  | 11/6/2022         |                  | \$250,000.00   | \$250,000.00   | Expand CNG Station & Modify Maintenance    | \$0.00        | Yes               |
| MS16102 | Nasa Services, Inc.                   | 2/21/2017  | 4/20/2023         |                  | \$100,000.00   | \$100,000.00   | Construct a Limited-Access CNG Station     | \$0.00        | Yes               |
| MS16103 | Arrow Services, Inc.                  | 2/3/2017   | 4/2/2023          |                  | \$100,000.00   | \$100,000.00   | Construct a Limited-Access CNG Station     | \$0.00        | Yes               |
| MS16105 | Huntington Beach Union High School    | 3/3/2017   | 7/2/2024          |                  | \$175,000.00   | \$175,000.00   | Expansion of Existing CNG Infrastructure   | \$0.00        | Yes               |
| MS16112 | Orange County Transportation Autho    | 4/14/2017  | 3/13/2024         |                  | \$1,470,000.00 | \$1,470,000.00 | Repower Up to 98 Transit Buses             | \$0.00        | Yes               |
| MS16113 | Los Angeles County MTA                | 5/12/2017  | 4/11/2024         |                  | \$1,875,000.00 | \$1,875,000.00 | Repower Up to 125 Transit Buses            | \$0.00        | Yes               |
| MS16114 | City of Norwalk                       | 3/3/2017   | 6/2/2024          |                  | \$45,000.00    | \$32,170.00    | Purchase 3 Transit Buses                   | \$12,830.00   | Yes               |
| MS16116 | Riverside Transit Agency              | 3/3/2017   | 1/2/2023          |                  | \$10,000.00    | \$9,793.00     | Purchase One Transit Bus                   | \$207.00      | Yes               |

**Total: 31**

| Cont.# | Contractor | Start Date | Original End Date | Amended End Date | Contract Value | Remitted | Project Description | Award Balance | Billing Complete? |
|--------|------------|------------|-------------------|------------------|----------------|----------|---------------------|---------------|-------------------|
|--------|------------|------------|-------------------|------------------|----------------|----------|---------------------|---------------|-------------------|

## FY 2016-2018 Contracts

### Open Contracts

|         |                                      |            |            |           |                |              |   |              |    |
|---------|--------------------------------------|------------|------------|-----------|----------------|--------------|---|--------------|----|
| ML18020 | City of Colton                       | 5/3/2018   | 4/2/2024   | 12/2/2026 | \$67,881.00    | \$35,667.00  | Purchase One Medium-Duty and One Heavy          | \$32,214.00  | No |
| ML18030 | City of Grand Terrace                | 6/28/2018  | 3/27/2022  | 3/27/2025 | \$45,000.00    | \$0.00       | Install EVSE                                    | \$45,000.00  | No |
| ML18031 | City of Diamond Bar                  | 9/7/2018   | 11/6/2025  | 11/6/2026 | \$73,930.00    | \$0.00       | Install EVSE, Purchase up to 2-LD Vehicles      | \$73,930.00  | No |
| ML18036 | City of Indian Wells                 | 8/8/2018   | 5/7/2023   | 5/7/2025  | \$50,000.00    | \$0.00       | Install EV Charging Stations                    | \$50,000.00  | No |
| ML18041 | City of West Hollywood               | 8/8/2018   | 12/7/2023  | 6/7/2024  | \$50,000.00    | \$0.00       | Install EV Charging Infrastructure              | \$50,000.00  | No |
| ML18043 | City of Yorba Linda                  | 9/7/2018   | 12/6/2023  | 12/6/2024 | \$87,990.00    | \$0.00       | Install EV Charging Infrastructure              | \$87,990.00  | No |
| ML18046 | City of Santa Ana                    | 11/9/2018  | 7/8/2026   |           | \$385,000.00   | \$0.00       | Purchase 6 Light-Duty ZEVs, 9 Heavy-Duty        | \$385,000.00 | No |
| ML18047 | City of Whittier                     | 8/8/2018   | 4/7/2026   |           | \$113,910.00   | \$45,564.00  | Purchase 5 Heavy-Duty Near-Zero Emission        | \$68,346.00  | No |
| ML18050 | City of Irvine                       | 9/7/2018   | 8/6/2028   |           | \$330,490.00   | \$0.00       | Purchase 1 Medium/Heavy-Duty ZEV and In         | \$330,490.00 | No |
| ML18051 | City of Rancho Cucamonga             | 3/1/2019   | 10/31/2025 |           | \$91,500.00    | \$30,000.00  | Purchase 6 Light-Duty ZEVs, Install 3 Limite    | \$61,500.00  | No |
| ML18053 | City of Paramount                    | 9/7/2018   | 3/6/2023   |           | \$64,675.00    | \$0.00       | Install EV Charging Infrastructure              | \$64,675.00  | No |
| ML18055 | City of Long Beach                   | 11/29/2018 | 11/28/2026 |           | \$622,220.00   | \$207,283.14 | Install EV Charging Stations                    | \$414,936.86 | No |
| ML18056 | City of Chino                        | 3/29/2019  | 9/28/2023  |           | \$103,868.00   | \$103,868.00 | Install EV Charging Infrastructure              | \$0.00       | No |
| ML18057 | City of Carson                       | 10/5/2018  | 7/4/2023   |           | \$106,250.00   | \$50,000.00  | Purchase 5 Zero-Emission Vehicles and Infr      | \$56,250.00  | No |
| ML18058 | City of Perris                       | 10/12/2018 | 11/11/2024 |           | \$94,624.00    | \$0.00       | Purchase 1 Medim-Dity ZEV and EV Chargi         | \$94,624.00  | No |
| ML18059 | City of Glendale Water & Power       | 2/1/2019   | 7/31/2026  |           | \$260,500.00   | \$0.00       | Install Electric Vehicle Charging Infrastructur | \$260,500.00 | No |
| ML18060 | County of Los Angeles Internal Servi | 10/5/2018  | 8/4/2026   | 8/4/2028  | \$1,367,610.00 | \$599,306.31 | Purchase 29 Light-Duty Zero Emission Vehi       | \$768,303.69 | No |
| ML18063 | City of Riverside                    | 6/7/2019   | 1/6/2027   |           | \$383,610.00   | \$0.00       | Expand Existing CNG Stations                    | \$383,610.00 | No |
| ML18064 | City of Eastvale                     | 11/29/2018 | 4/28/2026  | 4/28/2028 | \$80,400.00    | \$28,457.43  | Purchase 2 Light-Duty, One Medium-Duty. Z       | \$51,942.57  | No |
| ML18067 | City of Pico Rivera                  | 9/7/2018   | 11/6/2022  | 7/6/2025  | \$83,500.00    | \$0.00       | Install EVSE                                    | \$83,500.00  | No |
| ML18068 | City of Mission Viejo                | 7/31/2019  | 6/30/2027  |           | \$125,690.00   | \$10,000.00  | Purchase 2 Light-Duty ZEVs, Install EVSE &      | \$115,690.00 | No |
| ML18069 | City of Torrance                     | 3/1/2019   | 7/31/2027  |           | \$187,400.00   | \$100,000.00 | Purchase 4 Heavy-Duty Near-Zero Emission        | \$87,400.00  | No |
| ML18078 | County of Riverside                  | 10/5/2018  | 10/4/2028  |           | \$375,000.00   | \$300,000.00 | Purchase 15 Heavy-Duty Vehicles                 | \$75,000.00  | No |
| ML18080 | City of Santa Monica                 | 1/10/2019  | 12/9/2023  | 7/9/2025  | \$121,500.00   | \$14,748.62  | Install EV Charging Stations                    | \$106,751.38 | No |
| ML18082 | City of Los Angeles Bureau of Sanita | 8/30/2019  | 8/29/2028  |           | \$900,000.00   | \$0.00       | Purchase Medium-Duty Vehicles and EV Ch         | \$900,000.00 | No |
| ML18083 | City of San Fernando                 | 11/2/2018  | 11/1/2022  |           | \$20,000.00    | \$0.00       | Implement Traffic Signal Synchronization        | \$20,000.00  | No |
| ML18084 | City of South El Monte               | 10/18/2019 | 9/17/2023  | 9/17/2024 | \$30,000.00    | \$0.00       | EV Charging Infrastructure                      | \$30,000.00  | No |
| ML18087 | City of Murrieta                     | 3/29/2019  | 3/28/2025  |           | \$143,520.00   | \$143,520.00 | Install Four EV Charging Stations               | \$0.00       | No |
| ML18089 | City of Glendora                     | 7/19/2019  | 4/18/2025  | 4/18/2026 | \$50,760.00    | \$0.00       | Purchase a medium-duty ZEV                      | \$50,760.00  | No |
| ML18091 | City of Temecula                     | 1/19/2019  | 7/18/2023  |           | \$141,000.00   | \$0.00       | Install Sixteen EV Charging Stations            | \$141,000.00 | No |
| ML18092 | City of South Pasadena               | 2/1/2019   | 1/31/2025  | 4/30/2027 | \$50,000.00    | \$20,000.00  | Procure Two Light-Duty ZEVs and Install EV      | \$30,000.00  | No |
| ML18093 | City of Monterey Park                | 2/1/2019   | 2/28/2026  |           | \$25,000.00    | \$0.00       | Purchase Heavy-Duty Near-ZEV                    | \$25,000.00  | No |
| ML18094 | City of Laguna Woods                 | 7/12/2019  | 12/11/2024 |           | \$50,000.00    | \$0.00       | Install Two EV Charging Stations                | \$50,000.00  | No |
| ML18098 | City of Redondo Beach                | 2/1/2019   | 3/31/2023  | 3/31/2025 | \$89,400.00    | \$0.00       | Install Six EV Charging Stations                | \$89,400.00  | No |



| Cont.#  | Contractor                           | Start Date | Original End Date | Amended End Date | Contract Value | Remitted       | Project Description                          | Award Balance  | Billing Complete? |
|---------|--------------------------------------|------------|-------------------|------------------|----------------|----------------|--|----------------|-------------------|
| ML18099 | City of Laguna Hills                 | 3/1/2019   | 5/31/2023         |                  | \$32,250.00    | \$0.00         | Install Six EV Charging Stations             | \$32,250.00    | No                |
| ML18100 | City of Brea                         | 10/29/2020 | 12/28/2024        |                  | \$56,500.00    | \$0.00         | Install Twenty-Four Level II EV Charging Sta | \$56,500.00    | No                |
| ML18101 | City of Burbank                      | 2/1/2019   | 4/30/2024         | 10/30/2024       | \$137,310.00   | \$0.00         | Install Twenty EV Charging Stations          | \$137,310.00   | No                |
| ML18129 | City of Yucaipa                      | 12/14/2018 | 3/13/2023         |                  | \$63,097.00    | \$0.00         | Install Six EV Charging Stations             | \$63,097.00    | No                |
| ML18132 | City of Montclair                    | 4/5/2019   | 9/4/2023          |                  | \$40,000.00    | \$0.00         | Install Eight EVSEs                          | \$40,000.00    | No                |
| ML18134 | City of Los Angeles Dept of General  | 5/3/2019   | 5/2/2028          |                  | \$290,000.00   | \$0.00         | Purchase Five Medium-Duty ZEVs               | \$290,000.00   | No                |
| ML18135 | City of Azusa                        | 12/6/2019  | 12/5/2029         |                  | \$55,000.00    | \$0.00         | Purchase Three Light-Duty ZEVs and One H     | \$55,000.00    | No                |
| ML18136 | City of Orange                       | 4/12/2019  | 8/11/2024         |                  | \$42,500.00    | \$40,000.00    | Purchase Four Light-Duty ZEVs and Install    | \$2,500.00     | No                |
| ML18137 | City of Wildomar                     | 3/1/2019   | 5/31/2021         | 12/1/2022        | \$50,000.00    | \$0.00         | Install Bicycle Trail                        | \$50,000.00    | No                |
| ML18141 | City of Rolling Hills Estates        | 2/14/2020  | 1/13/2024         | 1/13/2025        | \$40,000.00    | \$0.00         | Purchase One Light-Duty ZEV and Install Tw   | \$40,000.00    | No                |
| ML18142 | City of La Quinta                    | 4/24/2019  | 2/23/2023         | 8/23/2023        | \$51,780.00    | \$0.00         | Install Two EV Charging Stations             | \$51,780.00    | No                |
| ML18144 | City of Fontana Public Works         | 10/4/2019  | 12/3/2023         |                  | \$269,090.00   | \$0.00         | Install Twelve EVSEs                         | \$269,090.00   | No                |
| ML18145 | City of Los Angeles Dept of Transpor | 1/10/2020  | 4/9/2027          |                  | \$1,400,000.00 | \$0.00         | Provide One Hundred Rebates to Purchaser     | \$1,400,000.00 | No                |
| ML18146 | City of South Gate                   | 3/1/2019   | 11/30/2023        | 11/30/2025       | \$127,400.00   | \$50,000.00    | Purchase Five Light-Duty ZEVs and Install T  | \$77,400.00    | No                |
| ML18147 | City of Palm Springs                 | 1/10/2019  | 1/9/2024          | 7/9/2026         | \$60,000.00    | \$0.00         | Install Eighteen EV Charging Stations        | \$60,000.00    | No                |
| ML18151 | County of San Bernardino Departme    | 8/25/2020  | 10/24/2029        |                  | \$200,000.00   | \$0.00         | Purchase Eight Heavy-Duty Near Zero Emis     | \$200,000.00   | No                |
| ML18152 | County of San Bernardino Flood Con   | 8/11/2020  | 10/10/2029        |                  | \$108,990.00   | \$0.00         | Purchase Five Heavy-Duty Near Zero Emis      | \$108,990.00   | No                |
| ML18159 | City of Rialto                       | 12/13/2019 | 5/12/2024         | 5/12/2025        | \$135,980.00   | \$0.00         | Purchase Nine Light-Duty ZEVs and EV Cha     | \$135,980.00   | No                |
| ML18161 | City of Indio                        | 5/3/2019   | 10/2/2025         |                  | \$50,000.00    | \$10,000.00    | Purchase 1 Light-Duty Zero Emission, 1 Hea   | \$40,000.00    | No                |
| ML18163 | City of San Clemente                 | 3/8/2019   | 12/7/2024         | 12/7/2025        | \$85,000.00    | \$70,533.75    | Purchase Four Light-Duty ZEVs and EV Cha     | \$14,466.25    | No                |
| ML18165 | City of Baldwin Park                 | 2/1/2019   | 1/30/2024         |                  | \$49,030.00    | \$0.00         | Expand CNG Station                           | \$49,030.00    | No                |
| ML18166 | City of Placentia                    | 2/18/2021  | 5/17/2027         |                  | \$25,000.00    | \$0.00         | Purchase One Heavy-Duty Near-Zero Emis       | \$25,000.00    | No                |
| ML18167 | City of Beverly Hills                | 3/29/2019  | 6/28/2025         |                  | \$50,000.00    | \$0.00         | Purchase Two Heavy-Duty Near-Zero Emis       | \$50,000.00    | No                |
| ML18168 | City of Maywood                      | 3/29/2019  | 11/28/2022        |                  | \$7,059.00     | \$0.00         | Purchase EV Charging Infrastructure          | \$7,059.00     | No                |
| ML18169 | City of Alhambra                     | 6/14/2019  | 8/13/2024         |                  | \$111,980.00   | \$111,980.00   | Install EV Charging Infrastructure           | \$0.00         | No                |
| ML18170 | City of Laguna Niguel                | 1/10/2020  | 8/9/2028          |                  | \$85,100.00    | \$0.00         | Purchase Two Light-Duty ZEVs and EV Cha      | \$85,100.00    | No                |
| ML18172 | City of Huntington Park              | 3/1/2019   | 2/28/2025         |                  | \$65,450.00    | \$0.00         | Purchase One Heavy-Duty ZEV                  | \$65,450.00    | No                |
| ML18174 | City of Bell                         | 11/22/2019 | 7/21/2026         |                  | \$25,000.00    | \$0.00         | Purchase One Heavy-Duty ZEV                  | \$25,000.00    | No                |
| ML18177 | City of San Bernardino               | 6/7/2019   | 12/6/2026         |                  | \$279,088.00   | \$0.00         | Purchase Medium- and Heavy-Duty Evs and      | \$279,088.00   | No                |
| ML18178 | City of La Puente                    | 11/1/2019  | 11/30/2025        | 11/30/2027       | \$25,000.00    | \$0.00         | Purchase One Heavy-Duty Near-Zero Emis       | \$25,000.00    | No                |
| ML18179 | City of Rancho Mirage                | 8/20/2021  | 2/19/2022         |                  | \$50,000.00    | \$50,000.00    | Traffic Signal Synchronization               | \$0.00         | No                |
| MS18002 | Southern California Association of G | 6/9/2017   | 11/30/2018        | 12/30/2021       | \$2,500,000.00 | \$1,989,699.15 | Regional Active Transportation Partnership   | \$510,300.85   | No                |
| MS18015 | Southern California Association of G | 7/13/2018  | 2/28/2021         | 8/31/2022        | \$2,000,000.00 | \$0.00         | Southern California Future Communities Par   | \$2,000,000.00 | No                |
| MS18023 | Riverside County Transportation Co   | 6/28/2018  | 6/27/2021         | 12/27/2022       | \$500,000.00   | \$361,688.10   | Weekend Freeway Service Patrols              | \$138,311.90   | No                |
| MS18024 | Riverside County Transportation Co   | 6/28/2018  | 8/27/2021         | 8/27/2023        | \$1,500,000.00 | \$659,640.00   | Vanpool Incentive Program                    | \$840,360.00   | No                |
| MS18027 | City of Gardena                      | 11/2/2018  | 9/1/2026          | 1/1/2028         | \$365,000.00   | \$0.00         | Install New Limited Access CNG, Modify Mai   | \$365,000.00   | No                |
| MS18029 | Irvine Ranch Water District          | 8/8/2018   | 10/7/2024         |                  | \$185,000.00   | \$0.00         | Install New Limited Access CNG Station & T   | \$185,000.00   | No                |

| Cont.#  | Contractor                             | Start Date | Original End Date | Amended End Date | Contract Value | Remitted       | Project Description                          | Award Balance  | Billing Complete? |
|---------|--|------------|-------------------|------------------|----------------|----------------|--|----------------|-------------------|
| MS18065 | San Bernardino County Transportatio    | 3/29/2019  | 8/28/2023         |                  | \$2,000,000.00 | \$2,000,000.00 | Implement Metrolink Line Fare Discount Pro   | \$0.00         | No                |
| MS18073 | Los Angeles County MTA                 | 1/10/2019  | 2/9/2026          |                  | \$2,000,000.00 | \$2,000,000.00 | Purchase 40 Zero-Emission Transit Buses      | \$0.00         | No                |
| MS18104 | Orange County Transportation Autho     | 2/21/2020  | 3/31/2021         | 3/31/2022        | \$212,000.00   | \$165,235.92   | Implement College Pass Transit Fare Subsid   | \$46,764.08    | No                |
| MS18106 | R.F. Dickson Co., Inc.                 | 7/19/2019  | 1/18/2026         |                  | \$265,000.00   | \$250,000.00   | Expansion of Existing Infrastructure/Mechani | \$15,000.00    | No                |
| MS18108 | Capistrano Unified School District     | 2/1/2019   | 5/30/2025         |                  | \$116,000.00   | \$0.00         | Expansion of Existing Infrastructure & Train | \$116,000.00   | No                |
| MS18110 | Mountain View Unified School Distric   | 2/1/2019   | 3/31/2025         |                  | \$275,000.00   | \$0.00         | Install New Limited-Access CNG Infrastructu  | \$275,000.00   | No                |
| MS18114 | Los Angeles County Department of P     | 11/15/2019 | 11/14/2026        |                  | \$175,000.00   | \$0.00         | Install New Limited-Access CNG Infrastructu  | \$175,000.00   | No                |
| MS18115 | City of Commerce                       | 6/7/2019   | 12/6/2025         |                  | \$275,000.00   | \$0.00         | Expansion of Existing L/CNG Infrastructure   | \$275,000.00   | No                |
| MS18116 | Los Angeles County Department of P     | 11/15/2019 | 11/14/2026        |                  | \$175,000.00   | \$0.00         | Install New Limited-Access CNG Infrastructu  | \$175,000.00   | No                |
| MS18118 | City of Beverly Hills                  | 3/29/2019  | 7/28/2025         |                  | \$85,272.00    | \$0.00         | Expansion of Existing CNG Infrastructure     | \$85,272.00    | No                |
| MS18122 | Universal Waste Systems, Inc.          | 2/1/2019   | 3/31/2025         | 3/31/2027        | \$200,000.00   | \$0.00         | Install New Limited Acess CNG Infrastructur  | \$200,000.00   | No                |
| MS18175 | Regents of the University of Californi | 6/7/2019   | 8/6/2025          | 8/6/2026         | \$1,000,000.00 | \$0.00         | Expansion of Existing Hydrogen Station       | \$1,000,000.00 | No                |

**Total: 83**

#### Pending Execution Contracts

|         |                                     |  |  |  |                |        |  |                |    |
|---------|-------------------------------------|--|--|--|----------------|--------|--|----------------|----|
| ML18148 | City of San Dimas                   |  |  |  | \$50,000.00    | \$0.00 | Implement Bicycle Detection Measures         | \$50,000.00    | No |
| MS18180 | Omnitrans                           |  |  |  | \$83,000.00    | \$0.00 | Modify Vehicle Maintenance Facility and Trai | \$83,000.00    | No |
| MS18181 | San Bernardino County Transportatio |  |  |  | \$1,662,000.00 | \$0.00 | Construct Hydrogen Fueling Station           | \$1,662,000.00 | No |
| MS18182 | Air Products and Chemicals Inc.     |  |  |  | \$1,000,000.00 | \$0.00 | Install Publicly Accessible Hydrogen Fueling | \$1,000,000.00 | No |
| MS18183 | Nikola Energy, Inc.                 |  |  |  | \$1,660,000.00 | \$0.00 | Install Publicly Accessible Hydrogen Fueling | \$1,660,000.00 | No |
| MS18184 | Clean Energy                        |  |  |  | \$1,000,000.00 | \$0.00 | Install Publicly Accessible Hydrogen Fueling | \$1,000,000.00 | No |

**Total: 6**

#### Declined/Cancelled Contracts

|         |                                      |            |            |           |                |        |  |                |    |
|---------|--------------------------------------|------------|------------|-----------|----------------|--------|--|----------------|----|
| ML18044 | City of Malibu                       | 8/8/2018   | 10/7/2022  | 10/7/2023 | \$50,000.00    | \$0.00 | Install EV Charging Infrastructure           | \$50,000.00    | No |
| ML18075 | City of Orange                       |            |            |           | \$25,000.00    | \$0.00 | One Heavy-Duty Vehicle                       | \$25,000.00    | No |
| ML18140 | City of Bell Gardens                 | 12/14/2018 | 12/13/2028 |           | \$50,000.00    | \$0.00 | Purchase Two Heavy-Duty Near-ZEVs            | \$50,000.00    | No |
| ML18149 | City of Sierra Madre                 |            |            |           | \$50,000.00    | \$0.00 | Implement Bike Share Program                 | \$50,000.00    | No |
| ML18150 | City of South El Monte               |            |            |           | \$20,000.00    | \$0.00 | Implement Bike Share Program                 | \$20,000.00    | No |
| ML18153 | City of Cathedral City               | 5/3/2019   | 4/2/2025   |           | \$52,215.00    | \$0.00 | Install EV Charging Infrastructure           | \$52,215.00    | No |
| ML18158 | City of Inglewood                    |            |            |           | \$146,000.00   | \$0.00 | Purchase 4 Light-Duty Zero Emission, 4 Hea   | \$146,000.00   | No |
| ML18164 | City of Pomona                       |            |            |           | \$200,140.00   | \$0.00 | Purchase Three Heavy-Duty ZEVs               | \$200,140.00   | No |
| MS18009 | Penske Truck Leasing Co., L.P.       | 8/8/2018   | 12/7/2020  |           | \$82,500.00    | \$0.00 | Modify Maintenance Facility & Train Technici | \$82,500.00    | No |
| MS18013 | California Energy Commission         |            |            |           | \$3,000,000.00 | \$0.00 | Advise MSRC and Administer Hydrogen Infr     | \$3,000,000.00 | No |
| MS18017 | City of Banning                      |            |            |           | \$225,000.00   | \$0.00 | Expansion of Existing CNG Infrastructure     | \$225,000.00   | No |
| MS18018 | City of Norwalk                      | 6/8/2018   | 9/7/2019   |           | \$75,000.00    | \$0.00 | Vehicle Maintenance Facility Modifications   | \$75,000.00    | No |
| MS18107 | Huntington Beach Union High School   |            |            |           | \$225,000.00   | \$0.00 | Expansion of Existing Infrastructure         | \$225,000.00   | No |
| MS18109 | City of South Gate                   |            |            |           | \$175,000.00   | \$0.00 | Install New Limited-Access CNG Infrastructu  | \$175,000.00   | No |
| MS18111 | Newport-Mesa Unified School District |            |            |           | \$175,000.00   | \$0.00 | Expansion of Existing CNG Infrastructure     | \$175,000.00   | No |

| Cont.#  | Contractor                      | Start Date | Original End Date | Amended End Date | Contract Value | Remitted | Project Description                         | Award Balance | Billing Complete? |
|---------|---------------------------------|------------|-------------------|------------------|----------------|----------|---|---------------|-------------------|
| MS18112 | Banning Unified School District | 11/29/2018 | 11/28/2024        | 11/28/2025       | \$275,000.00   | \$0.00   | Install New CNG Infrastructure              | \$275,000.00  | No                |
| MS18113 | City of Torrance                |            |                   |                  | \$100,000.00   | \$0.00   | Expansion of Existing CNG Infrastructure    | \$100,000.00  | No                |
| MS18119 | LBA Realty Company XI LP        |            |                   |                  | \$100,000.00   | \$0.00   | Install New Limited-Access CNG Infrastructu | \$100,000.00  | No                |
| MS18121 | City of Montebello              |            |                   |                  | \$70,408.00    | \$0.00   | Expansion of Existing CNG Infrastructure    | \$70,408.00   | No                |

**Total: 19**

#### Closed Contracts

|         |  |            |           |            |                |                |  |              |     |
|---------|--|------------|-----------|------------|----------------|----------------|--|--------------|-----|
| ML18021 | City of Signal Hill                    | 4/6/2018   | 1/5/2022  |            | \$49,661.00    | \$46,079.31    | Install EV Charging Stations                   | \$3,581.69   | Yes |
| ML18022 | City of Desert Hot Springs             | 5/3/2018   | 1/2/2020  | 1/2/2021   | \$50,000.00    | \$50,000.00    | Traffic Signal and Synchronization Project     | \$0.00       | Yes |
| ML18088 | City of Big Bear Lake                  | 11/29/2018 | 8/28/2020 | 8/28/2021  | \$50,000.00    | \$50,000.00    | Install Bicycle Trail                          | \$0.00       | Yes |
| ML18126 | City of Lomita                         | 12/7/2018  | 1/6/2020  |            | \$26,500.00    | \$13,279.56    | Install bicycle racks and lanes                | \$13,220.44  | Yes |
| ML18139 | City of Calimesa                       | 8/30/2019  | 7/29/2020 | 11/29/2021 | \$50,000.00    | \$50,000.00    | Install Bicycle Lane                           | \$0.00       | No  |
| MS18001 | Los Angeles County MTA                 | 6/29/2017  | 4/30/2018 |            | \$807,945.00   | \$652,737.07   | Provide Clean Fuel Transit Service to Dodge    | \$155,207.93 | Yes |
| MS18003 | Geographics                            | 2/21/2017  | 2/20/2021 | 6/20/2021  | \$72,453.00    | \$65,521.32    | Design, Host and Maintain MSRC Website         | \$6,931.68   | Yes |
| MS18004 | Orange County Transportation Autho     | 8/3/2017   | 4/30/2019 |            | \$503,272.00   | \$456,145.29   | Provide Special Rail Service to Angel Stadiu   | \$47,126.71  | Yes |
| MS18005 | Orange County Transportation Autho     | 1/5/2018   | 4/30/2019 |            | \$834,222.00   | \$834,222.00   | Clean Fuel Bus Service to OC Fair              | \$0.00       | Yes |
| MS18006 | Anaheim Transportation Network         | 10/6/2017  | 2/28/2020 |            | \$219,564.00   | \$9,488.22     | Implement Anaheim Circulator Service           | \$210,075.78 | Yes |
| MS18008 | Foothill Transit                       | 1/12/2018  | 3/31/2019 |            | \$100,000.00   | \$99,406.61    | Special Transit Service to LA County Fair      | \$593.39     | Yes |
| MS18010 | Southern California Regional Rail Aut  | 12/28/2017 | 7/31/2019 |            | \$351,186.00   | \$275,490.61   | Implement Special Metrolink Service to Unio    | \$75,695.39  | Yes |
| MS18011 | Southern California Regional Rail Aut  | 2/9/2018   | 6/30/2018 |            | \$239,565.00   | \$221,725.12   | Special Train Service to Festival of Lights    | \$17,839.88  | Yes |
| MS18014 | Regents of the University of Californi | 10/5/2018  | 12/4/2019 | 3/4/2020   | \$254,795.00   | \$251,455.59   | Planning for EV Charging Infrastructure Inve   | \$3,339.41   | Yes |
| MS18016 | Southern California Regional Rail Aut  | 1/10/2019  | 3/31/2019 |            | \$87,764.00    | \$73,140.89    | Special Train Service to Auto Club Speedwa     | \$14,623.11  | Yes |
| MS18025 | Los Angeles County MTA                 | 11/29/2018 | 5/31/2019 |            | \$1,324,560.00 | \$961,246.86   | Special Bus and Train Service to Dodger Sta    | \$363,313.14 | Yes |
| MS18102 | Orange County Transportation Autho     | 10/4/2019  | 5/31/2020 |            | \$1,146,000.00 | \$1,146,000.00 | Implement OC Flex Micro-Transit Pilot Proje    | \$0.00       | Yes |
| MS18103 | Orange County Transportation Autho     | 2/8/2019   | 9/7/2020  |            | \$642,000.00   | \$613,303.83   | Install Hydrogen Detection System              | \$28,696.17  | Yes |
| MS18105 | Southern California Regional Rail Aut  | 1/10/2019  | 6/30/2019 |            | \$252,696.00   | \$186,830.04   | Special Train Service to the Festival of Light | \$65,865.96  | Yes |

**Total: 19**

#### Closed/Incomplete Contracts

|         |                       |           |           |  |             |        |  |             |    |
|---------|-----------------------|-----------|-----------|--|-------------|--------|--|-------------|----|
| ML18133 | City of Rancho Mirage | 12/7/2018 | 11/6/2020 |  | \$50,000.00 | \$0.00 | Traffic Signal Synchronization               | \$50,000.00 | No |
| MS18026 | Omnitrans             | 10/5/2018 | 1/4/2020  |  | \$83,000.00 | \$0.00 | Modify Vehicle Maintenance Facility and Trai | \$83,000.00 | No |

**Total: 2**

#### Open/Complete Contracts

|         |                          |           |           |          |             |             |                                       |        |     |
|---------|--------------------------|-----------|-----------|----------|-------------|-------------|---------------------------------------|--------|-----|
| ML18019 | City of Hidden Hills     | 5/3/2018  | 5/2/2022  | 5/2/2023 | \$49,999.00 | \$49,999.00 | Purchase Two Light-Duty ZEVs and EVSE | \$0.00 | Yes |
| ML18028 | City of Artesia          | 6/28/2018 | 3/27/2025 |          | \$50,000.00 | \$50,000.00 | Install EVSE                          | \$0.00 | Yes |
| ML18032 | City of Arcadia          | 2/1/2019  | 4/30/2025 |          | \$24,650.00 | \$24,650.00 | Purchase 1 Heavy-Duty Near-ZEV        | \$0.00 | Yes |
| ML18033 | City of Duarte           | 8/8/2018  | 2/7/2025  |          | \$50,000.00 | \$50,000.00 | Purchase 1-HD ZEV                     | \$0.00 | Yes |
| ML18034 | City of Calabasas        | 6/8/2018  | 3/7/2022  | 3/7/2023 | \$50,000.00 | \$50,000.00 | Install EVSE                          | \$0.00 | No  |
| ML18035 | City of Westlake Village | 8/8/2018  | 11/7/2022 |          | \$50,000.00 | \$50,000.00 | Install EVSE                          | \$0.00 | Yes |

| Cont.#  | Contractor                            | Start Date | Original End Date | Amended End Date | Contract Value | Remitted     | Project Description                          | Award Balance | Billing Complete? |
|---------|---------------------------------------|------------|-------------------|------------------|----------------|--------------|--|---------------|-------------------|
| ML18037 | City of Westminster                   | 6/28/2018  | 6/27/2024         | 12/27/2026       | \$120,900.00   | \$120,900.00 | Install EVSE, Purchase up to 3-LD ZEV & 1-   | \$0.00        | Yes               |
| ML18038 | City of Anaheim                       | 10/5/2018  | 5/4/2025          | 5/4/2026         | \$151,630.00   | \$147,883.27 | Purchase 5 Light-Duty ZEVs and Install EVS   | \$3,746.73    | Yes               |
| ML18039 | City of Redlands                      | 6/28/2018  | 7/27/2024         | 1/27/2025        | \$63,191.00    | \$63,190.33  | Purchase 1 Medium/Heavy-Duty ZEV and In      | \$0.67        | Yes               |
| ML18040 | City of Agoura Hills                  | 7/13/2018  | 6/12/2022         |                  | \$17,914.00    | \$17,914.00  | Install EV Charging Infrastructure           | \$0.00        | Yes               |
| ML18042 | City of San Fernando                  | 6/28/2018  | 2/27/2024         |                  | \$10,000.00    | \$10,000.00  | Purchase 1 Light-Duty ZEV                    | \$0.00        | Yes               |
| ML18045 | City of Culver City Transportation De | 6/28/2018  | 6/27/2025         |                  | \$51,000.00    | \$51,000.00  | Purchase Eight Near-Zero Vehicles            | \$0.00        | Yes               |
| ML18048 | City of Lynwood                       | 6/28/2018  | 10/27/2024        |                  | \$93,500.00    | \$44,505.53  | Purchase Up to 3 Medium-Duty Zero-Emissi     | \$48,994.47   | Yes               |
| ML18049 | City of Downey                        | 7/6/2018   | 5/5/2023          |                  | \$148,260.00   | \$148,116.32 | Install EV Charging Stations                 | \$143.68      | Yes               |
| ML18052 | City of Garden Grove                  | 8/8/2018   | 10/7/2022         |                  | \$53,593.00    | \$46,164.28  | Purchase 4 L.D. ZEVs and Infrastructure      | \$7,428.72    | Yes               |
| ML18054 | City of La Habra Heights              | 8/8/2018   | 4/7/2022          |                  | \$9,200.00     | \$9,200.00   | Purchase 1 L.D. ZEV                          | \$0.00        | Yes               |
| ML18061 | City of Moreno Valley                 | 4/9/2019   | 2/8/2025          |                  | \$25,000.00    | \$25,000.00  | Purchase 1 Heavy-Duty Near-ZEV               | \$0.00        | Yes               |
| ML18062 | City of Beaumont                      | 8/8/2018   | 9/7/2024          |                  | \$25,000.00    | \$25,000.00  | Purchase 1 Heavy-Duty Near-ZEV               | \$0.00        | Yes               |
| ML18070 | City of Lomita                        | 11/29/2018 | 6/28/2022         |                  | \$6,250.00     | \$6,250.00   | Purchase 1 Light-Duty ZEV                    | \$0.00        | Yes               |
| ML18071 | City of Chino Hills                   | 9/7/2018   | 10/6/2022         |                  | \$20,000.00    | \$20,000.00  | Purchase 2 Light-Duty ZEVs                   | \$0.00        | Yes               |
| ML18072 | City of Anaheim                       | 12/18/2018 | 11/17/2026        |                  | \$239,560.00   | \$239,560.00 | Purchase 9 Light-Duty ZEVs & 2 Med/Hvy-D     | \$0.00        | Yes               |
| ML18074 | City of Buena Park                    | 12/14/2018 | 6/13/2026         |                  | \$107,960.00   | \$107,960.00 | EV Charging Infrastructure                   | \$0.00        | Yes               |
| ML18076 | City of Culver City Transportation De | 10/5/2018  | 10/4/2023         |                  | \$1,130.00     | \$1,130.00   | Purchase Light-Duty ZEV                      | \$0.00        | Yes               |
| ML18077 | City of Orange                        | 11/2/2018  | 10/1/2022         |                  | \$59,776.00    | \$59,776.00  | Four Light-Duty ZEV and EV Charging Infr     | \$0.00        | Yes               |
| ML18079 | City of Pasadena                      | 12/7/2018  | 11/6/2023         |                  | \$183,670.00   | \$183,670.00 | EV Charging Infrastructure                   | \$0.00        | Yes               |
| ML18081 | City of Beaumont                      | 10/5/2018  | 10/4/2022         | 10/4/2025        | \$31,870.00    | \$31,870.00  | EV Charging Infrastructure                   | \$0.00        | Yes               |
| ML18085 | City of Orange                        | 4/12/2019  | 10/11/2026        |                  | \$50,000.00    | \$50,000.00  | Purchase Two Heavy-Duty Near-Zero Emissi     | \$0.00        | Yes               |
| ML18086 | City of Los Angeles Bureau of Street  | 2/8/2019   | 4/7/2023          |                  | \$300,000.00   | \$300,000.00 | Install Sixty EV Charging Stations           | \$0.00        | Yes               |
| ML18090 | City of Santa Clarita                 | 5/9/2019   | 2/8/2023          | 2/8/2024         | \$122,000.00   | \$118,978.52 | Install Nine EV Charging Stations            | \$3,021.48    | Yes               |
| ML18095 | City of Gardena                       | 11/9/2018  | 12/8/2024         |                  | \$25,000.00    | \$25,000.00  | Purchase Heavy-Duty Near-ZEV                 | \$0.00        | Yes               |
| ML18096 | City of Highland                      | 12/13/2019 | 8/12/2024         |                  | \$10,000.00    | \$9,918.84   | Purchase Light-Duty Zero Emission Vehicle    | \$81.16       | Yes               |
| ML18097 | City of Temple City                   | 11/29/2018 | 7/28/2022         |                  | \$16,000.00    | \$12,000.00  | Purchase Two Light-Duty ZEVs                 | \$4,000.00    | Yes               |
| ML18127 | City of La Puente                     | 2/1/2019   | 2/28/2023         |                  | \$10,000.00    | \$7,113.70   | Purchase Light-Duty Zero Emission Vehicle    | \$2,886.30    | Yes               |
| ML18128 | City of Aliso Viejo                   | 8/30/2019  | 11/29/2023        |                  | \$65,460.00    | \$65,389.56  | Purchase Two Light-Duty ZEVs and Install S   | \$70.44       | No                |
| ML18130 | City of Lake Forest                   | 3/1/2019   | 9/30/2022         |                  | \$106,480.00   | \$106,480.00 | Install Twenty-One EVSEs                     | \$0.00        | No                |
| ML18131 | City of Los Angeles, Police Departm   | 5/3/2019   | 12/2/2022         |                  | \$19,294.00    | \$19,294.00  | Purchase Three Light-Duty ZEVs               | \$0.00        | Yes               |
| ML18138 | City of La Canada Flintridge          | 2/8/2019   | 5/7/2023          |                  | \$50,000.00    | \$32,588.07  | Install Four EVSEs and Install Bicycle Racks | \$17,411.93   | No                |
| ML18143 | City of La Habra                      | 10/18/2019 | 9/17/2025         | 9/17/2027        | \$80,700.00    | \$80,700.00  | Install Two EV Charging Stations             | \$0.00        | Yes               |
| ML18154 | City of Hemet                         | 11/22/2019 | 9/21/2023         | 3/21/2024        | \$30,000.00    | \$30,000.00  | Purchase Two Light-Duty ZEVs and EV Cha      | \$0.00        | Yes               |
| ML18155 | City of Claremont                     | 7/31/2019  | 9/30/2023         |                  | \$50,000.00    | \$35,608.86  | Install EV Charging Infrastructure           | \$14,391.14   | Yes               |
| ML18156 | City of Covina                        | 2/1/2019   | 3/31/2023         | 12/31/2023       | \$63,800.00    | \$62,713.00  | Purchase Four Light-Duty ZEVs and EV Cha     | \$1,087.00    | Yes               |
| ML18157 | City of Los Angeles Bureau of Street  | 6/21/2019  | 5/20/2027         |                  | \$85,000.00    | \$85,000.00  | Purchase One Medium-Duty ZEV                 | \$0.00        | Yes               |
| ML18160 | City of Irwindale                     | 3/29/2019  | 12/28/2022        |                  | \$14,263.00    | \$14,263.00  | Purchase Two Light-Duty ZEVs                 | \$0.00        | Yes               |

| Cont.#  | Contractor                            | Start Date | Original End Date | Amended End Date | Contract Value | Remitted     | Project Description                         | Award Balance | Billing Complete? |
|---------|---------------------------------------|------------|-------------------|------------------|----------------|--------------|---|---------------|-------------------|
| ML18162 | City of Costa Mesa                    | 1/10/2020  | 7/9/2026          |                  | \$148,210.00   | \$148,210.00 | Purchase Three Light-Duty ZEVs and EV Ch    | \$0.00        | Yes               |
| ML18171 | City of El Monte                      | 3/1/2019   | 4/30/2025         |                  | \$119,757.00   | \$68,077.81  | Purchase One Heavy-Duty ZEVs and EV Ch      | \$51,679.19   | No                |
| ML18173 | City of Manhattan Beach               | 3/29/2019  | 2/28/2023         |                  | \$49,000.00    | \$49,000.00  | Purchase Two Light-Duty ZEVs and EV Cha     | \$0.00        | Yes               |
| ML18176 | City of Coachella                     | 3/1/2019   | 11/30/2024        |                  | \$58,020.00    | \$58,020.00  | Install EV Charging Stations                | \$0.00        | Yes               |
| MS18012 | City of Hermosa Beach                 | 2/2/2018   | 2/1/2024          |                  | \$36,000.00    | \$36,000.00  | Construct New Limited-Access CNG Station    | \$0.00        | Yes               |
| MS18066 | El Dorado National                    | 12/6/2019  | 2/5/2026          |                  | \$100,000.00   | \$100,000.00 | Install New Limited-Access CNG Station      | \$0.00        | Yes               |
| MS18117 | City of San Bernardino                | 6/7/2019   | 11/6/2025         |                  | \$240,000.00   | \$240,000.00 | Expansion of Existing CNG Infrastructure/Me | \$0.00        | No                |
| MS18120 | City of Redondo Beach                 | 2/1/2019   | 9/30/2025         |                  | \$275,000.00   | \$275,000.00 | Install New Limited-Access CNG Infrastructu | \$0.00        | Yes               |
| MS18123 | City Rent A Bin DBA Serv-Wel Dispo    | 12/14/2018 | 2/13/2025         |                  | \$200,000.00   | \$200,000.00 | Install New Limited-Access CNG Infrastructu | \$0.00        | Yes               |
| MS18124 | County Sanitation Districts of Los An | 7/31/2019  | 2/28/2027         |                  | \$275,000.00   | \$275,000.00 | Install New Limited-Access CNG Infrastructu | \$0.00        | No                |
| MS18125 | U.S. Venture                          | 5/9/2019   | 8/8/2025          |                  | \$200,000.00   | \$200,000.00 | Install New Limited-Access CNG Infrastructu | \$0.00        | Yes               |

**Total: 54**

| Cont.# | Contractor | Start Date | Original End Date | Amended End Date | Contract Value | Remitted | Project Description | Award Balance | Billing Complete? |
|--------|------------|------------|-------------------|------------------|----------------|----------|---------------------|---------------|-------------------|
|--------|------------|------------|-------------------|------------------|----------------|----------|---------------------|---------------|-------------------|

### **FY 2018-2021 Contracts**

#### **Open Contracts**

|         |                                      |           |            |  |                |              |   |                |    |
|---------|--------------------------------------|-----------|------------|--|----------------|--------------|---|----------------|----|
| MS21002 | Better World Group Advisors          | 11/1/2019 | 12/31/2022 |  | \$265,079.00   | \$114,490.05 | Programmatic Outreach Services              | \$150,588.95   | No |
| MS21004 | Los Angeles County MTA               | 1/7/2021  | 5/31/2023  |  | \$2,188,899.00 | \$0.00       | Clean Fuel Bus Service to Dodger Stadium    | \$2,188,899.00 | No |
| MS21005 | Southern California Association of G | 5/5/2021  | 1/31/2024  |  | #####          | \$0.00       | Implement Last Mile Goods Movement Progr    | #####          | No |
| MS21006 | Geographics                          | 4/1/2021  | 6/20/2023  |  | \$12,952.00    | \$2,661.00   | Hosting & Maintenance of the MSRC Websit    | \$10,291.00    | No |
| MS21010 | MHX, LLC                             | 9/29/2021 | 1/28/2028  |  | \$569,275.00   | \$0.00       | Deploy One Zero-Emission Overhead Crane     | \$569,275.00   | No |
| MS21011 | RDS Logistics Group                  | 1/21/2022 | 7/20/2028  |  | \$808,500.00   | \$0.00       | Deploy 3 Zero-Emission Yard Tractors and    | \$808,500.00   | No |
| MS21014 | Green Fleet Systems, LLC             | 8/31/2021 | 8/30/2027  |  | \$500,000.00   | \$0.00       | Deploy up to 5 Near Zero Emission Trucks    | \$500,000.00   | No |
| MS21015 | Premium Transportation Services, In  | 9/22/2021 | 5/21/2027  |  | \$1,500,000.00 | \$0.00       | Deploy up to 15 Near-Zero Emissions Truck   | \$1,500,000.00 | No |
| MS21017 | MHX, LLC                             | 9/29/2021 | 9/28/2030  |  | \$1,900,000.00 | \$0.00       | Deploy up to 10 Zero-Emission Trucks & Infr | \$1,900,000.00 | No |
| MS21018 | Pac Anchor Transportation, Inc.      | 8/17/2021 | 8/16/2027  |  | \$2,300,000.00 | \$0.00       | Deploy up to 23 Near Zero Emission Trucks   | \$2,300,000.00 | No |

**Total: 10**

#### **Pending Execution Contracts**

|         |                                    |  |  |  |                |        |   |                |    |
|---------|------------------------------------|--|--|--|----------------|--------|---|----------------|----|
| MS21007 | Penske Truck Leasing Co., L.P.     |  |  |  | \$1,000,000.00 | \$0.00 | Deploy 5 Zero-Emission Yard Tractors        | \$1,000,000.00 | No |
| MS21008 | CMA CGM (America) LLC              |  |  |  | \$3,000,000.00 | \$0.00 | Deploy 2 Zero-Emission Rubber Tire Gantry   | \$3,000,000.00 | No |
| MS21009 | ITS Technologies & Logistics, LLC  |  |  |  | \$1,686,900.00 | \$0.00 | Deploy 12 Zero-Emission Yard Tractors       | \$1,686,900.00 | No |
| MS21012 | Amazon Logistics, Inc.             |  |  |  | \$4,157,710.00 | \$0.00 | Deploy up to 10 Zero-Emission and 100 Nea   | \$4,157,710.00 | No |
| MS21013 | 4 Gen Logistics                    |  |  |  | \$7,000,000.00 | \$0.00 | Deploy 40 Zero Emssion Trucks               | \$7,000,000.00 | No |
| MS21016 | Ryder Integrated Logistics, Inc.   |  |  |  | \$3,169,746.00 | \$0.00 | Procure Two Integrated Power Centers and    | \$3,169,746.00 | No |
| MS21019 | Volvo Financial Services           |  |  |  | \$3,930,270.00 | \$0.00 | Lease up to 14 Zero-Emission Trucks and Pr  | \$3,930,270.00 | No |
| MS21021 | CMA CGM (America) LLC              |  |  |  | \$1,946,463.00 | \$0.00 | Deploy up to 13 Near Zero Emission Trucks   | \$1,946,463.00 | No |
| MS21022 | Orange County Transportation Autho |  |  |  | \$289,054.00   | \$0.00 | Implement Special Transit Service to the Or | \$289,054.00   | No |
| MS21023 | BNSF Railway Company               |  |  |  | \$1,313,100.00 | \$0.00 | Install EV Charging Infrastructure          | \$1,313,100.00 | No |

**Total: 10**

#### **Declined/Cancelled Contracts**

|         |                |  |  |  |                |        |   |                |    |
|---------|----------------|--|--|--|----------------|--------|---|----------------|----|
| MS21020 | Sea-Logix, LLC |  |  |  | \$2,300,000.00 | \$0.00 | Deploy up to 23 Near-Zero Emssions Trucks | \$2,300,000.00 | No |
|---------|----------------|--|--|--|----------------|--------|---|----------------|----|

**Total: 1**

#### **Closed Contracts**

|         |                                    |           |           |  |                |              |   |              |     |
|---------|------------------------------------|-----------|-----------|--|----------------|--------------|---|--------------|-----|
| MS21001 | Los Angeles County MTA             | 8/30/2019 | 7/29/2020 |  | \$1,148,742.00 | \$285,664.87 | Implement Special Transit Service to Dodger | \$863,077.13 | Yes |
| MS21003 | Orange County Transportation Autho | 7/8/2020  | 5/31/2021 |  | \$468,298.00   | \$241,150.48 | Provide Express Bus Service to the Orange   | \$227,147.52 | Yes |

**Total: 2**

BOARD MEETING DATE: March 4, 2022

AGENDA NO. 28

REPORT: California Air Resources Board Monthly Meeting

SYNOPSIS: The California Air Resources Board held meetings on February 10, 2022, and February 24 & 25, 2022. The following are summaries of the meetings.

RECOMMENDED ACTION:  
Receive and file.

Gideon Kracov, Member  
South Coast AQMD Governing Board

ft

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The California Air Resources Board (CARB or Board) held a meeting remotely on February 10, 2022 via a web-based videoconferencing service. The key item presented is summarized below.

### **DISCUSSION ITEM**

#### **22-2-1: Public Meeting to Consider Assembly Bill 617 Community Air Protection Program – Fourth Annual Selection of Communities**

The Board approved the fourth annual selection of new communities for the Community Air Protection Program (Program). The Program was developed by CARB as directed by Assembly Bill 617 (C. Garcia, Stats. of 2017) to reduce exposure in communities most impacted by air pollution. The Board selected two new communities to join the fifteen communities previously selected. The communities selected will see additional focused action to reduce air pollution exposure through the development and implementation of community emissions reduction programs and/or community air monitoring. The new communities selected are the East Oakland Community in the Bay Area Air Quality Management District and the International Border Community (San Ysidro/Otay Mesa) in the San Diego Air Pollution Control District. Both communities were selected to develop a Community Emissions Reduction Program to improve air quality in the community neighborhoods. In addition, the San Ysidro/Otay Mesa community was also selected to develop a community air monitoring plan. The communities will work in partnership with their local air district in crafting community-

specific plans to reduce both air pollution emissions and exposures using a variety of strategies based on incentives, enhanced enforcement, and rulemaking. Staff also discussed the need to reexamine the program and its approach to better serve communities most impacted by air pollution.

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The California Air Resources Board (CARB or Board) held a meeting remotely on February 24, 2022 via a web-based videoconferencing service. The key items presented are summarized below.

### **DISCUSSION ITEMS**

#### **22-3-1: Public Hearing to Consider Proposed 2021 Amendments to Area Designations for State Ambient Air Quality Standards**

The Board approved amendments to the California area designation regulations to reflect current air quality data. The area designations are labels that describe the healthfulness of the air quality in each area. The Health and Safety Code section 39608 requires CARB to annually review air quality designations for areas in California with respect to the State ambient air quality standards, and to amend the designations if appropriate. Based on a review of air quality data collected during 2018 through 2020, the Board changed the designation of several areas in California. For the State nitrogen dioxide (NO<sub>2</sub>) standard, the Board changed the designation of the CA Highway 60 near-road portion of San Bernardino, Riverside, and Los Angeles Counties in the South Coast Air Basin from nonattainment to attainment. For the State suspended particulate matter (PM<sub>10</sub>) standards, the Board changed the designation of Mendocino County in the North Coast Air Basin from nonattainment to attainment, and for the State fine particulate matter (PM<sub>2.5</sub>) standard, the Board changed the designation of Santa Barbara County in the South Central Coast Air Basin from unclassified to attainment.

#### **22-3-3: Public Hearing to Consider Proposed Amendments to the Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate**

The Board approved amendments to the Transport Refrigeration Units Airborne Toxic Control Measure (TRU ATCM). The TRU ATCM was first adopted in 2004 to reduce diesel particulate matter (PM) emissions and resulting health risk from diesel-powered TRUs used to control the environment of temperature-sensitive products transported in insulated trucks, trailers, shipping containers, or railcars, as well as diesel-powered TRU generator sets that provide electric power to electrically-powered refrigeration units of any kind. The TRU ATCM amendments will achieve additional emission reductions by requiring the transition of diesel-powered truck TRUs to zero-emission, a diesel particulate matter (PM) emission standard for newly manufactured non-truck TRU engines, the use of lower global warming potential (GWP) refrigerant, facility registration and reporting, expanded TRU reporting and labeling, and fees. The TRU



ATCM amendments will help meet the State's air quality and climate goals, in addition to the Governor's Executive Order N-79-20, which set a goal for 100 percent zero-emission off-road vehicles and equipment in the State by 2035.

**22-3-6: Public Meeting to Hear an Informational Update on the 2022 State Strategy for the State Implementation Plan**

The Board heard an informational update on the Draft 2022 State Strategy for the State Implementation Plan (2022 State SIP Strategy). The Draft 2022 State SIP Strategy describes the proposed control measures and emissions reductions from State-regulated sources to support local air districts in attaining the 70 parts per billion (ppb) 8-hour ozone standard over the next 15 years, while also prioritizing early emission reductions for near-term ozone and particulate matter deadlines. Controlling ozone precursor emissions, in particular oxides of nitrogen (NO<sub>x</sub>), is key to attaining the federal ozone standards across the State. Since mobile sources account for about two-thirds of NO<sub>x</sub> emissions statewide, many nonattainment areas in California will need significant reductions from State measures to meet the 70 ppb 8-hour ozone standard attainment deadlines. With the 2022 State SIP Strategy, CARB is exploring and proposing an unprecedented variety of new measures to reduce emissions from the sources under our authority using all mechanisms available. The Draft 2022 State SIP Strategy identifies the control measures and emissions reductions necessary to support attainment of the 70 ppb 8-hour ozone standard. The Board will consider the final 2022 State SIP Strategy later this summer.

**South Coast AQMD Staff Comments/Testimony:** Staff noted the need for coordination between South Coast AQMD and CARB in developing a plan of action to achieve the substantial emission reductions required to bring clean air to our state and region; and highlighted the need for significant federal action to control sources subject to federal regulation, the need to implement all commercially-available technology today to get emission reductions as soon as feasible, and the need for multi-agency coordination to ensure the availability of zero-emission fuels and infrastructure at scale.

**22-3-5: Public Meeting to Hear an Overview of the Development of the 2022 Scoping Plan Update**

The Board heard an informational update on development of the 2022 Climate Change Scoping Plan (2022 Scoping Plan Update), as required under Assembly Bill (AB) 32 (Nunez, Stats. 2006, Chap. 488). In June 2021, CARB in collaboration with other State agencies, initiated the development of the 2022 Scoping Plan Update to assess progress towards achieving the Senate Bill (SB) 32 (Pavley, Stats. of 2016) target of reducing statewide greenhouse gas emissions to 40 percent below 1990 levels by 2030 and achieving carbon neutrality no later than 2045. Achieving carbon neutrality in California will require moving the State away from fossil fuel combustion and also drastically reducing air pollution disparities that persist in disadvantaged and low-income communities, while maintaining economic and job growth in California.

CARB staff provided the Board with an overview of the 2022 Scoping Plan Update, including specific statutory requirements and the public process guiding the development of the Update, key policy topics, the draft energy and industry and natural and working lands scenarios being modeled, and next steps prior to the public release of the draft 2022 Scoping Plan Update. The Board also heard an update on staff engagement with the AB 32 Environmental Justice Advisory Committee and the Committee's role in supporting development of the 2022 Scoping Plan Update. The Board will hold joint meetings with the EJAC, hear additional updates on the Scoping Plan development, and consider the Scoping Plan later in 2022.

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The California Air Resources Board (CARB or Board) held a meeting remotely on February 25, 2022 via a web-based videoconferencing service. The key item presented is summarized below.

### **DISCUSSION ITEM**

#### **22-3-4: Public Meeting to Hear an Overview of Community Air Grants Program and 2021 Awardees**

The Board heard an overview of the Community Air Grants Program from CARB staff and grant award winners. CARB staff also presented the Board with an overview of the 2021 grant awardees selected for the Fiscal Year 2019-2020 community air grants. The Community Air Grants Program is part of CARB's overall efforts to implement Assembly Bill (AB) 617 (C. Garcia, Stats. of 2017) by providing funds to California community-based organizations and tribes to establish and support community-focused approaches to improving air quality at the neighborhood level. For Fiscal Year (FY) 2019-2020, the Legislature appropriated 10 million dollars for Community Air Grants which CARB awarded to 39 community organizations and Native American Tribes in California.

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### **Attachments**

CARB February 10, 2022 and February 24 & 25, 2022 Meeting Agendas



# Public Meeting Agenda

**Thursday, February 10, 2022**

In accordance with [Assembly Bill 361](#) (Gov. Code § 11133) as extended by Governor Newsom's Executive Order [N-1-22](#), the February 10, 2022, meeting of the California Air Resources Board will not have a physical location open to the public. It will be a remote-only meeting conducted via a web-based videoconferencing service called Zoom. Members of the public who wish to comment verbally can register for the webinar.

**[Register for the Webinar](#) – for those who wish to comment verbally at the hearing.**

Alternatively, during the Board Meeting, members of the public can offer verbal comments by calling in via telephone. Members of the public do not have to register beforehand if they call in using the number below.

Phone Number: (669) 900-6833

Webinar ID: 881 4231 3780

To only watch the Board Meeting and not provide verbal comments, please view the webcast. The webcast is the same video stream offered by the California Air Resources Board (CARB or Board) during normal Board Meetings. If you do not wish to provide verbal comments, we strongly recommend watching the webcast as this will free up space on the webinar for those who are providing verbal comments.

**[Webcast](#) – for those who only plan to observe the hearing.**

**[How to Participate in the Remote Board Meeting](#)**

**[Como Participar en la Reunión del Consejo a Distancia](#)**

**[Agenda de la Reunión del Consejo del 10 de febrero de 2022](#)**

Spanish interpretation will be provided for the February 10, 2022, Board Meeting.

**Thursday, February 10, 2022 @ 4:00 p.m.**

**Discussion Item:**

## **22-2-1: Public Meeting to Consider Assembly Bill 617 Community Air Protection Program – Fourth Annual Selection of Communities**

The Board will consider for selection staff's proposed list of communities for the development of community emission reduction programs and/or community monitoring via the Community Air Protection Program. The Board will also consider adopting a California Environmental Quality Act exemption as part of its action.

- [More Information](#)
- [Public Meeting Notice](#)

- [Staff Report](#)
- [Item Summary](#)
- [Meeting Presentation](#)
- [Proposed Resolution](#)
- [Submit Written Comments](#)
- [View Public Comments](#)

## **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. The public will also have an opportunity to [submit written comments](#) for open session the morning of the Board Meeting.

## **Other Information**

[Submit Comments Electronically the Day of the Board Meeting](#)

[View Submitted Comments](#)

Please Note: PowerPoint presentations to be displayed during public comment at the Board meeting must be electronically submitted via email to the Clerks' Office at [cotb@arb.ca.gov](mailto: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

[cotb@arb.ca.gov](mailto:cotb@arb.ca.gov) or (916) 322-5594

CARB Homepage: [www.arb.ca.gov](http://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 [cotb@arb.ca.gov](mailto:cotb@arb.ca.gov) or at (916) 322-5594 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.

## **Acomodación Especial**

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 alterno u otro idioma
- Una acomodación razonable relacionados con una incapacidad

Para solicitar estas comodidades especiales o necesidades de otro idioma, por favor contacte la oficina del Consejo al (916) 322-5594 o por correo electronico al [cotb@arb.ca.gov](mailto:cotb@arb.ca.gov) 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.



# Public Meeting Agenda

**Thursday, February 24, 2022 and  
Friday, February 25, 2022**

In accordance with [Assembly Bill 361](#) (Gov. Code § 11133) as extended by Governor Newsom's Executive Order [N-1-22](#), the February 24-25, 2022, meeting of the California Air Resources Board will not have a physical location open to the public. It will be a remote-only meeting conducted via a web-based videoconferencing service called Zoom. Members of the public who wish to comment verbally can register for the webinar.

**[Register for the Webinar](#) – for those who wish to comment verbally at the hearing.**

Alternatively, during the Board Meeting, members of the public can offer verbal comments by calling in via telephone. Members of the public do not have to register beforehand if they call in using the number below.

Phone Number: (669) 900-6833  
Webinar ID: 839 2661 8079

To only watch the Board Meeting and not provide verbal comments, please view the webcast. The webcast is the same video stream offered by CARB during normal Board Meetings. If you do not wish to provide verbal comments, we strongly recommend watching the webcast as this will free up space on the webinar for those who are providing verbal comments.

**[Webcast](#) – for those who only plan to observe the hearing.**

**[How to Participate in the Remote Board Meeting](#)  
[Agenda de la Reunión Pública](#)  
[¿Cómo participar en la Reunión Remota del Consejo?](#)**

**Thursday, February 24, 2022 @ 9:00 a.m.**

## **Discussion Items:**

The following agenda items may be heard in a different order at the Board meeting.

### **22-3-1: Public Hearing to Consider Proposed 2021 Amendments to Area Designations for State Ambient Air Quality Standards**

The Board will consider proposed amendments to the regulations designating areas of California as attainment, nonattainment, nonattainment-transitional, or unclassified for pollutants for the State ambient air quality standards. Based on 2018 to 2020 air quality data, a total of three changes to area designations are proposed for NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> air quality standards. The Board will consider adopting a California Environmental Quality Act exemption as part of its action.

- [Formal Rulemaking Page](#)
- [Public Meeting Notice](#)
- [Staff Report](#)
- [Item Summary](#)
- [Proposed Resolution](#)
- [Submit Written Comments](#)
- [View Public Comments](#)

### **22-3-3: Public Hearing to Consider Proposed Amendments to the Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate**

The Board will consider proposed amendments to the TRU Airborne Toxic Control Measure. The proposed amendments will achieve additional emission and health risk reductions by requiring zero-emission truck TRUs, a particulate matter (PM) emission standard for newly-manufactured non-truck TRU engines, and the use of lower global warming potential refrigerants. This is the second of two Board hearings on this item; the Board will also consider certifying the Final Supplemental Environmental Analysis and approving the written response to comments on the Draft Supplemental Environmental Analysis.

- [Formal Rulemaking Page](#)
- [Item Summary](#)
- [Meeting Presentation](#)
- [Proposed Resolution](#)
- [Submit Written Comments](#)
- [View Public Comments](#)

### **22-3-6: Public Meeting to Hear an Informational Update on the 2022 State Strategy for the State Implementation Plan**

The Board will hear an informational update on the development of the 2022 State Strategy for the State Implementation Plan (SIP) and Draft 2022 State SIP Strategy, and next steps for Board and public engagement. This item is informational; there will not be a proposal before the Board for it to act on at this meeting. Staff plans to return to the Board with a formal proposal later in 2022.

- [More Information](#)
- [Draft 2022 State SIP Strategy](#)
- [Item Summary](#)
- [Meeting Presentation](#)
- [Submit Written Comments](#)
- [View Public Comments](#)

### **22-3-5: Public Meeting to Hear an Overview of the Development of the 2022 Scoping Plan Update**

The Board will hear an informational update on the 2022 Scoping Plan development process; analytical work underway; and next steps for Board, Environmental Justice Advisory Committee, and public engagement.

- [More Information](#)

- [Item Summary](#)
- [Meeting Presentation](#)
- [Submit Written Comments](#)
- [View Public Comments](#)

**Friday, February 25, 2022 @ 8:30 a.m.**

## **Discussion Item:**

### **22-3-4: Public Meeting to Hear an Overview of Community Air Grants Program and 2021 Awardees**

The Board will hear an informational update on the Community Air Grants Program and staff's conditional award of \$10 million in grants to support 39 community-focused efforts pursuant to Assembly Bill 617 (C. Garcia, Chapter 136, Statutes of 2017) and in support of the California Air Resources Board's Community Air Protection Program.

- [More Information](#)
- [Item Summary](#)
- [Meeting Presentation](#)
- [Submit Written Comments](#)
- [View Public Comments](#)

## **Closed Session**

The Board may hold a closed session, as authorized by Government Code section 11126(a)(1), and, as authorized by Government Code section 11126(e), to confer with, and receive advice from, its legal counsel regarding the following pending or potential litigation:

*Alliance for California Business v. California State Transportation Agency, et al.*, Sacramento County Superior Court, Case No. 34-2016-80002491.

*American Lung Association, et al. v. United States Environmental Protection Agency, et al.* (D.C. Cir. 2021) 985 F.3d 914, cert. granted sub nom. *Westmoreland Mining Holdings v. EPA* (U.S., Oct. 29, 2021, No. 20-1778).

*Best Energy Solutions & Technology Corp., et al v. California Air Resources Board, et al.*, Kern County Superior Court, Case No. BCV-20-102198.

*California v. Stout, et al.*, United States District Court, Central District of California, Case No. 2:20-cv-00371.

*California v. Wheeler, et al.*, United States Court of Appeals, District of Columbia Circuit, Case No. 19-1239.

*California, et al. v. United States Environmental Protection Agency*, United States Court of Appeals for the District of Columbia Circuit, Case No. 21-1024.

*California, et al. v. United States Environmental Protection Agency, et al.*, United States Court of Appeals, District of Columbia Circuit, Case No. 21-1014.

*California Natural Gas Vehicle Coalition v. California Air Resources Board, et al.*, Fresno County Superior Court, Case No. 20CECG02250.



*Clean Energy Renewable Fuels, LLC v. California Air Resources Board*, Orange County Superior Court, Case No. 30-2020-01167039-CU-WM-CJC.

*Competitive Enterprise Inst. v. NHTSA*, United States Court of Appeals, District of Columbia Circuit, Case No. 20-1145 (consolidated with No. 20-1167).

*Environmental Defense Fund, et al., v. Andrew Wheeler, et al.*, United States Court of Appeals, District of Columbia Circuit, Case No. 20-1360.

*Friends of Oceano Dunes, Inc. v. California Coastal Commission, et al.*, U.S. District Court for the Central District of California, Case No. 2:17-cv-8733.

*South Coast Air Quality Management District v. City of Los Angeles, et al.*, Los Angeles County Superior Court, Case No. 20STCP02985.

*State of California v. United States Environmental Protection Agency*, United States Court of Appeals, District of Columbia Circuit, Case No. 18-1096.

*State of California v. Wheeler et. al.*, District of Columbia Circuit, Case No. 19-1239, consolidated under No. 19-1230 along with Nos. 19-1241, 19-1242, 19-1243, 19-1245, 19-1246, and 19-1249.

*State of California, et al., v. Andrew Wheeler, et al.*, United States Court of Appeals, District of Columbia Circuit, Case No. 20-1359.

*State of California, et al. v. David Bernhardt, et al.*, United States District Court, Northern District of California, Case No. 3:18-cv-5712-DMR; United States Court of Appeals, Ninth Circuit, Case No. 20-16793.

*State of California, et al. v. United States Environmental Protection Agency*, United States Court of Appeals, District of Columbia Circuit, Case No. 21-1018.

*State of New York, et al. v. United States Environmental Protection Agency*, United States Court of Appeals, District of Columbia Circuit, Case No. 21-1026.

*State of New York, et al. v. United States Environmental Protection Agency, et al.*, United States Court of Appeals, District of Columbia Circuit, Case No. 21-1028.

*State of Massachusetts v. EPA*, United States Court of Appeals, District of Columbia Circuit, Case No. 20-1265.

*State of New York, et al. v. Andrew Wheeler and the United States Environmental Protection Agency*, U.S. District Court, District of Columbia, Case No. 1:18-cv-00773.

*State of North Dakota v. United States Environmental Protection Agency*, U.S. Court of Appeals, District of Columbia Circuit, Case No. 15-1381.

*State of North Dakota, et al. v. United States Environmental Protection Agency*, U.S. Court of Appeals, District of Columbia Circuit, Case No. 16-1242.

*State of Wyoming, et al. v. United States Department of the Interior, et al.*, U.S. District Court, District of Wyoming, Case No. 16-CV-285-SWS; United States Court of Appeals, Tenth Circuit, Case No. 20-8073.

*Truck Trailer Manufacturers Association, Inc. v. United States Environmental Protection Agency, et al.*, U.S. Court of Appeals, District of Columbia Circuit, Case No. 16-1430.

*People v. Southern California Gas Company*, Los Angeles Superior Court, Case No. BC 602973.

*The Two Hundred, et al. v. California Air Resources Board, et al.*, Fresno County Superior Court, Case No. 18CECG01494.

*Western States Petroleum Association v. California Air Resources Board*, Los Angeles County Superior Court, Case No. 20STCP03138x.

*Westmoreland Mining v. EPA*, United States Court of Appeals, District of Columbia Circuit, Case No. 20-1160.

*W.O. Stinson & Son LTD. v. Western Climate Initiative, Inc.*, Ontario Canada Superior Court, Case No. CV-20-00083726-0000.

## **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. The public will also have an opportunity to [submit written comments](#) for open session the morning of the Board Meeting.*

## **Other Information**

[Submit Comments Electronically the Day of the Board Meeting](#)

[View Submitted Comments](#)

*Please Note:* PowerPoint presentations to be displayed during public comment at the Board meeting must be electronically submitted via email to the Clerks' Office at [cotb@arb.ca.gov](mailto: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

[cotb@arb.ca.gov](mailto:cotb@arb.ca.gov) or (916) 322-5594

CARB Homepage: [www.arb.ca.gov](http://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 [cotb@arb.ca.gov](mailto:cotb@arb.ca.gov) or at (916) 322-5594 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.

## **Acomodación Especial**

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 alterno u otro idioma;
- Una acomodación razonable relacionados con una incapacidad.

Para solicitar estas comodidades especiales o necesidades de otro idioma, por favor contacte la oficina del Consejo al (916) 322-5594 o por correo electronico al [cotb@arb.ca.gov](mailto:cotb@arb.ca.gov) 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.

BOARD MEETING DATE: March 4, 2022

AGENDA NO. 30

**PROPOSAL:** Determine That Proposed Amendments to Rule 1115 – Motor Vehicle Assembly Line Coating Operations, are Exempt from CEQA and Amend Rule 1115

**SYNOPSIS:** Rule 1115 - Motor Vehicle Assembly Line Coating Operations regulates VOC emissions from coatings and solvents used in operations conducted on motor vehicle assembly lines. Proposed Amended Rule 1115 will revise VOC emission limits consistent with VOC limits established under Reasonably Achievable Control Technology requirements. In addition, the proposed amendment will update definitions, recordkeeping, and testing requirements. This action is to adopt the Resolution: 1) Determining that the proposed amendments to Rule 1115 – Motor Vehicle Assembly Line Coating Operations, are exempt from the requirements of the California Environmental Quality Act, and 2) Amending Rule 1115 – Motor Vehicle Assembly Line Coating Operations.

**COMMITTEE:** Stationary Source, January 21, 2022, Reviewed

**RECOMMENDED ACTIONS:**

Adopt the attached Resolution:

1. Determining that the proposed amendments to Rule 1115 – Motor Vehicle Assembly Line Coating Operations, are exempt from the requirements of the California Environmental Quality Act; and
2. Amending Rule 1115 – Motor Vehicle Assembly Line Coating Operations.

Wayne Natri  
Executive Officer

SR:MK:MM:RC

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**Background**

Rule 1115 – Motor Vehicle Assembly Line Coating Operations was adopted on March 2, 1979, with the purpose of reducing emissions of VOCs resulting from coating operations conducted on motor vehicle assembly lines during the manufacturing of new motor vehicles.

The federal Clean Air Act requires a Reasonably Available Control Technology (RACT) demonstration to ensure South Coast AQMD rules are equally as stringent as regulations under other air agencies in California and throughout the United States. U.S. EPA issued Control Techniques Guidelines (CTG) for Automobile and Light-Duty Truck Assembly Coatings that are more stringent than the VOC emission limits contained in the current South Coast AQMD Rule 1115. In addition, the VOC emission limits in Rule 1115 for several coating types are less stringent than those in the corresponding rules from other regulatory agencies. To fulfill RACT requirements, PAR 1115 will address these deficiencies.

### **Public Process**

The development of PAR 1115 was conducted through a public process. A Public Workshop was held remotely on January 6, 2022. As part of this rulemaking process, staff had individual meetings with affected facilities and conducted site visits at facilities subject to this rule.

### **Proposed Amendments**

PAR 1115 updates VOC limits for coatings used in automotive assembly line processes and for other miscellaneous materials used at motor vehicle assembly coating operations to comply with RACT requirements. The update incorporates VOC limits recommended in the U.S. EPA 2008 CTG, includes new terms and definitions, and updates existing terms per definitions contained in the 2008 CTG and other sources. In addition, recordkeeping and testing requirements are updated.

### **Emission Reductions**

Although PAR 1115 proposes to lower the VOC emission limits for coatings used in the motor vehicle assembly line and includes VOC emission limits for miscellaneous materials used at motor vehicle assembly coating operations, there are no anticipated emissions reductions associated with this proposal. Existing coatings used at facilities subject to PAR 1115 have been determined to already be compliant with the proposed emission limits.

### **Key Issue**

Throughout the rulemaking process, staff worked closely with stakeholders to address their comments and issues regarding the proposed emission standards, monitoring, and recordkeeping requirements.

On February 17, 2022, staff received a comment letter from a stakeholder requesting:

- Exemption for UV/EB/LED materials
- Inclusion of Energy Curable Materials definition
- Inclusion of thin film UV/EB/LED materials test method
- Exclusion of transfer efficiency requirements for UV/EB/LED materials

The requested changes are not necessary since UV/EB/LED materials may be used provided they meet the VOC emission limits in the proposed amended rule. Since coatings and solvents are needed with a UV/EB/LED curing technology, exempting any process that use UV/EB/LED could result in higher VOC emissions if these materials do not meet VOC limits in the proposed amended rule and rules regulating clean-up solvents.

### **California Environmental Quality Act**

Pursuant to the California Environmental Quality Act (CEQA) Guidelines Sections 15002(k) and 15061, the proposed project (PAR 1115) is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3). A Notice of Exemption has been prepared pursuant to CEQA Guidelines Section 15062 and is included as Attachment H to this Board letter. If PAR 1115 is approved, the Notice of Exemption will be filed for posting with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino counties, and with the State Clearinghouse of the Governor's Office of Planning and Research.

### **Socioeconomic Analysis**

The proposed amendments to Rule 1115 do not impose any additional costs and do not result in any adverse socioeconomic impacts. As a result, no socioeconomic analysis is required under California Health and Safety Code Sections 40440.8 and 40728.5.

### **AQMP and Legal Mandates**

Pursuant to Health & Safety Code Section 40460 (a), South Coast AQMD is required to adopt an Air Quality Management Plan (AQMP) to achieve and maintain the state and federal ambient air quality standards for the South Coast Air Basin. South Coast AQMD is required to adopt rules and regulations that carry out the objectives of the AQMP. In accordance with CAA requirements, PAR 1115 is updated to meet the EPA's 2008 CTG and to fulfill RACT requirements.

### **Resource Impacts**

Existing staff resources are adequate to implement the proposed amendments.

### **Attachments**

- A. Summary of Proposal
- B. Key Issues and Responses
- C. Rule Development Process
- D. Key Contacts List
- E. Resolution
- F. Proposed Amended Rule 1115
- G. Final Staff Report
- H. Notice of Exemption from CEQA
- I. Board Presentation

## ATTACHMENT A

### SUMMARY OF PROPOSAL

#### Proposed Amended Rule 1115 – Motor Vehicle Assembly Line Coating Operations

##### *Definitions*

- Terms and definitions as contained in the U.S. EPA 2008 Control Techniques Guidelines for Automobile and Light-Duty Truck Assembly Coatings and other source-specific rules are introduced or modified

##### *Emissions Limits*

- VOC emission limits are revised or included to meet the limits recommended in the U.S. EPA 2008 Control Techniques Guidelines for Automobile and Light-Duty Truck Assembly Coatings
- Prohibition of coatings that contain cadmium or hexavalent chromium

##### *Transfer Efficiency*

- Specifies methods of coating application that meet minimum transfer efficiency standards

##### *Monitoring, Reporting, and Recordkeeping*

- Maintain daily records of operation time, quantity of product, and pollutant mass emission rates
- Maintain manufacturer specification sheets, safety data sheets, technical data sheets, or other air quality data sheets that contain the necessary information to determine compliance with the emission limits

##### *Exemptions*

- Removes exemption for trunk coatings, interior coatings, sealers, deadeners, and accent and stripe coatings

## ATTACHMENT B

### KEY ISSUES AND RESPONSES

#### Proposed Amended Rule 1115 – Motor Vehicle Assembly Line Coating Operations

Throughout the rulemaking process, staff has worked closely with stakeholders from facilities and with various other stakeholders to address their comments and resolve any key issues.

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On February 17, 2022, staff received a comment letter from a stakeholder requesting:

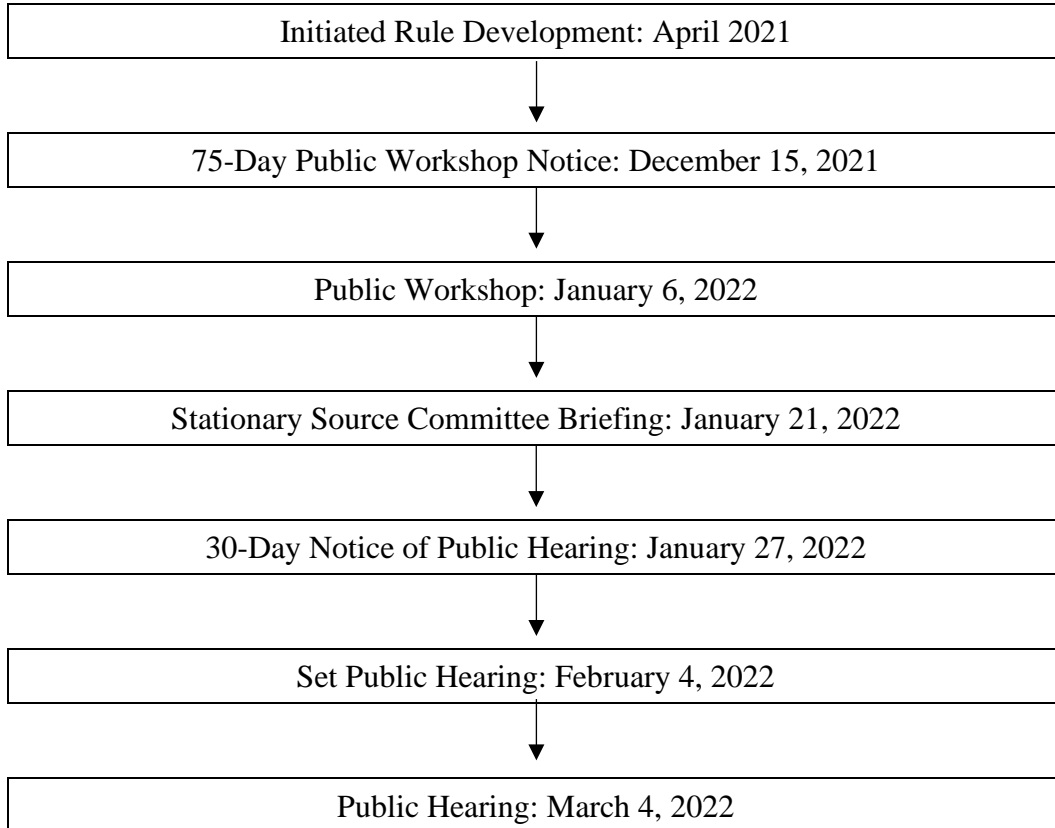
- Exemption for UV/EB/LED materials
- Inclusion of definition of Energy Curable Materials
- Inclusion of test method for thin film UV/EB/LED materials
- Exclusion from transfer efficiency requirements for UV/EB/LED materials

The requested changes are not necessary since UV/EB/LED materials are not precluded from being used to comply with rule. The requested changes are also outside the scope of the amendments to align the rule with the 2008 CTG. Finally, an exemption could result in potential backsliding and the EPA would need to approve.



**ATTACHMENT C  
RULE DEVELOPMENT PROCESS**

Proposed Amended Rule 1115 – Motor Vehicle Assembly Line Coating Operations



**Eleven (11) months spent in rule development.**

**One (1) Public Workshop.**

**One (1) Stationary Source Committee Meeting**

## **ATTACHMENT D**

### **KEY CONTACTS LIST**

Proposed Amended Rule 1115 – Motor Vehicle Assembly Line Coating Operations  
*(listed alphabetically)*

- Amrep (Ontario)
- El Dorado National (Riverside)
- Fortress Resources, Royal Truck Bodies (Carson)
- Harbor Truck Bodies (Brea)
- Karma Automotive (Moreno Valley)
- Marathon Industries (Santa Clarita)
- Spartan Motors GTB (Montebello)
- TABC, Inc (Long Beach)
- Taylor Dunn Manufacturing (Anaheim)
- UniVersal Engineering (Alta Loma)

**Appendix A**

**South Coast AQMD Advisory Groups**

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## Technology Advancement Advisory Group<sup>1</sup>

Dr. Matt Miyasato, Chair ..... South Coast AQMD

Don Anair ..... Union of Concerned Scientists

Chris Cannon ..... Port of Los Angeles

\*Dr. Bill Robertson..... 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

Laura Renger..... Southern California Edison

\*Newly appointed member

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<sup>1</sup> Members as of February 18, 2022

## SB 98 Clean Fuels Advisory Group<sup>2</sup>

|                                |   |
|--------------------------------|---|
| Dr. Matt Miyasato, Chair ..... | South Coast AQMD  |
| Keith Brandis .....            | Volvo Group   |
| Dr. John Budroe .....          | California Environmental Protection Agency,<br>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, &<br>University of Nevada-Reno   |
| Dr. Wayne Miller .....         | University of California, Riverside,<br>College of Engineering, Center for Environmental<br>Research and Technology |
| Dr. Petros Ioannou .....       | University of Southern California<br>Director of the Center for Advanced Transportation<br>Technologies             |
| Dr. Scott Samuelson .....      | University of California, Irvine,<br>Combustion Laboratory/National Fuel Cell<br>Research Center                    |
| Dr. Robert Sawyer .....        | Sawyer Associates   |
| Dr. Andreas Truckenbrodt ..... | Independent Consultant in Fuel Cell Technologies  |
| *Ken Kelly .....               | National Renewable Energy Laboratory  |
| Dwight Robinson .....          | Mortimer & Wallace, Inc.  |

\*Newly appointed member

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<sup>2</sup> Members as of March 4, 2022

## **Appendix B**

### **Open Clean Fuels Contracts as of January 1, 2022**

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| Contract   | Contractor   | Project Title   | Start Term | End Term | South Coast AQMD \$ | Project Total \$ |
|--|--|---|------------|----------|---------------------|------------------|
| Electric / Hybrid Electric Technologies and Infrastructure |  |   |            |          |                     |                  |
| 14184  | Clean Fuel Connection, Inc.                              | DC Fast Charging Network Provider   | 04/04/14   | 06/30/23 | 390,000             | 1,210,000        |
| 16081  | Broadband Telecom Power Inc                              | Provide EV Hardware and Control System at SCAQMD Headquarters Including Installation Support, Warranty and Networking | 04/27/16   | 04/26/22 | 367,425             | 689,850          |
| 17105  | BYD Motors Inc   | Development and Demonstration of up to 25 Class 8 Battery Electric Drayage Trucks                                     | 04/14/17   | 10/13/23 | 2,294,436           | 8,942,400        |
| 17207  | Peterbilt Motors   | Development and Demonstration of up to 12 Class 8 Battery Electric Drayage Trucks                                     | 04/07/17   | 10/06/23 | 2,342,436           | 11,082,340       |
| 17225  | Volvo Technology of America LLC                          | Development and Demonstration of up to 2 Class 8 Battery Electric Drayage Trucks                                      | 06/09/17   | 03/31/22 | 1,741,184           | 11,065,938       |
| 17244  | Kenworth Truck Company                                   | Development & Demonstration of four Class 8 CNG Hybrid Electric Drayage Trucks  | 09/08/17   | 06/30/22 | 2,239,106           | 6,492,238        |
| 18129  | Electric Power Research Institute                        | Versatile Plug-In Auxiliary Power System Demonstration  | 06/28/18   | 04/30/23 | 125,000             | 273,000          |
| 18232  | Hyster-Yale Group Inc                                    | Electric Top-Pick Development, Integration & Demonstration  | 09/14/18   | 06/30/23 | 367,801             | 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 | 582,305             | 4,198,000        |
| 18287  | Evgo Services LLC  | Charging Station and Premises Agreement for Installation of One DCFC at SCAQMD Headquarters                           | 06/27/18   | 06/26/28 | 0                   | 0                |
| 19166  | Phoenix Cars LLC dba Phoenix Motorcars                   | Battery Electric Shuttle Bus Replacement Project  | 01/31/19   | 01/30/22 | 0                   | 7,311,456        |
| 19182  | Los Angeles County                                       | Disburse donated Mercedes-Benz USA, LLC. Electric Vehicle Chargers  | 01/03/19   | 01/03/22 | 0                   | 0                |
| 19183  | Southern California Public Power Authority (SCPPA)       | Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers   | 01/10/19   | 01/10/22 | 0                   | 0                |
| 19190  | Daimler Trucks North America LLC                         | Zero Emission Trucks and EV Infrastructure Project  | 12/18/18   | 06/17/22 | 8,230,072           | 31,340,144       |
| 19202  | City of Compton  | Disburse donated Mercedes-Benz USA, LLC. Electric Vehicle Chargers  | 04/11/19   | 04/10/22 | 0                   | 0                |
| 19250  | Baldemar Caraveo   | Disburse donated Mercedes-Benz USA, LLC. Electric Vehicle Chargers  | 03/06/19   | 03/06/22 | 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                |

| Contract  | Contractor                     | Project Title  | Start Term | End Term | South Coast AQMD \$ | Project Total \$ |
|---|--------------------------------|--|------------|----------|---------------------|------------------|
| Electric / Hybrid Electric Technologies and Infrastructure (cont'd) |                                |  |            |          |                     |                  |
| 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                |
| 19278   | Volvo Group North America, LLC | Low Impact Green Heavy Transport Solutions (LIGHTS) - Develop and Demonstrate Zero Emissions Heavy-Duty Trucks, Freight Handling Equipment, EV Infrastructure and Renewable Energy | 04/17/19   | 06/30/22 | 4,000,000           | 92,345,863       |
| 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                |
| 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                |

| Contract   | Contractor                         | Project Title   | Start Term | End Term | South Coast AQMD \$ | Project Total \$ |
|--|------------------------------------|---|------------|----------|---------------------|------------------|
| <b>Electric / Hybrid Electric Technologies and Infrastructure (cont'd)</b> |                                    |   |            |          |                     |                  |
| 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           |
| 20097  | Zeco Systems, Inc. DBA Greenlots   | Operate, Maintain and Network the EV Chargers   | 02/14/20   | 02/13/23 | 155,664             | 155,664          |
| 20124  | Volvo Technology of America LLC    | Develop & Demonstrate Battery-Electric Excavator & Wheel Loader   | 09/01/19   | 09/30/22 | 0                   | 2,000,000        |
| 20125  | Roush Cleantech, LLC               | Develop and Demonstrate Battery Electric Medium-Duty Truck  | 03/19/20   | 03/18/22 | 937,500             | 3,200,000        |
| 20168  | OMNITRANS                          | Disburse donated Mercedes-Benz USA, LLC Electric Vehicle Chargers   | 02/28/20   | 02/27/23 | 0                   | 0                |
| 20296  | Daimler Trucks North America LLC   | Deploy Zero Emission Electric Delivery Trucks   | 05/27/21   | 12/31/24 | 0                   | 12,310,000       |
| 21077  | Daimler Trucks North America LLC   | Develop and Demonstrate up to 8 Heavy-Duty Battery Electric Trucks and Transportable Fast-Charging          | 03/11/21   | 03/31/23 | 1,000,000           | 6,742,000        |
| 21153  | Volvo Group North America, LLC     | Switch-On: Develop and Deploy Seventy Heavy-Duty Battery Electric Vehicles                                  | 06/10/21   | 09/30/24 | 2,000,000           | 31,540,000       |
| <b>Engine Systems and Technologies</b>                                     |                                    |   |            |          |                     |                  |
| 17353  | Odyne Systems, LLC                 | Develop and Demo Medium-Heavy Duty (Class 5-7) Plug-In Hybrid Electric Vehicles for Work Truck Applications | 06/09/17   | 02/28/22 | 900,000             | 6,955,281        |
| 18194  | CALSTART                           | Develop and Demonstrate Near-Zero Emission Opposed Piston Engine  | 05/30/18   | 06/30/22 | 1,000,000           | 15,550,000       |
| 19439  | Cummins, Inc.                      | Natural Gas Engine and Vehicles Research and Development - Natural Gas Specific Combustion Design           | 08/30/19   | 08/29/23 | 250,000             | 10,996,626       |
| 20092  | Southwest Research Institute       | Natural Gas Engine and Vehicles Research and Development - Pent-Roof Medium Duty Natural Gas Engine         | 10/14/20   | 04/13/24 | 475,000             | 6,000,000        |
| 20158  | University of California Riverside | OnBoard Nox and PM Measurement Method   | 05/19/20   | 05/18/22 | 201,087             | 688,587          |
| 20199  | Agility Fuel Solutions LLC         | Develop a Near-Zero Natural Gas and Propane Conversion System for On-Road Medium-Duty Vehicles              | 07/01/21   | 06/30/22 | 453,500             | 1,834,000        |

| Contract  | Contractor                                    | Project Title  | Start Term | End Term | South Coast AQMD \$ | Project Total \$ |
|---|---|--|------------|----------|---------------------|------------------|
| <b>Engine Systems and Technologies (cont'd)</b>         |   |  |            |          |                     |                  |
| 20316   | US Hybrid                                     | Natural Gas Engine & Vehicles Research & Development - Plug-In Hybrid CNG Drayage Truck (PHET)   | 06/02/20   | 12/01/23 | 500,000             | 2,853,006        |
| <b>Fuel / Emission Studies</b>                          |   |  |            |          |                     |                  |
| 17276   | University of California Riverside, Ce-Cert   | Development of ECO-ITS Strategies for Cargo Containers   | 08/03/17   | 01/31/22 | 543,000             | 2,190,233        |
| 17286   | University of California Riverside            | In-Use Emissions Testing and Fuel Usage Profile of On-Road Heavy-Duty Vehicles                   | 06/09/17   | 03/31/22 | 300,000             | 1,625,000        |
| 21103   | University of California Riverside            | Perform Investigation Study of E15 Gasoline Fuel Effects   | 03/09/21   | 06/08/22 | 200,000             | 1,300,000        |
| 21169   | West Virginia University Research Corp        | Evaluation of Vehicle Maintenance Costs Between NG and Diesel Fueled On-Road Heavy-Duty Vehicles | 09/29/21   | 03/28/24 | 100,000             | 250,000          |
| <b>Fueling Infrastructure and Deployment (NG / RNG)</b> |   |  |            |          |                     |                  |
| 18336   | ABC Unified School District                   | FY2017-18 Alternative Fuel School Bus Replacement Program (3 CNG Buses)                          | 10/05/18   | 11/30/34 | 117,900             | 676,500          |
| 18337   | Alta Loma School District                     | FY 2017-18 Alternative Fuel School Bus Replacement Program (2 CNG Buses)                         | 10/05/18   | 11/30/34 | 78,600              | 423,000          |
| 18344   | Bellflower Unified School District            | FY 2017-18 Alternative Fuel School Bus Replacement Program (1 CNG Bus)                           | 09/07/18   | 11/30/34 | 39,300              | 225,500          |
| 18346   | Chaffey Joint Union High School District      | FY 2017-18 Alternative Fuel School Bus Replacement Program (6 CNG Buses)                         | 10/05/18   | 11/30/34 | 235,800             | 1,269,000        |
| 18348   | Cypress School District                       | FY 2017-18 Alternative Fuel School Bus Replacement Program (1 CNG Bus)                           | 09/07/18   | 11/30/34 | 39,300              | 211,500          |
| 18349   | Downey Unified School District                | FY 2017-18 alternative Fuel School Bus Replacement Program (4 CNG Buses)                         | 09/14/18   | 11/30/36 | 157,200             | 902,000          |
| 18350   | Fountain Valley School District               | FY2017-18 Alternative Fuel School Bus Replacement Program (1 CNG Bus)                            | 09/07/18   | 11/30/34 | 39,300              | 211,500          |
| 18351   | Fullerton Joint Union High School District    | FY2017-18 Alternative Fuel School Bus Replacement Program (4 CNG Buses)                          | 10/05/18   | 11/30/34 | 157,200             | 846,000          |
| 18355   | Huntington Beach Union High School District   | FY2017-18 Alternative Fuel School Bus Replacement Program (15 CNG Buses)                         | 10/05/18   | 11/30/34 | 589,500             | 3,382,500        |
| 18363   | Orange Unified School District                | FY 2017-18 Alternative Fuel School Bus Replacement Program (1 CNG Bus)                           | 09/14/18   | 11/30/34 | 39,300              | 225,500          |
| 18364   | Placentia-Yorba Linda Unified School District | FY2017-18 Alternative Fuel School Bus Replacement Program (6 CNG Buses)                          | 10/05/18   | 11/30/34 | 235,800             | 1,353,000        |

| Contract  | Contractor                                    | Project Title   | Start Term | End Term | South Coast AQMD \$ | Project Total \$ |
|---|---|---|------------|----------|---------------------|------------------|
| Fueling Infrastructure and Deployment (NG / RNG) (cont'd)     |   |   |            |          |                     |                  |
| 18365   | Pupil Transportation Cooperative              | FY 2017-18 Alternative Fuel School Bus Replacement Program (5 CNG Buses)                      | 10/05/18   | 11/30/34 | 196,500             | 1,127,500        |
| 18367   | Rialto Unified School District                | FY 2017-18 Alternative Fuel School Bus Replacement Program (13 CNG Buses)                     | 10/05/18   | 11/30/34 | 510,900             | 2,931,500        |
| 18368   | Rim Of The World Unified School District      | FY2017-18 Alternative Fuel School Bus Replacement Program (3 CNG Buses)                       | 10/05/18   | 11/30/34 | 513,600             | 676,500          |
| 18369   | Rowland Unified School District               | FY 2017-18 Alternative Fuel School Bus Replacement Program (3 CNG Buses & 1 Propane Bus)      | 11/02/18   | 11/30/34 | 117,900             | 770,000          |
| 18374   | Upland Unified School District                | FY 2017-18 Alternative Fuel School Bus Replacement Program (4 CNG Buses)                      | 10/12/18   | 11/30/34 | 157,200             | 902,000          |
| 20178   | Whittier Union High School District           | FY 2017-18 Alternative Fuel School Bus Replacement Program                                    | 02/21/20   | 11/30/34 | 196,500             | 1,052,500        |
| 21099   | CR & R, Inc.                                  | Renewable Natural Gas Production and Vehicle Demonstration Project                            | 03/03/20   | 09/30/22 | 166,250             | 166,250          |
| 21140   | Inland Kenworth (US) Inc                      | SCAQMD Approved Participating Dealership in TRUCK TRADE DOWN PROGRAM                          | 01/07/21   | 12/31/23 | 0                   | 0                |
| 21141   | Velocity Truck Centers                        | SCAQMD Approved Participating Dealership in TRUCK TRADE DOWN PROGRAM                          | 03/04/21   | 12/31/23 | 0                   | 0                |
| 21142   | TEC of California, Inc.                       | SCAQMD Approved Participating Dealership in TRUCK TRADE DOWN PROGRAM                          | 04/15/21   | 12/31/23 | 0                   | 0                |
| Hydrogen and Mobile Fuel Cell Technologies and Infrastructure |   |   |            |          |                     |                  |
| 15150   | Air Products and Chemicals, Inc.              | Install/Upgrade Eight H2 Fueling Stations throughout SCAG (including SCAQMD's HQs H2 station) | 10/10/14   | 04/09/22 | 1,000,000           | 17,335,439       |
| 15366   | Engineering, Procurement & Construction, LLC. | Operate and Maitain Publicly Accessible Hydrogen Fueling Station at SCAQMD's Diamond Bar HQs  | 10/10/14   | 04/09/22 | 0                   | 0                |
| 15611   | Ontario CNG Station, Inc.                     | Installation of Ontario Renewable Hydrogen Fueling Station                                    | 07/10/15   | 07/09/22 | 200,000             | 2,510,000        |
| 16025   | Center for Transportation and the Environment | Develop & Demonstrate Fuel Cell Hybrid Electric Medium-Duty Trucks                            | 02/05/16   | 11/30/23 | 980,000             | 7,014,050        |
| 17059   | CALSTART Inc                                  | Develop and Demonstrate Fuel Cell Extended Range Powertrain for Parcel Delivery Trucks        | 10/27/16   | 02/28/22 | 589,750             | 1,574,250        |
| 17312   | Cummins EP NA Inc                             | ZECT II - Develop Fuel Cell Range-Extended Drayage Truck                                      | 11/20/17   | 05/30/24 | 125,995             | 2,093,146        |
| 18150   | California Department of Food and Agriculture | Conduct Hydrogen Station Site Evaluations for Hydrogen Station Equipment Performance          | 06/28/18   | 02/27/22 | 100,000             | 805,000          |

| Contract  | Contractor                                     | Project Title   | Start Term | End Term | South Coast AQMD \$ | Project Total \$ |
|---|--|---|------------|----------|---------------------|------------------|
| <b>Hydrogen and Mobile Fuel Cell Technologies and Infrastructure (cont'd)</b> |  |   |            |          |                     |                  |
| 19248   | Tustin Hyundai                                 | Three Year Lease of 2019 Fuel Cell Hyundai Nexco  | 03/07/19   | 03/06/22 | 25,193              | 25,193           |
| 19313   | Equilon Enterprises LLC DBA Shell Oil Products | Construct & Operate Renewable Hydrogen Refueling Station  | 06/30/20   | 04/01/22 | 1,200,000           | 12,000,000       |
| 20033   | Port of Long Beach                             | Sustainable Terminals Accelerating Regional Transportation (START) Phase I  | 06/04/21   | 04/30/22 | 500,000             | 102,964,064      |
| 20038   | University of California Irvine                | Expansion of the UCI Hydrogen Refueling Station   | 10/18/19   | 02/17/27 | 400,000             | 1,800,000        |
| 20169   | Port of Los Angeles                            | Develop & Demonstrate Near-Zero and Zero Emissions Vehicles and Equipment at the Ports  | 06/28/21   | 11/30/22 | 1,000,000           | 83,548,872       |
| 20244   | Cummins Electrified Power NA Inc               | Demonstrate Fuel Cell Range-Extended Drayage Trucks   | 12/16/19   | 06/30/22 | 582,305             | 4,985,665        |
| 21313   | Sunline Transit Agency                         | Deployment of 5 Zero-Emission Fuel Cell Transit Buses   | 08/27/21   | 09/30/25 | 204,921             | 6,761,125        |
| 21386   | National Renewable Energy Laboratory           | CA Hydrogen Heavy-Duty Infrastructure Research Consortium H2@Scale Initiative   | 09/03/21   | 09/02/23 | 25,000              | 1,171,000        |
| <b>Stationary Sources - Clean Fuels</b>                                       |  |   |            |          |                     |                  |
| 21266   | University of California Irvine                | Develop Model for Connected Network of Microgrids   | 08/17/21   | 02/16/24 | 290,000             | 370,000          |
| <b>Technology Assessments and Transfer / Outreach</b>                         |  |   |            |          |                     |                  |
| 08210   | Sawyer Associates                              | Technical Assistance on Mobile Source Control Measures and Future Consultation on TAO Activities                                    | 02/22/08   | 02/28/22 | 50,000              | 50,000           |
| 09252   | JWM Consulting Service                         | Technical Assistance with Review and Assessment of Advanced Technologies, Heavy-Duty Engines and Conventional and Alternative Fuels | 12/20/08   | 06/30/22 | 30,000              | 30,000           |
| 12376   | University of California Riverside             | Technical Assistance with Alternative Fuels, Biofuels, Emissions Testing, and Zero-Emission Transportation Technology               | 06/01/14   | 05/31/24 | 300,000             | 300,000          |
| 15380   | ICF Resources LLC                              | Technical Assistance with Goods Movement, Alternative Fuels and Zero-Emission Transportation Technologies                           | 12/12/14   | 12/11/22 | 30,000              | 30,000           |
| 16262   | University of California Davis                 | Support Sustainable Transportation Energy Pathways (STEPs) 2015-2018 Program  | 01/05/18   | 01/04/22 | 240,000             | 5,520,000        |
| 17097   | Gladstein, Neandross & Associates LLC          | Technical Assistance with Alt Fuels and Fueling Infrastructure, Emissions Analysis and On-Road Sources                              | 11/04/16   | 06/30/22 | 200,000             | 200,000          |

| Contract  | Contractor  | Project Title  | Start Term | End Term | South Coast AQMD \$ | Project Total \$ |
|---|---|--|------------|----------|---------------------|------------------|
| Technology Assessments and Transfer / Outreach (cont'd) |   |  |            |          |                     |                  |
| 19078   | Green Paradigm Consulting, Inc.   | Technical Assistance with Alternative Fuels, Evs, Charging & Infrastructure and Renewable Energy                                       | 09/07/18   | 09/30/24 | 200,000             | 857,236          |
| 19227   | Gladstein, Neandross & Associates LLC                                     | Technical Assistance with Alternative Fuels & Fueling Infrastructure, Emissions Analysis & On-Road Sources                             | 02/01/19   | 01/31/22 | 300,000             | 300,000          |
| 19302   | Jerald Cole   | Technical Assistance with Hydrogen Infrastructure and Related Projects   | 04/24/19   | 04/23/23 | 50,000              | 50,000           |
| 20085   | CALSTART Inc  | Technical Assistance for Development & Demonstration of Infrastructure and Mobile Source Applications                                  | 11/08/19   | 11/07/23 | 250,000             | 250,000          |
| 20163   | Gladstein, Neandross & Associates LLC                                     | Technical Assistance with Implementation & Outreach Support for California VW Mitigation Trust Fund                                    | 01/21/20   | 01/21/22 | 26,000              | 26,000           |
| 20265   | Eastern Research Group  | Technical Assistance with Heavy-Duty Vehicle Emissions Testing, Analyses & Engine Development & Applications                           | 06/17/20   | 06/16/22 | 50,000              | 50,000           |
| 21260   | Fred Minassian  | Technical Assistance with Incentive and Research and Development Programs  | 04/13/21   | 10/12/22 | 75,000              | 75,000           |
| 22032   | Southern California Chinese American Environmental Protection Association | Cosponsor the 2021 Southern California Chinese-American Environmental Protection Association 30-Year Anniversary and Annual Convention | 08/20/21   | 05/31/22 | 1,500               | 20,000           |
| 22096   | AEE Solutions LLC   | Technical Assistance with Heavy-Duty Vehicle Emission Testing, Test Methods and Analysis of Real-World Activity Data                   | 11/08/21   | 11/07/23 | 100,000             | 100,000          |

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## **Appendix C**

### **Final Reports for 2021**

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South Coast AQMD Contract #17065

December 2021

# Installation Services for Installation of EV Chargers at South Coast AQMD Headquarters

## Contractor

Clean Fuel Connection, Inc. (CFCI)

## Cosponsors

South Coast AQMD

## Project Officer

Patricia Kwon

## Background

Clean Fuel Connection, Inc. (CFCI) was chosen by a competitive RFP process for installation of ninety-two (92) Level 2 electric vehicle supply equipment (EVSE) at South Coast AQMD headquarters. Goss Engineering, Inc. was also hired through a competitive RFP process to provide required engineering services prior to the release of an RFP for installation of EV chargers, preparation of construction plans to obtain a permit from the City of Diamond Bar, and engineering services as required during the installation of EV chargers from October 2016 through December 2017.

## Project Objective

CFCI performed the installation services as outlined in the City of Diamond Bar's approved construction plans and line drawings. These installation services included six ADA accessible chargers for both the front lobby entrance and the side entrance closest to conference room GB which is commonly used for public meetings and workshops. These services included working with the hardware provider Broadband Telecom Power, Inc. (BTC), Goss Engineering, and the City of Diamond Bar for permitting approvals.

Additional services included obtaining electrical and trenching permits from the City of Diamond Bar, providing a phased construction plan for work to be performed in different areas of the parking lot to minimize disruption, and performing the final job walk with South Coast AQMD staff and CFCI based on completing items on the final punch list. This also included ensuring compliance with the State of California Governor's Office of Planning and Research and Division of the State Architect EVSE universal charging access guidelines, as well as the

American with Disabilities Act accessibility requirements, SB 854 requirements for Public Works projects, and all applicable building, electrical and safety codes.

## Technology Description

Due to the wide range of cutting-edge alternative fuel technologies that are demonstrated at the South Coast AQMD headquarters facility, even a moderately large scale construction project impacting six areas of the parking lot including upgrade and replacement of three transformers and seven electrical panels, presents technical challenges. In addition, there was an inability to shut down power at the facility for even a short thirty-minute interval due to the need to have continuous power at the facility for Air Quality Management Plan modeling runs and laboratory analyses for resolving toxics issues at metal processing plants in Paramount. Due to the need to comply with South Coast AQMD's Rule 1470 (prohibiting use of a backup natural gas generator to provide power during routine maintenance), replacement of the transformer in the main electrical room took place with the power still on through a "hot connect" procedure.

## Status

CFCI played a critical role in the installation of 92 Level 2 EV charging ports at South Coast AQMD headquarters. Electrical upgrades and hardware installation occurred between October 2016 and April 2017, with minor construction tasks completed in December 2017. CFCI remained under a warranty and maintenance agreement until December 2021.



Locations of EV charging stations installed at South Coast AQMD headquarters

## Results

Coordination between Goss Engineering who developed the approved plans, hardware provider BTC, and the City of Diamond Bar Plan Check department enabled the construction project to be carried out successfully and with a minimum of delays despite technical challenges, delays in receiving equipment, and unprecedented heavy rainfall.



*EV charging stations under the solar carport*

EV charging transactions in December 2017 showed there were over 1,329 charging sessions dispensing 15,309 kWh of electricity for EV chargers serving South Coast AQMD staff, visitors, and the general public. These EV chargers continue to be utilized but to a lesser extent since the COVID pandemic closed South Coast AQMD facilities to the public in March 2020 and have not yet re-opened to the public.

## Benefits

This project showcases the benefits of providing Level 2 EV charging for staff, visitors, and the general public at a large workplace location. On average, South Coast AQMD staff have a twenty-mile one-way commute to work, with some staff having as much as a 45-mile one-way commute. Without workplace charging, staff would be unable to drive their EVs to work and make it home. This results in increased zero emission vehicle miles traveled, particularly during critical morning and evening commuting hours when congestion impacts are at their greatest.

## Project Costs

Installation services for this project totaled \$805,219 and were within the budget for this project. Hardware and Greenlots EVSE networking software were provided under a separate BTC contract for \$367,425. Engineering services to obtain City permits were provided under a separate contract with Goss Engineering

for \$50,000. Total costs for the EVSE installation were \$1.2M.

## Commercialization and Applications

The utilization of engineering services to define the installation phase of the project and assist in providing calculations and revised plans to the City of Diamond Bar assisted greatly in allowing the installation to stay within budget and to be completed within the desired time frame. It is recommended that for the installation of workplace charging at large facilities such as South Coast AQMD headquarters that an engineering firm be available to provide the necessary technical assistance at key points during the project. In particular, the engineering services were critical to define the load of existing panels and ensure proper specifications and upsizing of transformers, panels, conduit, and wiring. This upsizing incorporated not only the planned installation of 92 EVSE but also anticipated future deployments of EV chargers that were likely to occur within the next 5-10 years to future proof the facility. This future proofing enabled staff to later serve as a site host for a new 50 kW DC fast charger with CHAdeMO and CCS1 connectors at the front lobby parking area to better serve EVs capable of fast charging. Another critical service was having an installation warranty with CFCI and a maintenance contract with hardware provider BTC and networking software provider Greenlots to address post installation EVSE issues.

South Coast AQMD Contract #17316

September 2021

## Develop and Demonstrate 10 Zero-Emission Fuel Cell Electric Buses

### Contractor

Center for Transportation and the Environment (CTE)  
Orange County Transportation Authority (OCTA)  
New Flyer  
Air Products  
Trillium

### Cosponsors

California Air Resources Board (CARB)  
South Coast AQMD

### Project Officer

Patricia Kwon

### Background

As part of the CARB-funded Fuel Cell Electric Bus Commercialization Consortium Project (FCEBCC), this project furthers the development of fuel cell technology for transit agencies nationwide. CTE partnered with Orange County Transportation Authority (OCTA) to incorporate ten (10) prototype fuel cell electric transit buses into daily operation, which reduces carbon emissions and air pollutants in the South Coast Air Quality Management District (South Coast AQMD).

### Project Objective

The purpose of the FCEBCC project was to help accelerate the commercialization of zero-emission buses. Besides working to reduce greenhouse gas emissions, strengthen the economy, and improve public health and the environment, this project was also intended to create a financial incentive for industries to invest in clean technologies and develop innovative ways to reduce pollution through the cap-and-trade program.

### Technology Description

While battery-electric vehicle adoption has steadily increased, hydrogen fuel cell electric buses (FCEB) are also a necessary technology for the mass

adoption of zero-emission technologies. FCEBs have an electric drive system that feature a traction motor powered by a battery. The energy supply for an FCEB is on board the bus, where hydrogen, stored in tanks, is converted to electricity using a fuel cell. The electricity from the fuel cell is used to recharge the batteries.

### Status

This project is complete and the final report is on file with the technical details of the project. The project did not encounter any fatal issues, although the project timeline was extended due to infrastructure deployment and bus delivery delays. The first bus was delivered to OCTA in September of 2018, the station was commissioned in January of 2020 and buses completed 40-hour testing in December of 2020.



*New Flyer Xcelsior XHE40 fuel cell bus at OCTA*

### Results

In the first year of deployment, the two fleets had an average fuel economy of 8.46 miles per kg, or roughly 9.56 miles per diesel gallon equivalent. This is about twice that of typical diesel and compressed natural gas (CNG) buses. **Figure 1** illustrates that the buses were able to offset a combined total of 413 Metric Tons CO<sub>2</sub>e compared to their respective baseline fleets (CNG for OCTA, diesel for AC Transit). The energy efficiency of the fuel cell buses was greater than 2x that of comparable CNG buses. However, perhaps the biggest obstacle to adoption of FCEBs seen as a result of this project is vehicle availability.

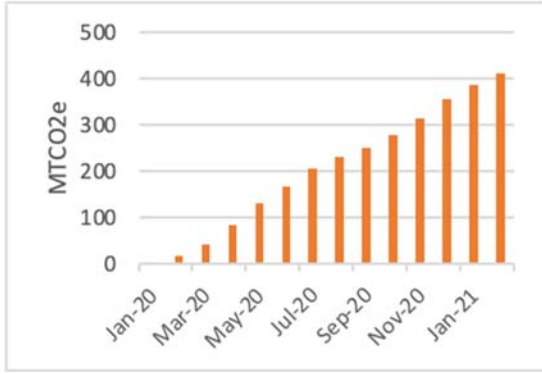


Figure 1. Cumulative GHG Emission Reductions of FCEBs over first year of deployment, from February 09, 2020 through February 28, 2021.

The average fleet availability through the first year of deployment was around 70%, with a maximum availability by month between the two fleets of 80%. Typical transit fleet operators target 85% vehicle availability in order to provide reliable service. As the technology matures and maintenance becomes more routine, FCEBs are expected to meet these targets.

**Benefits**

A key challenge with the overall environmental impacts of fuel cell vehicles is the difficulty of sourcing hydrogen produced renewably. Despite this issue, the FCEBs were still able to provide environmental benefits by eliminating the release of key criteria pollutants such as nitrogen oxides (NOx), reactive organic gases (ROG), and particulate matter (PM10) compared to the agencies’ baseline conventional diesel and CNG fleets. The expected annual emission reductions from the project application, and the actual realized reductions from the first year of deployment, are presented in the following table.

|          | GHG (MTCO2e) | NOx (tons) | ROG (tons) | PM10 (tons) |
|----------|--------------|------------|------------|-------------|
| Expected | 348          | 0.47       | 0.15       | 0.023       |
| Actual   | 413          | 0.29       | 0.09       | 0.014       |

The expected emission reduction calculations assumed a general carbon intensity of the hydrogen fuel supply for California, while the actual calculations are based on the realized carbon intensity of fuel supply, which was significantly

lower. The expected emission reduction calculations also assumed the FCEBs would travel the same number of miles as their baseline fleets. However, due to early maintenance issues, the buses did not meet the target mileage. The agencies expect the buses to meet their respective mileage targets as the maintenance becomes more routine.

Several other transit agencies in the South Coast Air Basin have also expressed interest in integrating fuel cell buses into their fleets including: Big Blue Bus, Foothill Transit, Long Beach Transit, OmniTrans, and SunLine Transit. Assuming these agencies are able to deploy 100 buses in total, replacing conventional diesel vehicles, this technology has the potential to reduce up to 73,450 MTCO2e in the South Coast Air Basin over the lifetime of the vehicles.

**Project Costs**

The following table summarizes the project budget and actual expenditure.

|        |                   | SCAQMD Share | Total        |
|--------|-------------------|--------------|--------------|
| Budget | Buses             | \$1,000,000  | \$13,338,000 |
|        | Facility Upgrades | -            | \$414,819    |
|        | Station           | -            | \$5,486,895  |
| Actual | Buses             | \$1,000,000  | \$12,978,382 |
|        | Facility Upgrades | -            | \$989,377    |
|        | Station           | -            | \$5,403,097  |

**Commercialization and Applications**

This project has already had an impact on the commercialization of FCEBs. There are two American original equipment manufacturers, New Flyer and ENC, that are Buy America compliant and these buses can therefore be purchased as part of other federal funding programs. New Flyer’s XHE40 and XHE60 Xcelsior FCEBs also completed Altoona testing in early 2019, in parallel to this project, which made these buses eligible for purchase through federal, as well as California funding programs, which will only further their adoption. FCEB costs have also dropped steadily since 2004, when FCEB demo bus costs exceeded \$3 million. OEM estimates for a 40-bus order are now around \$1 million.



# Develop & Demonstrate Battery Electric Switcher Locomotive

## Contractor

Rail Propulsion Systems

## Cosponsors

Coast Rail Services  
South Coast AQMD  
US Environmental Protection Agency (EPA)

## Project Officer

David Cook

## Background

Prior to the start of this project in 2018, there had been several attempts to develop and market battery-based hybrid or pure electric locomotives. Due primarily to the low energy density of the batteries used, new product reliability issues and poor cost benefit relative to the abundance of diesel locomotives available on the used market, these projects were unsuccessful in bringing a battery locomotive to market.

In 2017, following the implementation and subsequent EPA certification of the Blended Aftertreatment System (BATS) emissions reduction upgrade for existing passenger locomotives, Rail Propulsion Systems (RPS) proposed to South Coast AQMD a project for the design, development, and demonstration of a battery locomotive energy system. In 2018 South Coast AQMD notified RPS of available funding (\$210,000) and RPS offered to provide the additional funds, access to the facilities, locomotive platform, and batteries required to support the project.

## Project Objective

The goal of this project was to utilize available funds from South Coast AQMD along with contributions from RPS to demonstrate and assess the viability of a battery locomotive conversion. Further, this project utilized existing “2<sup>nd</sup> life”



Figure 1. The Simple Battery Switcher Locomotive

batteries both for economic reasons and to assess viability for use of 2<sup>nd</sup> life batteries in certain applications as a deferment of, or an alternative to, costly and inefficient recycling of the batteries after being removed from first life services such as electric passenger vehicles. The project required RPS to design, develop and implement a large (300 kW-hr) battery system, power electronics, and related subsystems necessary to convert a diesel locomotive platform to a zero-emissions battery locomotive on a limited budget. Following the conversion, RPS was to assess and report on the performance of the battery locomotive followed by an option for additional in-service operation.

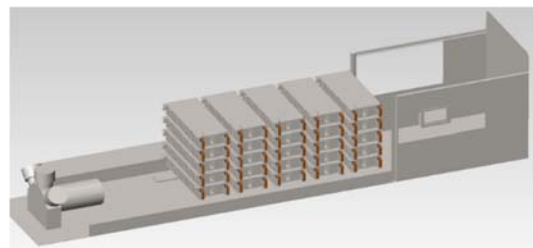


Figure 2. Battery module cans in locomotive chassis

## Technology Description

The RPS conversion package for the Simple Switcher project consists of an air cooled, modular, rack-based battery system, battery management, power electronics, motor driven cooling blowers and air compressor, and a lab view based locomotive control system. The

battery system contains approximately 300kW-hrs of second life Lithium-Ion batteries packaged into fifteen modules that could be individually removed and serviced or replaced. The battery management system consists of local monitoring units that measure the current, voltage and temperature of the batteries in a given module. This data is communicated to and monitored by a central controller unit that conveys data to the power electronics and locomotive control system to process fault indications and command power contactors to isolate specific modules if necessary. The power electronics receive inputs from the locomotive control system and battery management controller which are then processed to manage the flow of current from and to the battery system. The LabVIEW based locomotive controller receives command inputs from the operator control stand for throttle and direction and processes them into outputs to command the traction motor power contactors and the current input from the power electronics.

**Status**

The Simple Switcher completed the performance test requirements of the project, successfully pulling trains of up to five loaded hopper cars in the railyard. Though the testing was successful, the operators on site assessed that, in its current configuration, the 1201 was not sufficient for daily in-service use. The compressed air system on the locomotive did not have sufficient capacity to support the flow and pressure requirements necessary to affectively charge and control the trainline braking system on consists of greater than five cars. Furthermore, the locomotive control system specified in this project was determined to be too simplistic and lacked the ruggedness and features necessary for daily switching use. These two items would need to be addressed through redesign or upgrades requiring additional funds beyond the scope of work of this contract.

**Results and Benefits**

RPS successfully designed, manufactured and demonstrated that its battery locomotive conversion package is capable of powering a locomotive in place of a conventional internal combustion engine and generator package. The systems and related subsystems created in this

project will be further improved and utilized on future RPS battery locomotives. An on-site charging station and related training for the operators were both successfully completed as well. Conversely, the budget constraints for this project did not allow for sufficient upgrade of other systems on the test locomotive resulting in a reduction in the amount of in-service testing that was ultimately conducted as part of the project. Primarily, a more robust compressed air system and a more capable locomotive control system are both required. As for the assessment of 2<sup>nd</sup> life batteries, the results of the testing found the project batteries to be sufficient in energy density and remaining cycle life to support the project locomotive. Ultimately, the labor involved with harvesting and repurposing the second life batteries may outway the perceived cost benefit when compared to sourcing new batteries of alternate compositions that have lower energy density but much higher cycle life performance. Ultimately, replacing diesel switcher locomotives with zero emissions alternatives has the potential to significantly reduce emissions and improve air quality in metropolitan areas particularly in EJ communities where most rail yards are located.

**Project Costs**

| Participant  | Funding            |
|--|--------------------|
| South Coast AQMD<br><i>(pass-thru from US EPA)</i> | \$210,000          |
| Rail Propulsion Systems                            | \$2,059,603        |
| <b>Total</b>                                       | <b>\$2,269,603</b> |

**Commercialization and Applications**

The Simple Battery Switcher project provided a basis for requirements necessary to develop and market battery electric locomotives that would be acceptable to switching railyard operations and commuter rail service. Based on current battery and system development and manufacturing costs, it is estimated that battery switchers can be made available to the market for a retail cost of \$4-6M and passenger locomotives for a cost of \$12-15M for commuter applications. RPS is prepared to deliver battery switcher locomotives by early 2023 or sooner and battery commuter locomotives by 2025



# Demonstrate Zero-Emission Cargo Handling Vehicle at Port of Long Beach

**Contractor**

City of Long Beach Harbor Department  
Port of Long Beach (POLB)

**Cosponsors**

California Air Resources Board (CARB)  
South Coast AQMD

**Project Officer**

Patricia Kwon

**Background**

*C-PORT: The Commercialization of POLB Off-Road Technology (C-PORT) Demonstration* demonstrated the first zero-emission human-operated cargo-handling equipment (CHE) at the Port of Long Beach (POLB). C-PORT is focused on demonstrating zero emission battery electric yard tractors and top handlers since these represent 60% of the CHE utilized at the POLB. Utilizing battery electric yard tractors and top handlers would be a critical way to achieve the POLB’s emission reduction goals as well as meeting the goals in the POLB’s Clean Air Action Plan Update. The Clean Air Action Plan set a goal for zero emission CHE by 2030.

**Project Objective**

C-PORT’s objectives were to design, manufacture, and deploy three battery electric top handlers, one battery electric yard tractor, and one hydrogen fuel cell yard tractor across two port terminals with differing duty cycles; install sufficient infrastructure to support charging and operation of zero emission equipment in revenue service; and demonstrate the proposed equipment in revenue service for at least six months, collecting real-world data on equipment performance. The project also included important stakeholder and community engagement, workforce development and educational components.

**Technology Description**

Three battery electric top handlers were manufactured as a collaboration between original

equipment manufacturer (OEM) Taylor Machine Works, Inc., and the technology developer, BYD Motors, Inc. The battery-electric yard tractor was manufactured as a collaboration between Kalmar USA (OEM) and TransPower/Meritor, Inc. (technology developer). Each OEM provided its own 200kW proprietary charger at a one-to-one vehicle to charger ratio. The fuel cell yard tractor was manufactured as a collaboration between China National Heavy Duty Truck Group Co., Ltd. (OEM) and Loop Energy, Inc. (technology developer). Each of these vehicles represent the first zero emission technologies deployed from these OEMs. The fuel cell yard tractor was not demonstrated due to the lack of engineering documentation to fully address the POLB’s safety and design concerns.



Figure 1. Battery-Electric Kalmar Yard Tractor



Figure 2. Battery-Electric Taylor Top Handler

## Status

C-PORT was a 38-month long project, commencing in June of 2018 and completed in August of 2021. A final report is on file with complete technical details.

## Results

The demonstration of battery electric top handlers and yard tractors was successfully completed. The battery electric yard tractor was able to meet the performance requirements at the Long Beach Container Terminal (LBCT). The battery electric top handlers were not able to meet the performance requirements for the long shifts at the SSA Marine Terminal at the POLB. However, the battery electric top handler deployed at the LBCT was suitable for the required work.

SSA Marine is a busy container terminal where the top handlers have a challenging duty-cycle and are required to operate two entire shifts. As such, operators found that due to the nature of the work and limitations around opportunity charging, the units did not maintain enough battery life to be comfortably used for the full two shifts. The greatest measured battery discharge (usage) during the demonstration was 91% during operations for 7.61 hours. The longest day for the tested SSA Marine diesel top handler was 12.43 hours. A full 29% of the days in which data was collected showed operations longer than 7.61 hours.

Table 1. Daily averages for battery electric and diesel top handlers (top two) and yard tractor (bottom)

|                                      | Electric SSA Marine Top Handler #1 | Electric SSA Marine Top Handler #2 | LBCT Top Handler |
|--------------------------------------|------------------------------------|------------------------------------|------------------|
| Daily Averages                       |                                    |                                    |                  |
| Energy Use (kWh)                     | 382                                | 301                                | 63               |
| SOC Use (%)                          | 38                                 | 43                                 | 7                |
| Hourly Electricity Use Rate (kWh/hr) | 67                                 | 57                                 | 28               |
| Time Operational (Hours)             | 5.2                                | 4.7                                | 2.6              |
| Speed (mph)                          | 3                                  | 2.5                                | 0.5              |
| Distance (miles/day)                 | 18                                 | 13                                 | 1                |

|                            | SSA Marine Diesel Top Handler (a) | SSA Marine Diesel Top Handler (b) |
|----------------------------|-----------------------------------|-----------------------------------|
| Daily Averages             |                                   |                                   |
| Engine Load (%)            | 41                                | 22                                |
| Engine Torque (%)          | 27                                | 41.3                              |
| Time Operational (hours)   | 5                                 | 4.8                               |
| Speed (mph)                | 1.6                               | 1.4                               |
| Distance (miles/day)       | 7.4                               | 8.5                               |
| Fuel Consumption (gal/day) | 29                                | 21.7                              |

|                  | Electric Yard Tractor | Diesel Yard Tractor                 |
|------------------|-----------------------|-------------------------------------|
| Daily Averages   |                       |                                     |
| 95 kWh           |                       | 28% engine load                     |
| 56% of SOC use   |                       | 57% engine torque                   |
| 15 kWh/hr        |                       | 6.6 liters per hour of fuel per day |
| 6 hours          |                       | 7 hours                             |
| 8 mph            |                       | 5.5 mph                             |
| 42 miles per day |                       | 44 miles per day                    |

Table 2. Greenhouse gas (GHG) and criteria pollutant emission reductions from the demonstration

|                          | Net GHG Reductions based on the Demonstration Period | Estimated Avoided NOx Emissions | Estimated Avoided THC Emissions | Estimated Avoided PM Emissions |
|--------------------------|--|---------------------------------|---------------------------------|--------------------------------|
| Units                    | MTCO <sub>2</sub> e                                  | ton                             | ton                             | ton                            |
| SSA Top Handler 80367    | 49.0   | 0.32                            | 0.00048                         | 0.010                          |
| SSA Top Handler 80368    | 44.3   | 0.28                            | 0.00041                         | 0.009                          |
| LBCT Top Handler BYD     | 17.4   | 0.09                            | 0.00013                         | 0.003                          |
| LBCT Yard Tractor Kalmar | 11.1   | 0.03                            | 0.00000                         | 0.0000007                      |
| <b>Total</b>             | <b>121.7</b>   | <b>0.72</b>                     | <b>0.00103</b>                  | <b>0.022</b>                   |

## Benefits

The project demonstrated that the vehicles were able to provide the expected operational benefits (GHG savings/operating hour). Based on the POLA & POLB 2019 Emission Inventories, deploying battery electric technologies across the entire fleet of yard tractors and top handlers would be equivalent to reducing annual emissions by 237,186 metric tons of CO<sub>2</sub>e, 445.1 tons of NO<sub>x</sub>, 85.8 tons of THC, and 7.2 tons of PM10.

## Project Costs

The total project cost was \$7,784,086. The California Air Resources Board (CARB) awarded \$5,339,820 through its Off-Road Advanced Technology Demonstration Project grant program. Of the required match funding, South Coast AQMD provided \$350,000 and the balance of \$2,184,266.74 was funded by the POLB.

## Commercialization and Applications

The project provided an important first step in full commercialization of these, and other battery electric CHE. Battery electric off-road vehicles, mobile equipment, and CHE are rapidly developing markets, and the knowledge gleaned from C-PORT will be applied to future products developed by Taylor and Kalmar.

Taylor has reported that the next generation of battery electric ZLC-996 series top handler will be a commercialized unit which will feature technology directly evolved from the precommercial C-PORT unit. Kalmar has reported that the information gleaned from C-PORT will be used to improve the next generation of battery electric yard tractors going into production in late 2022.

# Economic and Workforce Impact Analysis of Electric Revolution in Southern California

## Contractor

The Los Angeles County Economic Development Corporation

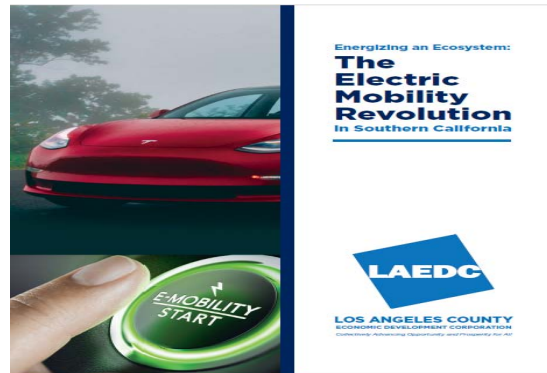
## Cosponsors

Southern California Edison  
Southern California Association of Governments (SCAG)  
Los Angeles County Metropolitan Transportation Authority (LA Metro)  
Los Angeles Department of Water and Power  
South Coast AQMD

## Project Officer

Seungbum Ha

## Technology Description



The final LAEDC Electric Vehicle report is divided into five sections followed by a conclusion.

## Background

The Energizing an Ecosystem: The Electric Mobility Revolution in Southern California (hereafter the LAEDC Electric Vehicle or EV report) was a collaboration between the LAEDC and five regional partners to analyze the electric vehicle ecosystem in the state of California as a whole and the five-county (Los Angeles, Orange, Ventura, San Bernardino and Riverside counties) Southern California region specifically. The purpose of this report was to build on existing LAEDC industry cluster development around electric mobility in addition to LAEDC research expertise in industry cluster and workforce analysis. This report was commissioned as of September 2019.

## Project Objective

The objective of this project was to define and assess the size and scope of the electric vehicle cluster in California from the perspective of firms and employment. The report was also to provide analysis of the scope of electric vehicle (EV) adoption thus far in the state; state and local goals and resources for adoption; the environmental concerns motivating adoption; and policies and programs that could be enacted to further the industrial and workforce development of the EV cluster in California.

The introductory stage qualitative sets the framework for a return of the automotive industry in California in the form of electric and alternative energy mobility. This section also includes a summary of the major findings of the report.

Section two of the report provides an asset mapping of all major firms in the state of California operating in the EV cluster. These firms were broken into three broad categories: passenger (light duty) vehicle companies; bus, truck, and tram companies; and charging and alternative fuel companies. Each category also included a summary of pertinent public and private initiatives and resources.

The third section focuses on the scope of EV deployment in the 5-county Southern California region, with an emphasis on City of Los Angeles and County of Los Angeles strategic plans for EV adoption and the environmental concerns the single out Southern California as a region for concentrated EV adoption and industry cluster development.

Section four provides a definition of the electric vehicle ecosystem across 17 industries as defined by the North American Industry Classification System (NAICS). Estimates and forecasts are given

for the electric vehicle cluster and for specific occupations in the cluster. Finally, consideration is given to jobs that might be lost as result of the EV cluster’s growth.

The final section of the report recommends certain policies, such as new commissions, incentives, and data tools, to motivate the continued growth and success of the EV cluster in California.

## Status

This report was released publicly on March 4<sup>th</sup>, 2020, at the 2020 Veloz Forum in Sacramento, California.

## Results

### Major Findings

#### New EVs to Reach 7 million by 2030

|                          |         |
|--------------------------|---------|
| Annual New Registrations | 565,300 |
| Annual % Change          | 25%     |

#### EV Companies in California

##### Passenger Vehicle

##### Companies

|                       |    |
|-----------------------|----|
| Headquarters          | 13 |
| Design & Tech Studios | 19 |
| Manufacturing         | 4  |
| R&D                   | 6  |

##### Bus, Truck & Tram

##### Companies

|               |    |
|---------------|----|
| Headquarters  | 16 |
| Other Offices | 17 |

##### EV Charging and Alternative Energy

##### Companies

|               |    |
|---------------|----|
| Headquarters  | 31 |
| Other Offices | 6  |

#### EV Employment

|            | 2018    | 2023f   |
|------------|---------|---------|
| California | 275,600 | 312,000 |
| SoCal      | 119,200 | 152,200 |

#### EV Wages

|            | EV Jobs  | Average  |
|------------|----------|----------|
| California | \$91,300 | \$68,500 |
| SoCal      | \$80,900 | \$54,900 |

Estimates by LAEDC

## Benefits

This report is intended to enhance the understanding of the EV cluster in California by estimating the scope of business development in the cluster; the extent to which the cluster does and can provide for meaningful job creation; and advocating for policies and programs to enhance EV adoption and EV-related economic development. This report should aid both public and private sector actors as a data tool demonstrating the significance of the EV ecosystem as a catalyst for long-term economic

growth. These anticipated benefits have not changed from the original inception and commencement of this project.

## Project Costs

### Project Costs by Funder

| Contributor  | Amount           |
|--------------|------------------|
| SoCal Edison | \$35,000         |
| LA Metro     | \$25,000         |
| SCAQMD       | \$10,000         |
| LA DWP       | \$25,000         |
| SCAG         | \$25,000         |
| <b>Total</b> | <b>\$120,000</b> |

### Project Costs by Item

| Item                            | Task Description                                      | Cost             |
|---------------------------------|---|------------------|
| Module 1                        | EV industry landscape analysis                        | \$16,500         |
| Module 2                        | Regional EV supply, demand and externality assessment | \$22,040         |
| Module 3                        | Regional workforce impact analysis                    | \$34,460         |
| Module 4                        | EV Policy Analysis                                    | \$22,000         |
| Infographic printing (estimate) |   | \$500            |
| Copy editor                     |   | \$2,000          |
| Rpt design-(estimate)           |   | \$7,500          |
| LAEDC Strategic Initiatives     |   | \$15,000         |
| <b>Total</b>                    |   | <b>\$120,000</b> |

## Commercialization and Applications

This report is the first of its kind in the state of California in that it takes a comprehensive look at the electric vehicle ecosystem from an industry and workforce standpoint. Most other reports analyze the scope of vehicle adoption and related incentives from a consumption standpoint. This report was created to be a public resource to all parties interested in electric vehicles as a unique industry cluster and who are invested in seeing this cluster grow not just to accomplish environmental policy aims but for economic development and job creation goals.



# Develop and Commercialize a Near-Zero Natural Gas Conversion System for On-Road Medium-Duty Vehicles

## Contractor

Landi Renzo USA Corporation (LRUSA)

## Cosponsors

South Coast AQMD  
US Environmental Protection Agency (EPA)  
California Air Resources Board (CARB)

## Project Officer

Joseph Lopat

## Background

Landi Renzo approached South Coast AQMD in August 2018 to discuss a potential partnership regarding the development of a near-zero emissions 7.3L compressed natural gas (CNG) engine for the automotive industry. Landi Renzo has significant experience in the field of emissions having been a manufacturer of ecological fuel systems and engines for nearly 70 years. Given the strong and growing interest in near-zero nitrogen oxide (NOx) emission engines for commercial use, there is a robust market potential for CNG engines for medium-duty vehicles. CNG is plentiful and can be sourced domestically as renewable natural gas (RNG) is a strong contributor in combating climate change. Based on previous studies it has been shown that fleets using CNG engines can meet air quality regulations more cost effectively.

## Project Objective

The objective of this project was to advance existing CNG engine and aftertreatment technologies to achieve engine NOx emission levels that are at least 90% lower than 2010 heavy-duty NOx emission standards. With this goal in mind, the objective was to modify a recently introduced 7.3-liter gasoline engine and demonstrate a 0.02 g/bhp-hr NOx CARB and EPA certified CNG engine for medium-duty vehicle applications. The initial plans involved changing

controller software and utilizing the latest catalyst technology.

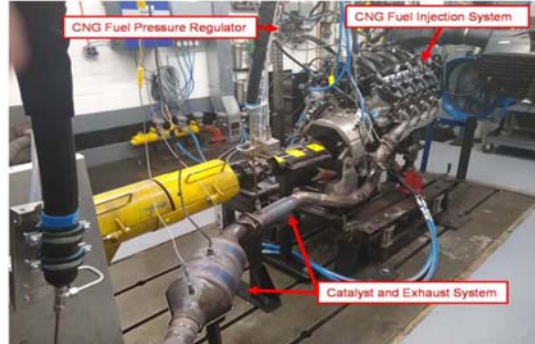


Figure 1: LRUSA / Ford 7.3L CNG Engine on Dynamometer

## Technology Description

The LRUSA CNG system consisted of a CNG fuel system containing a pressure regulator, engine feed lines, high pressure filter and supply, and fuel rail and injectors. All of these were installed on a Ford 7.3-liter engine within a Ford F-450 vehicle and a Ford E-450 vehicle. An original equipment manufacturer (OEM) specified catalyst and exhaust system was used. It was acknowledged that there were other potential projects of this nature that could involve modifications to the exhaust aftertreatment system.

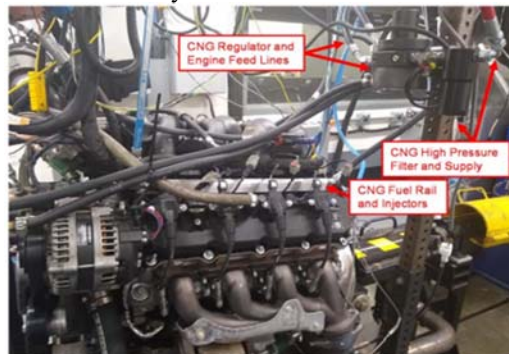


Figure 2: Close up of LRUSA CNG Fuel System Components

**Status**

The LRUSA 7.3-liter CNG engine project completed all eight (8) tasks associated with a successful project per the South Coast AQMD contract. It should be noted that the ultra-low NOx goal of 0.02 g/bhp-hr was not achieved with the 7.3L engine’s stock exhaust aftertreatment system. The certification results of 0.038 g/bhp-hr still resulted in achieving a lower NOx standard.

**Results and Benefits**

In January 2020, Landi Renzo USA completed engine durability and OEM compliance testing of the Ford 7.3-liter CNG engine. The test satisfied the requirements specified by Ford in their Qualified Vehicle Modifier Bulletin Q185-R1 (Found at <https://fordbbas.com/bulletins>). Engine emissions development, emissions testing, and on-board diagnostics testing was completed per the test plan arranged with EPA in early February 2020. On March 25, 2020, the EPA issued LRUSA a Certificate of Conformity with the Clean Air Act for the Ford 7.3-liter CNG engine. In April 2020, the demonstration vehicle was completed and shipped to the Ford wind tunnel in Allen Park, MI to undergo chassis-level durability and OEM compliance testing. The vehicle was also reviewed and scored by Ford QVM staff to ensure that the design, build, and components meet or exceed the performance and quality standards set forth by the QVM program. After the OEM chassis-level testing was completed, the vehicle returned to California to continue on-road testing and development. Official CARB testing in our CFR 1065 compliant lab with CARB certification fuel was completed June 2020, and achieved NOx emissions of 0.038 g/bhp-hr. Despite all the delays caused by the Covid-19 pandemic, LRUSA received a conditional CARB EO November 17, 2020.

or pulling forward the production of Ford’s catalyst system for an ultra-low NOx 7.3-liter gasoline engine for use in a Landi near-zero NOx system. Because of the time and resource constraints and the realities of working around the Covid-19 crisis, LRUSA was limited to utilizing the stock exhaust aftertreatment components for testing. LRUSA believes that with an improved aftertreatment system and further calibration development, a CNG system based on the 7.3-liter engine could achieve the goal of a near-zero NOx system. The Landi Renzo USA 7.3L CNG/RNG engine is currently the cleanest engine available for medium duty vehicles and allowed several fleets to meet their sustainability goals. These fleets include shuttle bus vehicles, food and beverage delivery trucks, general delivery vehicles etc. The Landi Renzo USA 7.3L engine covers a wide array of vocational vehicles that operate in high non-attainment areas, such as airports (e.g., shuttle buses). This is particularly key as Landi Renzo exclusively supplies to the #1 bus dealer in the United States.

**Project Costs**

| <b>Participant</b> | <b>Funding</b>     |
|--------------------|--------------------|
| South Coast AQMD   | \$600,000          |
| Landi Renzo USA    | \$900,000          |
| <b>Total</b>       | <b>\$1,500,000</b> |

**Commercialization and Applications**

Landi Renzo and Ford initially identified two possible development paths to meet the near-zero NOx target using either 7.3-liter chassis cert catalyst systems (used on lower gross vehicle weight rating chassis such as the MY2021 E-350)

## Develop and Demonstrate Vessel Performance Management Software and Equipment

### Contractor

California State University Maritime Academy  
SkySail GmbH  
Krohne Messtechnik GmbH  
Alliance Marine Inc.

### Cosponsors

Bay Area Air Quality Management District  
South Coast AQMD  
Cal State University Maritime Academy Maritime Administration

### Project Officer

Naveen Berry

### Technology Description

The V-PER Performance Monitoring System receives input from various peripheral instruments and measurements i.e. fuel meters, anemometers, shaft torque, gyro compass, and engine/ship speed. The integration of the existing navigation, weather, and engineering data, combined with data from the new V-PER inertial measuring unit (IMU) are used to reflect real-time conditions experienced by the vessel such that the Master can make more informed decisions on economically and environmentally sound operations via course and speed selection or vessel trim.

### Status

The installation of commercially available marine monitoring equipment combined with standardized emissions testing practices resulted in a highly complex logistical process impacting the original performance period objective. The conceptual phase of securing extramural funding support occupied most of 2017. Additionally, challenges presented themselves in acquisitions, software installation and vessel logistics which consumed all of 2018 and much of 2019. Control system electronic communication issues were difficult to identify and address which caused a delay in the finalization of this project. Though functional, we anticipate full capability to be realized in the spring of 2020 with significant sea time usage by the summer of 2020 on our blue water cruise on the Training Ship Golden Bear.

### Background

This project, funded by the Bay Area Air Quality Management District (BAAQMD) and South Coast AQMD along with others, constituted much of the first phase of a proposed multi-year project to incorporate and evaluate emissions reduction strategies. The SkySail V-PER project was associated with the California State University Maritime Academy's (Cal Maritime) Golden Bear Research Center (GBRC) and centered on the 500-foot long United States Training Ship (USTS) Golden Bear.

### Project Objective

The V-PER performance management package, a novel marine monitoring system, focused on a decrease in exhaust emissions associated with decreased fuel consumption. The package was to be installed and qualitatively evaluated on the USTS Golden Bear by Cal State Maritime staff. This required associated upgrades be made to fuel sensors essential to the operation and evaluation of that equipment. Along with these upgrades, a baseline emissions qualitative profile for the vessel was developed and shared with sponsors. Though it is understood that the deliverable for this phase will be a qualitative evaluation, it is hoped that the work will lead to additional phases and a more lengthy quantitative assessment phase.

*Picture of technology that has been supported with SCAQMD/Technology Advancement cosponsorship, if applicable. The picture, preferably a photograph, should clearly illustrate the technology. The size of the image should be about 3x3 to fit this two column format. The picture of the technology should be positioned on the front page*

### Results

Though the time frame for the project extended beyond what was originally anticipated, it is now

moving toward a successful conclusion. The project will continue with a longitudinal evaluation of SkySail V-PER along with additional assessments being made.

Location of the primary Human Machine Interface (HMI) for the SkySail V-PER in a central location adjacent to engine and navigational controls will provide the Master and Bridge personnel with convenient real-time feedback on propulsion responses to course and speed changes as well as adjustments to vessel loading (Figure 1).

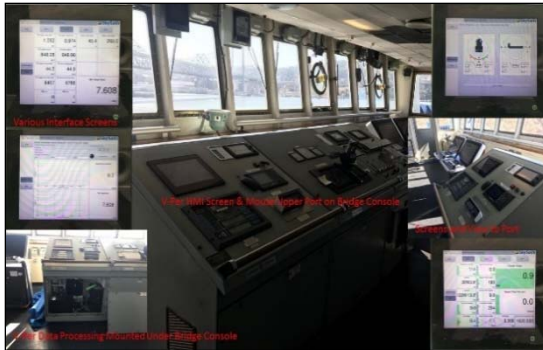


Figure 1: V-PER Installed on Training Ship Golden Bear Bridge

The HMI display is a clean and clear screen providing the viewer dimmable access to well laid out and intuitive pages. If there is any initial criticism of the provided display, it is that it is not a touch screen and requires a separate mouse or track-ball plus keyboard for input. Given current hardware technology and availability, this lack of a more cleanly integrated HMI component is somewhat surprising. Several of the intended users have expressed disappointment that a mouse and keyboard connection had to be provided on the console. Final assessment of this interface will be made after several more months of use through mid-2020.

Though the HMI provided an attractive, single-screen interface for the speed, wind direction, vessel trim and course, there was no added value given that all this data was available at nearly the same location on the bridge. As a monitoring tool, it is understood that further efforts would be required to gain engine and fuel data to fully realize the system potential.

All involved parties eagerly anticipate availability for the upcoming 2020 summer cruise in order to enhance vessel management in what is primarily an optimization effort. The Master and Chief Engineer, along with their crew must take port schedules,

weather, fuel consumption and regulatory requirements into account in finding the best and safest path for delivering their cargos or completing a mission. These new tools and immediate feedback promise to greatly enhance that optimization capability.

## Benefits

The primary benefit of the V-PER will be the ability to accurately monitor and assess vessel conditions affecting fuel consumption and associated exhaust emissions. Location of the primary HMI for the SkySail V-PER in a central location adjacent to engine and navigational controls will provide the Master and Bridge personnel with convenient real-time feedback on propulsion responses to course and speed changes as well as adjustments to vessel loading. This real-time data, provided in a clear and easy-to-read format, will likely be an appreciated tool in the day-to-day voyage planning.

## Project Costs

The project costs totaled \$135,230.14. Of this amount, South Coast AQMD and BAAQMD each paid \$50,086. CSU Maritime Academy had a cost share of \$35,058.14. The project came in at \$2,194.14 over budget. This additional amount was cost shared by CSU Maritime Academy. The cost overage is a result of unexpected customs duties of \$1,491.08, along with supplies and materials, and the associated overhead costs.

## Commercialization and Applications

The SkySail V-PER performance management software system and associated wind energy propulsion equipment are commercially available, but in limited use. The intent of this project was to demonstrate and evaluate the commercial advantages that might be achieved by shipowners and operators employing these and similar technologies. Our detailed benchmarking of significant installation challenges provided to our sponsors should be of significant value to entities interested in acquiring and utilizing performance management systems and will help inform commercial or market viability of the products. Further detailed quantitative assessments and results identifying reduced consumption and emissions results will ultimately determine the market competitiveness of this system.



## Conduct Emission Study on Use of Alternative Diesel Blends in Off-Road Heavy-Duty Engines

### Contractor

University of California Riverside, Center for Environmental Research and Technology.

### Cosponsors

California Air Resources Board (CARB)  
South Coast AQMD

### Project Officer

Joseph Lopat

### Background

On-road and off-road diesel engines have long been recognized as major sources of oxides of nitrogen (NO<sub>x</sub>), particulate matter (PM) and other toxic pollutants. The use of alternative diesel fuel formulations, such as renewable diesel will address California's efforts in reducing NO<sub>x</sub> and PM emissions from diesel engines and improve local and regional air quality. Although there are many studies characterizing combustion performance and emissions of renewable diesel and biodiesel, there is a lack of literature on the emissions characterization of renewable diesel-biodiesel blends. This is particularly true for blends in higher cetane diesel fuels, such as the California Air Resources Board (CARB) Ultra Low Sulfur Diesel (ULSD), which is the focus of CARB's Low Emission Diesel (LED) regulatory effort. There is also limited information available on the impacts of renewable diesel and renewable diesel blends in new technology diesel engines that are equipped with diesel particulate filters (DPFs) and selective catalytic reductors (SCR) or in off-road engines, where the benefits of renewable diesel fuel might be more long lasting due to their less stringent emissions standards over time. The characterization of toxic pollutants from these fuel blends is also limited and needs to be expanded.

### Project Objective

The goals of this study were to confirm and quantify the NO<sub>x</sub>, PM, ultrafine particles, and polycyclic aromatic hydrocarbons (PAHs) and their nitrated derivatives (nitro-PAHs) from the renewable diesel use in legacy off-road engines,

as well as the potential benefits of renewable diesel in modern on-road engines with robust aftertreatment controls.

### Technology Description

For this program, 2 heavy-duty diesel engines were used, including a legacy off-road John Deere engine without aftertreatment controls and a modern on-road Cummins engine equipped with diesel oxidation catalyst (DOC), DPF, and SCR systems. The off-road engine is typically used for construction applications. The on-road Cummins engine was selected because Cummins represents a good share of the California diesel engine market in Class 7 or Class 8 trucks. The test fuels included a reference CARB ULSD, used as a baseline fuel, a neat 100 percent or 99 percent renewable diesel fuel (R100/R99), a blend of 65 percent renewable diesel and 35 percent biodiesel (R65/B35), and a blend of 50 percent renewable diesel and 50 percent biodiesel (R50/B50). Testing was performed using federal testing procedures (FTP), the non-road-tested cycle (NRTC), and steady state ramped modal cycles. For the John Deere engine, a 5-mode D2 ISO 8718 cycle was used.

### Status

This project was successfully completed in March 2021. Comprehensive data analysis for the toxic pollutants was completed in May 2021.



Figure 1: John Deere off-road engine in testing lab

### Results

Results showed important NO<sub>x</sub> reductions with renewable diesel for the off-road engine compared to CARB ULSD. The R65/B35 showed no statistically significant differences compared to the CARB ULSD for the D2 and for the NRTC. The R50/B50 showed statistically significant increases in NO<sub>x</sub> emissions for the D2 and NRTC compared to the CARB ULSD. For the on-road

Cummins engine, no statistically significant differences were seen between the CARB ULSD and R100 over either the FTP or ramped modal cycles (RMCs). R65/B35 and R50/B50 showed statistically significant increases in NOx compared to CARB ULSD. The use of renewable diesel will likely provide NOx emission benefits from older construction engines with no aftertreatment and will not adversely affect air quality and ozone formation from newer on-road engines.

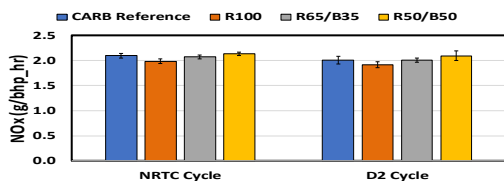


Table 1: NOx emissions for the John Deere engine

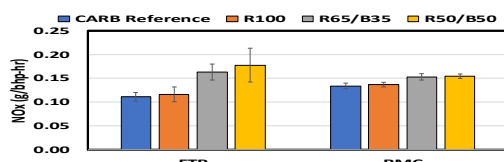


Table 2: NOx emissions for the Cummins engine

For the John Deere engine, PM emissions showed large reductions with R100 and the biodiesel blends. For the Cummins engine, PM mass emissions were found in very low levels due to the presence of DPF. Total and solid particle number emissions were generally lower for the biofuels compared to CARB ULSD. The biodiesel blends resulted in larger reductions of total and solid particle number emissions due to the oxygen content in the biodiesel molecule.

Formaldehyde and acetaldehyde were the predominant aldehydes in the tailpipe for both engines. Trends for lower carbonyl emissions were observed for the biofuels. Total gas- and particle-phase PAH emissions were significantly lower for the John Deere engine compared to the DOC/DPF-equipped engine. This finding suggests that modern heavy-duty diesel (HDD) engines equipped with robust aftertreatment controls will reduce the emissions exposures from toxic, mutagenic, and carcinogenic compounds that contribute to adverse health effects. For both engines, the use of biofuels showed reductions in particle- and gas-phase PAH emissions compared to CARB ULSD. These reductions were more pronounced with the higher biodiesel blends. Nitrate PAH emissions were seen in significantly lower levels than their parent PAHs. Nitrate PAH emissions showed mixed results

with the biofuels with no consistent fuel trends. However, nitro-PAH concentrations for the DPF-equipped Cummins engine were relatively higher than those of the John Deere engine without aftertreatment controls. This phenomenon was due to the de-novo formation of nitro-PAHs inside the DPF system via nitration reactions of the parent PAHs, suggesting that DPF-equipped engines may form elevated emissions of the highly toxic and carcinogenic nitro-PAHs.

Overall, renewable diesel and its blends with biodiesel showed lower carcinogenic potential, as well as reduced ozone forming potential compared to CARB ULSD. Our findings suggest that these fuels can provide a strong pathway for emissions and emissions toxicity reductions from heavy-duty diesel applications in the South Coast Air Basin.

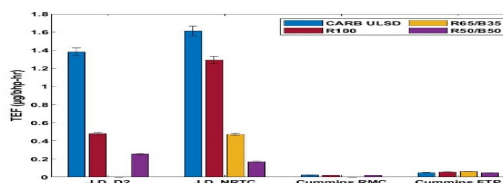


Table 3: Total grams produced per brake HP per hour

## Benefits

It is important to understand the emissions from current and older HDD engines with renewable diesel. Our findings suggest that these fuels can provide a strong pathway for emissions and emissions toxicity reductions from heavy-duty diesel applications in the South Coast Air Basin. This study provides a roadmap for the widespread use of these fuel formulations not only for on-road diesel engines, but also for off-road applications including construction, agricultural, marine, and locomotives. These fuels can also help achieve CARB LED standard and contribute to the Governor’s diesel emissions reduction target for California.

## Project Costs

|                     |           |
|---------------------|-----------|
|                     | SCAQMD    |
| Testing & Reporting | \$261,000 |

## Commercialization and Applications

It is expected that liquid renewable diesel fuels will play a major role in heavy-duty transportation for in off-road diesel applications. Their use will likely provide emissions and air quality benefits and will likely reduce emissions toxicity and adverse health effect.

# Evaluate Meteorological Factors and Trends Contributing to Recent Poor Air Quality in the Basin

## Contractor

University of California, Riverside

## Cosponsors

South Coast AQMD

## Project Officer

Sang-Mi Lee

## Background

The South Coast Air Basin (SCAB) of California has achieved tremendous reductions in ozone and particulate matter (PM, particularly fine PM, or PM<sub>2.5</sub>) levels over the last decades but has recently experienced a leveling off of the reductions and even an uptick in ozone in 2016 and 2017. The immediate question is why? Also, how much of this uptick is related to meteorological factors versus a response to emissions changes from mobile and stationary sources?

## Project Objective

The main objective of this project was to find why the ambient ozone and PM<sub>2.5</sub> levels in the South Coast Air Basin have plateaued in the past few years and to provide a robust understanding of the likely causes that led to the worsening of ozone and PM air quality in recent years. The results from the study will assist staff in better understanding the complex dynamics of air pollution and weather impacts and also help to develop more effective control strategies to improve air quality under changing climate conditions.

## Technology Description

The study employed long-term records of air quality data, emissions inventories and detailed meteorological information (from observations and models) to separate the contribution of meteorology and climate impacts from the effects of emission changes due to cleaner technologies

and air quality agencies' regulations. The study also used satellite-derived data on trace species loadings (e.g., nitrogen dioxide (NO<sub>2</sub>), formaldehyde (HCHO) and ozone (O<sub>3</sub>)) 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.

## Status

The study was expected to be complete by September of 2021. A no-cost extension was granted to accommodate the setbacks in research progress due to the COVID pandemic. Progress reports have been periodically provided to South Coast AQMD, and most tasks have been completed. The final report is being finalized and will be provided to South Coast AQMD staff for final review.

## Results

Preliminary results show that temperature is the dominant parameter that drives ozone high concentrations. Four different approaches were used in this study. The linear regression models, chemical transport models, and machine learning techniques indicate that higher temperatures lead to higher ozone concentrations, and as a result, general global warming is increasing the potential for high ozone events. High temperatures are also generally accompanied with stagnation that promotes pollutant concentration buildup. Meteorological conditions during La Nina phenomenon also contribute to a higher concentration of ozone. The effect of meteorological conditions on PM<sub>2.5</sub> concentration is more widely variable, as higher temperatures may lead to lowering ammonium nitrate concentrations while increasing other particulate matter components.

Using the four different approaches to accomplish the main objective provides a higher level of confidence in the findings of the study. Results are

consistent and complementary among the four approaches.

### **Benefits**

The project results provide a comprehensive analysis on the factors that lead to increasing ozone concentrations despite the decrease in ozone precursor emissions. While there are uncertainties associated with the use of any one of the analysis techniques employed in the study (regression modeling, chemical transport modeling, satellite observations, machine learning), results improve our understanding of why ozone may have increased in the past few years.

### **Project Costs**

The total cost of the study was \$188,798. The first three quarterly reports were provided earlier in 2020, and payment for \$113,277 was processed. The remaining \$75,521 will be paid once the final report is submitted and approved.

### **Commercialization and Applications**

This report will be posted on South Coast AQMD's website and made available to the general public. Several organizations have already expressed high interest in learning the results and conclusions of the report. This report will help South Coast AQMD and the people living in the South Coast Air Basin to better understand ozone dynamics and the meteorological parameters that affects smog formation.

South Coast AQMD Contract # 15635

September 2021

# ZECT II-Development and Demonstration of 1 Class 8 Fuel Cell Range Extended Electric Drayage Truck

## Contractor

Center for Transportation and the Environment  
(CTE)

## Cosponsors

US Department of Energy (DOE)  
California Energy Commission (CEC)  
Ports Technology Advancement Program (TAP)  
South Coast AQMD

## Project Officer

Seungbum Ha

## Background

The Fuel Cell Technologies Office (FCTO) is a key component of the Department of Energy's (DOE) Energy Efficiency and Renewable Energy (EERE) portfolio. The FCTO aims to provide clean, safe, secure, affordable, and reliable energy from diverse domestic resources, providing the benefits of increased energy security and reduced criteria pollutants and greenhouse gas (GHG) emissions.

In April 2014, DOE released DE-FOA-0001106: Zero Emission Cargo Transport II (ZECT II) Demonstration. This funding opportunity sought "to focus on accelerating the introduction and penetration of Zero Emission Carbon Transportation II (ZECT II) technologies." The FOA defined ZECT technologies as, "those that produce zero emissions from the transport vehicle (or other equipment) which propels cargo for all or large portions of their duty cycle."

South Coast AQMD wrote a proposal combining the DOE funding with funding from the California Energy Commission (CEC) and the Ports Technology Advancement Program (TAP). South Coast AQMD proposed to build and demonstrate trucks from three different teams as well as provide a single fueling infrastructure for all three teams. The Center for Transportation and the Environment (CTE) partnered with BAE Systems; Kenworth, a division of PACCAR; Total Transportation Services (TTSI); Ballard Power Systems; and

World CNG to form one team for this project. The other two teams were led by Transpower and US Hybrid.

In February 2016, South Coast AQMD executed a contract with CTE to lead the team developing the Kenworth/BAE truck as well as the fueling infrastructure for all three teams.



Figure 1: Zero Emission Electric Drayage Truck with Fuel Cell Range Extender

## Project Objective

The goal of this project was to build a robust zero-emission, heavy-duty Class 8 drayage fuel cell truck that can effectively demonstrate reliable service transporting up to 80,000 lbs. on multiple service routes with differing duty cycles. The intent was to leverage the success of tier one technology companies experienced at building fuel cell, hybrid-electric propulsion systems for heavy-duty transit buses. Working in partnership with Kenworth, a leading heavy-duty truck original equipment manufacturer (OEM), the project engineered and built a prototype vehicle that was then demonstrated and evaluated over a 24-month deployment on regularly scheduled routes serving outlying communities off the I-710 freeway in Los Angeles. Performance and operations data collected during the demonstration phase will help identify the pathways and barriers to commercialization.

## Technology Description

The purpose of this project is to accelerate deployment of zero-emission cargo transport technologies that reduce harmful diesel emissions, petroleum consumption, and GHGs in surrounding communities along goods movement corridors. To achieve this purpose, the project team developed a zero-emission battery electric Class 8 drayage truck

with a hydrogen fuel cell range extender. This prototype truck then demonstrated its use in goods movement operations between the Ports of Los Angeles and Long Beach and the near-dock rail yards and warehouses.

To develop the initial truck prototype, the project team adapted a hybrid electric fuel cell propulsion system that is currently used for transit buses so that it was suitable for a Class 8 truck used in a drayage application. The power output of the electric drive train was two electric motors with 270 kW combined power output, comparable to a current Class 8 truck engine's power output. One absorption chiller (AC) traction motor was mounted on each rear drive axle, and the electric drive train was designed to be fully redundant. The vehicle operates using 100 kWh Li-ion batteries, engaging the 85 kW (net) fuel cell system only when the batteries reach a specified state-of-charge (SOC). The hydrogen storage capacity is 30 kg (25 kg usable), which will provide approximately 112 miles of range between refueling.

### Status

The team achieved the primary goal of the project, which was to make significant strides developing zero-emission technologies for heavy-duty Class 8 trucks that would accelerate the improvement of air quality in southern California transportation corridors.

### Results

Kenworth and BAE Systems collaborated to develop the preliminary vehicle design including mechanical layout and installation drawings. The preliminary design was based on the defined operational requirements as well as duty cycle information from a diesel-equivalent vehicle. To finalize the vehicle design, a combined critical design review and pre-production meeting was held at Kenworth Research and Development Center in Renton, WA.



Figure 2: Overview of truck layout

Air Products' mobile refueler performed consistently throughout the demonstration, but mobile fueling infrastructure adds cost, time, and risk that can only be justified for a small, temporary

demonstration. An advantage for larger future deployments and for the heavy-duty vehicle market in general is investing in permanent on-site infrastructure. This will contribute to the cost-reduction goals achieved by mass deployment and shared resources. Expanding fueling infrastructure also guarantees the demand that hydrogen suppliers require to lower costs.

### Benefits

The specific design and development assessments and observations included the determination that the supply base is not yet ready for this technology. It was observed that the routing design is integral to the chassis layout, that there are currently too many connections (high voltage, low voltage, CAN, cooling, etc.), and that the high voltage interlocks are vital for functional safety. It was noted that minimizing to two voltages was difficult, cooling was a big challenge, and the battery management systems need self-diagnostics and auto-recovery. It was also determined that the power electronics firmware must become more automated, that human-machine-interface (HMI) is critical and that the procedures and infrastructure for vehicle testing are complex.

### Project Costs

The total project cost was \$7,109,384. South Coast AQMD provided \$821,198. An additional \$3,554,691 was provided by the DOE. The CEC provided \$2,400,000 and \$283,495 was provided by the Port's TAP program. The contractor provided the remaining \$50,000 as their cost share.

### Commercialization and Applications

Overall, the ZECT demonstration has laid the foundations for the commercialization of fuel cell electric heavy-duty trucks by successfully deploying the vehicle into TTSI's daily drayage operations. The lessons learned from demonstrating this prototype vehicle have informed improvements to both vehicle system design and manufacturing processes. By utilizing permanent on-site fueling infrastructure or existing public fueling infrastructure, increasing availability of off-the-shelf components, and achieving gains in efficiency of next generation technology, fuel cell electric trucks can enter the market at costs competitive with gasoline and diesel equivalents. The penetration of these zero-emission technologies into the heavy-duty market will maximize the impact to emissions reductions and help achieve local air quality targets on time.



## Participate in California Fuel Cell Partnership for CY 2021

### Contractor

Frontier Energy Inc.

### Cosponsors

South Coast AQMD  
Automakers, energy companies, local, state federal public agencies, technology companies, universities, transit agencies and others.

### Project Officer

Lisa Mirisola

### Background

Originally 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 Champion members (executive board level), 9 Champion members (steering team level), and 44 associate members. The focus is on furthering commercialization of fuel cell vehicles, fueling infrastructure technologies and renewable and decarbonized hydrogen production.

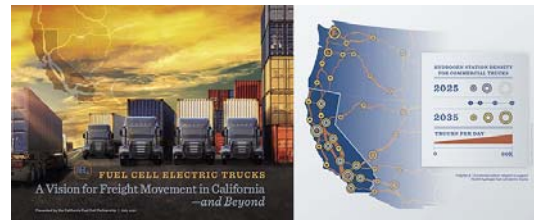
### Project Objectives

The goals for 2021 included the following:

- Identify technology challenges and information gaps within the state's hydrogen station network, and work collaboratively with members to advance the market
- Coordinate and collaborate on approaches to achieving an initial 200 hydrogen stations expanding to a state-wide sustainable infrastructure network in California
- Identify new concepts and approaches to initiate exponential station network growth for light- and heavy-duty applications
- 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 within California and have plans to expand activities in 2022 to advance the zero-emission vehicle (ZEV) technology benefits in-state and nationally. The final report covers the South Coast AQMD for 2021 membership. This contract was completed on schedule.



Graphic 1 - CaFCP published its truck vision in August, calling for 200 stations serving 70,000 heavy-duty fuel cell electric trucks by 2035.

### 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 second generation Mirai. Fuel cell bus operators include AC Transit, Sunline Transit, Orange County Transportation Authority and UC Irvine Student Transportation for a combined 46 buses, with 96 in the coming year or two, including Foothill Transit, Long Beach Transit, Golden Empire Transit, and others. More transit agencies are expected to adopt fuel cell buses over the next 5 to 10 years as they implement the Innovative Clean Transit regulation. Class 8 fuel cell drayage trucks include a Ballard powered BAE/Kenworth truck, the Hydrogenics fuel cell powered TransPower truck, Hyundai Xcient trucks and Toyota's Portal trucks.

### Results

Specific accomplishments include:

- Since 2015, more than 12,000 consumers and fleets have purchased or leased passenger FCEVs
- Transit agencies have 48 fuel cell electric buses in operation and more than 96 funded

- 48 plus light-duty retail hydrogen stations in operation in California and 124 in development; 4 bus stations in operation and 3 in early development, and 2 truck stations in operation, 2 in development and another 5 funded
- CaFCP staff and members continue to conduct targeted outreach and education 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 fuel cell electric vehicle (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 a truck vision document in 2021 which calls for 200 stations serving 70,000 trucks by 2035. Early discussions are under way for an implementation road map for California and western states.

## Benefits

Compared to conventional vehicles, fuel cell vehicles offer zero smog-forming emissions, reduced water pollution from oil leaks, higher efficiency, and much quieter and smoother operation. When renewable fuels and electricity are used as a source for hydrogen, fuel cell vehicles also encourage greater energy diversity and lower greenhouse gas emissions (CO<sub>2</sub>).

By combining efforts, the CaFCP can accelerate and improve the commercialization process for all categories of vehicles: passenger, bus, truck, etc. The members have a shared vision about the potential of fuel cells as a practical solution to many of California's environmental issues and similar issues around the world. The CaFCP provides a unique forum where infrastructure, technical and interface challenges can be identified early, discussed, and potentially resolved through cooperative efforts.

## Project Costs

Auto members provide vehicles along with the staff and facilities to support them. Energy members engage in fueling infrastructure activities, including hydrogen production. CaFCP's annual operating budget is about \$1.4 million, and includes operating costs, program administration, joint studies and public outreach and education. All members make annual contributions towards the common budget with executive government members making an annual contribution of approximately \$40,000. Some members contribute additional in-kind products and services to accelerate specific project and program activities.

## 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 2022, the primary goals are the same as the 2021 goals listed above but have been shifting to be more inclusive of heavy-duty vehicle applications due to the adoption of regulations for transit bus fleets and heavy-duty trucks as well as the technology's potential to significantly improve emissions in these applications.



# Installation of Eight Hydrogen Stations in Various Cities

|   |
|---|
| <p><b>Contractor</b><br/>FirstElement Fuel, Inc.</p> <p><b>Cosponsors</b><br/>California Energy Commission<br/>South Coast AQMD</p> <p><b>Project Officer</b><br/>Patricia Kwon</p> |
|---|

emissions, and the carbon footprint is nearly the same as plug-in electric vehicles.

The hydrogen stations installed under this contract must use a minimum average of 33% renewable hydrogen on a per kg basis through direct physical pathways (on-site or offsite production).

**Status**

Seven out of eight public access hydrogen fueling stations have been installed and are currently in operation. The following table summarizes the completion dates along with key milestone dates of our project. Note that final reports are on file with complete technical details of the project.

| Station                 | Develop    | Delivery   | Testing    | Completion |
|-------------------------|------------|------------|------------|------------|
| South Pasadena          | 8/26/2016  | 1/17/2017  | 2/22/2017  | 4/10/2017  |
| Los Angeles (Hollywood) | 11/16/2015 | 3/28/2016  | 4/30/2016  | 11/10/2016 |
| Los Angeles (PDR)       | 11/16/2015 | 4/12/2016  | 5/29/2016  | 8/18/2016  |
| Long Beach              | 6/22/2015  | 9/9/2015   | 10/30/2015 | 2/22/2016  |
| Costa Mesa              | 8/3/2015   | 10/13/2015 | 12/2/2015  | 1/21/2016  |
| La Canada Flintridge    | 8/20/2015  | 10/14/2015 | 12/9/2015  | 1/25/2016  |
| Laguna Niguel           |            |            |            |            |
| Lake Forest             | 8/6/2015   | 10/14/2015 | 2/27/2016  | 3/18/2016  |

**Background**

The California Energy Commission (CEC) issued solicitation PON-13-607 to provide funding opportunities under the ARFVT Program for projects which expand the network of publicly accessible hydrogen fueling stations to serve the current population of fuel cell vehicles (FCVs) and to also accommodate the planned large-scale roll-out of FCVs commencing between 2015 and 2016.

South Coast AQMD is a co-sponsor for this project.

**Project Objective**

The objective of this project is to build and install eight public access hydrogen fueling stations in the cities of South Pasadena, Los Angeles (2 stations), Long Beach, Costa Mesa, La Canada Flintridge, Laguna Niguel and Lake Forest.

Six of the stations will have delivered hydrogen with 33% renewable content, and the remaining two stations will have 100% renewable hydrogen delivered. The fueling stations will be capable of delivering up to 100 kg of hydrogen per day nominal capacity, with a 35 kg per hour peak Type A fill. They will be designed to be easily expandable in the future. The stations will be able to fuel multiple vehicles back-to-back without delay to avoid congestion.

**Technology Description**

Hydrogen fuel cell electric drive technology offers tremendous potential for the light-duty passenger vehicle market and medium- and heavy-duty truck and bus markets. These vehicles have zero tailpipe

The location of the remaining one station (Laguna Niguel) was relocated and the CEC approved location for this station was not located within South Coast AQMD jurisdiction.



Photo of installed Hydrogen Station at La Canada Flintridge. Source: FirstElement Fuel, Inc.

**Results**

Per California Senate Bill 1505, Environmental Standards for Hydrogen Production, at least one

third of the hydrogen sold by FirstElement’s state funded hydrogen refueling stations will be produced from renewable sources. Hydrogen is supplied to the hydrogen fueling stations from Air Products’ hydrogen production facilities in Wilmington/Carson, CA. Renewable biogas will be procured as feedstock for the facilities, resulting in delivered hydrogen product that meets the requirements of this PON and the 33.3% renewable hydrogen requirements of California SB 1505. Renewable hydrogen at 100% is achievable through the same supply pathway, however at a higher cost.

Air Products currently has a contract for sourcing of the renewable biogas that meets Public Resources Code Section 2574(b)(1). Air Products’ biogas supply for this project is being sourced outside of California and transported to California with connection to a natural gas pipeline in the Western Electricity Coordinating Council (WECC) region that delivers gas into California.

As of July 1, 2019, FirstElement began purchasing and retiring attributes directly through a third party to better increase our renewable supply.

### Benefits

The Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model (GREET) produced by Argonne National Laboratory was used to determine the energy sources and greenhouse gas emissions data presented in the table below. As shown, over two-thirds of the energy feedstock is renewable, very little petroleum is used, and the only tailpipe emissions are water compared to the myriad of pollutants emitted by the combustion of gasoline. The entire well-to-wheels process results in zero greenhouse gas emissions due to our procurement of very low carbon intensity biogas feedstock.

| Energy Sources            | Zero Station (Gaseous Hydrogen) | Multi-Hose True Zero Station (Liquid Hydrogen) | Gasoline Vehicle  |
|---------------------------|---------------------------------|--|---|
| Petroleum                 | 5.20%                           | 1.40%  | 75.50%  |
| Natural Gas               | 16.70%                          | 31.60%   | 18.90%  |
| Coal                      | 0.40%                           | 0.50%  | 0.20%   |
| Renewable                 | 77.70%                          | 66.80%   | 7.10%   |
| <b>Total GHGs</b>         | <i>0 grams/mile</i>             | <i>0 grams/mile</i>                            | <i>428 grams/mile</i>   |
| <b>Tailpipe Emissions</b> | <i>Pure Water</i>               | <i>Pure Water</i>                              | <i>VOC, CO, NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>x</sub>, CH<sub>4</sub>, N<sub>2</sub>O</i> |

### Project Costs

The table below provides the summary of project costs for the program.

| Station                 | CEC                  | SCAQMD            | Match               |
|-------------------------|----------------------|-------------------|---------------------|
| South Pasadena          | 1,451,000            | 100,000           | 925,822             |
| Los Angeles (Hollywood) | 1,451,000            | 200,000           | 591,408             |
| Los Angeles (PDR)       | 1,451,000            | 200,000           | 600,161             |
| Long Beach              | 1,451,000            | 100,000           | 765,719             |
| Costa Mesa              | 1,451,000            | 100,000           | 589,103             |
| La Canada Flintridge    | 1,451,000            | 100,000           | 712,515             |
| Laguna Niguel           | -                    | -                 | -                   |
| Lake Forest             | 1,451,000            | 100,000           | 742,899             |
| <b>Total</b>            | <b>\$ 10,157,000</b> | <b>\$ 900,000</b> | <b>\$ 4,927,628</b> |

### Commercialization and Applications

By adding eight additional stations to the California Hydrogen Fueling Station Network, FirstElement has helped establish the infrastructure needed for the large scale roll out of Fuel Cell Vehicles. As of January 12, 2021, our stations, as part of the network of publicly accessible hydrogen fueling stations, served approximately 8,931 light-duty passenger fuel cell cars.

As this network expands, we see the continued roll out of this technology encouraging growth in the light-duty passenger markets as well as establishing the foundation for growth in the medium- and heavy-duty truck and bus markets.

# Develop and Demonstrate Commercial Mobile Hydrogen Fueler

### Contractor

H2 Frontier Inc

### Cosponsors

California Energy Commission (CEC)  
South Coast AQMD  
US Hybrid  
H2Frontier  
Gas Technology Institute (GTI)

### Project Officer

Lisa Mirisola/Patricia Kwon

### Background

Automakers targeted a 2015 roll-out of hydrogen fuel cell vehicles (FCEV), making the availability of hydrogen fueling stations critically important. FCEVs play an important role in promoting the transition of the mobile transportation sector towards zero emission technologies. These new technologies are necessary to attain the federal criteria pollutant standards as well as the state greenhouse gas targets. California has the most extensive fleet of fuel cell vehicles in the nation, supported by the nation’s largest network of hydrogen fueling stations. Even though additional stations are expected to become available over the next few years there is little or no redundancy in the network. Consequently, the impact of a station going out of service due to planned (or unplanned) maintenance can leave fuel cell vehicle owners without a convenient reliable source of fuel until the station comes back on-line.

### Project Objective

H2 Frontier Inc. proposed to design, fabricate, test, and deploy a fully operational, commercial mobile hydrogen fueler in response to the California Energy Commission’s (CEC) recent Program Opportunity Notice 13-607 (Alternative and Renewable Fuel and Vehicle Technology Program, Subject Area-Hydrogen Refueling Infrastructure). The mobile fueler would be designed to provide back-up to stations during extended maintenance or

upgrade and support fuel cell vehicle ride-and-drive events, while providing a fueling experience that would be similar to a full-scale station.

### Technology Description

The mobile fueler was not only intended to be a stand-alone station for remote filling but designed to provide the flexibility to integrate itself into stations that may have temporary dispensing issues. The design connects to the onsite hydrogen storage supply and can connect to existing hydrogen dispensers to fill onboard storage. Another design option to be explored on a case-by-case basis was the ability of the fueler to tow and connect to a secondary tube trailer to expand its capacity for any high demand locations thus helping to limit the need to remove it from the designated site to replenish on-board storage. The mobile hydrogen fueler would use renewable fuel when possible and would be deployed at hydrogen stations as needed.

Configured on board a medium-duty, Ford F550 truck platform, with hydrogen storage, compression, and dispensing capabilities, the mobile fueler was designed to be completely self-contained, with no need for external power, pre-cooling, or delivered hydrogen supplies. Additionally, the mobile fueler would have the capability to fill either 350 bar or 700 bar vehicle tanks while meeting U.S. DOT on-road vehicle requirements, along with the intent of SAE J2601 and SAE 2719 hydrogen fueling interface and hydrogen quality requirements and guidelines. The expected life of the equipment design was ten years, assuming 80% availability.

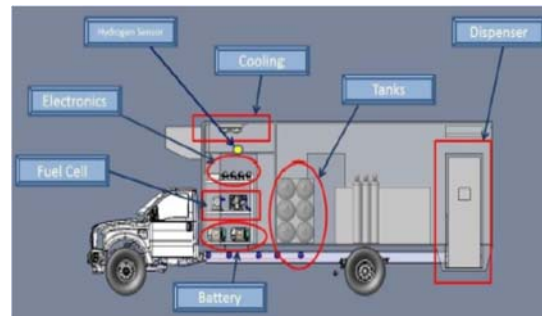


Figure 1: Mobile Refueler Design Layout

**Status**

The first task was to design the system, prepare the platform and specify the specific equipment. This task was completed. However, the design did not conform to revised SAE J2601 and automakers would not approve their new fuel cell vehicles to fuel with the obsolete design.

H2Frontier exited the project, but the team with CEC Grant Agreement ARV-14-003 determined that it would be necessary for the refueler to comply with the SAE International J2601:2014 fueling protocol for it to serve the industry appropriately. SAE International J2601:2014 is a fueling standard that defines conditions, such as the required hydrogen pressure and temperature, for filling light-duty FCEVs. At that time, the team focused on securing the additional funding necessary to expand the project scope to comply with the advanced fueling protocol.

The project team investigated several opportunities to secure additional funding for the project. They held discussions with private companies with needs for mobile refueling solutions, and with state agencies that have mandates for acquiring and operating fuel cell electric vehicles. The project team also contacted private station operators and constructed several design iterations and plans to develop a path forward that would satisfy all entities associated with the project and related end use. Unfortunately, the project team was not able to acquire the additional funds during the project period and, without the necessary funding to provide a viable system to the industry, the project concluded when it reached the term end date without constructing and deploying a mobile hydrogen refueler.

GTI submitted the Final Report CEC-600-2021-006 to CEC April 2021.



Figure 2: Base Truck Ford F650 with Custom Body

**Benefits**

In addition to criteria emission reductions, this project represented an investment in clean economical FCEV transportation to help meet California’s climate goals.

**Project Costs**

This project was not completed. The proposed total project costs to develop and deploy the commercial mobile hydrogen fueler were estimated at \$1,665,654. The proposed project costs were broken down as follows:

|                          | CEC Funding      | Partner Cost-Share |
|--------------------------|------------------|--------------------|
| Gas Technology Institute | \$224,677        | \$15,064           |
| U.S. Hybrid              | \$400,000        | \$375,913          |
| H2 Frontier, Inc.        | \$375,000        | 75,000             |
| South Coast AQMD         |                  | 200,000            |
| <b>Totals</b>            | <b>\$999,677</b> | <b>\$665,977</b>   |

The first task was completed for \$45,000. The remaining \$155,000 of Clean Fuels funds from South Coast AQMD were de-obligated.

**Commercialization and Applications**

New designs are being developed to address current fueling, safety and other standards.

# California Hydrogen Infrastructure Research Consortium H2 @ Scale Initiative

## Contractor

Alliance for Sustainable Energy, LLC,  
National Renewable Energy Laboratory (NREL)

## Cosponsors

US Department of Energy (DOE)  
South Coast AQMD  
California Air Resources Board (CARB)  
California Energy Commission (CEC)  
CA Go-Biz

## Project Officer

Lisa Mirisola

## Background

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 fuel cell electric vehicle deployment. This leadership has advanced a hydrogen network that is not duplicated anywhere in the United States and is unique in the world for its focus on providing a retail fueling experience. 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 United States.

## Project Objective

California agencies identified tasks based on top research needs and priorities for the benefit of state and national efforts to deploy a hydrogen fueling infrastructure and has identified a need to leverage national laboratory research capabilities and staff to support these efforts. The consortium used these tasks as the first step in a strategic partnership, balancing near-term research needs with accelerating earlier-stage research into the market. Specific focus was placed on sharing and translating lessons learned to other jurisdictions,

which is a priority in a partnership between state and federal agencies and laboratories.

## Technology Description

California agencies prioritized a certain set of tasks for the benefit of state and national efforts to deploy a hydrogen fueling infrastructure. The set of tasks focused on the near-term challenges for California hydrogen infrastructure development, deployment, and operation.

The set of tasks included hydrogen station data analysis, insights into medium and heavy-duty vehicles running on hydrogen, hydrogen contaminant detectors for use at hydrogen fueling stations, hydrogen nozzle freeze lock evaluation (component failure scenarios), hydrogen topics for integration into California energy management strategy, and a technical assistance project that analyzed liquid hydrogen modeling for a hydrogen station capacity tool.

## Status

The project was completed in April 2021. The final report is on file with complete technical details of all the project tasks.

For example, it was determined that understanding the conditions where nozzle freeze-lock occurs will help mitigate the issue in commercial hydrogen fueling stations. The observed trends can help station providers predict days when nozzle freeze-lock might occur and implement proactive countermeasures.



Figure 1. Nozzle Freeze-lock Chamber and Atmosphere Generating Cart at NREL

The medium/heavy-duty task was originally intended to analyze and report on retail and



experimental fueling of medium-/heavy-duty trucks, which were not operational in time for this project. The task was redirected towards a topical overview of medium/heavy duty truck fueling which resulted in a report and a presentation suitable for a webinar on April 7, 2021 that was shared with the California partners for their use as needed.

**Results**

Results have been presented as part of DOE’s Annual Merit Review 2018-2021, DOE H2@Scale Working Group, and at the 2019 Fuel Cell Seminar and Energy Exposition.

The markets for trucks and light duty vehicles complement each other with the larger number of light duty vehicles providing the possibility for many parts being produced thus bringing down the prices for components used in trucking, while the trucks use a lot of hydrogen fuel encouraging increased hydrogen production and bringing down the price of hydrogen for light duty vehicles.

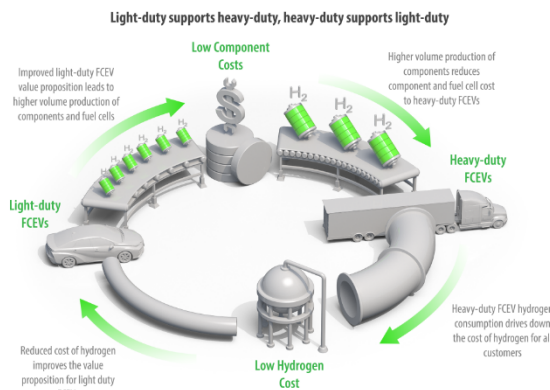


Figure 2. Light-duty fuel cell vehicles support heavy-duty cell vehicles simultaneously reducing component costs and hydrogen fuel costs as fuel cell manufacturing and hydrogen production scale increases

**Benefits**

This consortium coordinates research efforts that support the DOE’s and California’s hydrogen goals and requirements, shares lessons learned with other states and stakeholders to inform implementation efforts outside of California, supports shifting the hydrogen infrastructure progress from a government push into a market pull, advances the station technology and operation to meet the next waves of vehicle demand, and leverages existing core capabilities and researchers at national labs.

**Project Costs**

| Project Partner               | Co-Funding  |
|-------------------------------|-------------|
| Fuel Cell Technologies Office | \$700,000** |
| California Air Resources      | \$100,000   |
| California Energy Commission  | \$100,00    |
| South Coast AQMD              | \$100,000   |
| California Go-Biz             | In kind     |
| Total                         | \$1,000,000 |

\*\*subject to partial award, funding may be scale

The California Air Resources Board was unable to enter into a joint Cooperative Research and Development Agreement (CRADA), so CARB executed an individual CRADA with NREL for their portion.

**Commercialization and Applications**

To provide a more comprehensive picture of when nozzle freeze-lock occurs, NREL recommends both repeated testing and evaluating multiple nozzle manufacturers. Statistical significance and trends could be further expanded upon. New heavy-duty high flow rate nozzles will also need testing. Testing with freeze mitigation technology, such as nitrogen purging, could help determine if mitigation strategies are effective.

Hydrogen contaminant detectors are not expected to meet all requirements of SAE J2719.

Follow-on tasks focusing on heavy-duty applications proposed to DOE for H2@Scale 2020 funding were approved and a new contract is under final review. Three new tasks have been set. The first new task is an HD Reference Station Design led by Sandia National Lab. The second task is an HD Station Test Device Design to analyze hydrogen fueling performance and the third task is the development of a HD Station Capacity Tool. A fourth task under a separate agreement, is an H2 Contaminant Detector Design focused on water vapor contaminant sensing at stations. This task was determined as necessary as more electrolysis stations are expected and there will be a need to ensure compatibility of hydrogen contaminant detector (HCD) pneumatic systems with regulated contaminants with validating HCDs in the field at a California station.

# Develop Optimal Operation Model for Renewable Electrolytic Fuel Production

## Contractor

University of California, Irvine

## Cosponsors

South Coast AQMD

California Energy Commission (CEC)

US Department of Energy (DOE)

## Project Officer

Seungbum Ha

## Background

There is a growing interest in the use of renewable electrolytic hydrogen (green hydrogen) and methane as substitutes for natural gas. In the case of pure hydrogen, the fuel would be used as a blend stock at fractions that may be as high as 20%. The allowable blend fraction for renewable synthetic methane (also referred to as synthetic natural gas or SNG) could be as high as 100%. Both fuels have the potential to change the pollutant emissions of combustion systems with NO<sub>x</sub> being the constituent of concern.

## Project Objective

The objective of the project was to assess the potential local and regional NO<sub>x</sub> emissions and air quality impacts of electrolytic fuel production systems injecting hydrogen or synthetic methane onto the natural gas grid.

## Technology Description

Electrolyzers use electric power to split water into hydrogen and oxygen through a catalytic electrochemical process. When the input electricity is renewable, the product hydrogen is a renewable fuel, also called green hydrogen. Green hydrogen (GH<sub>2</sub>) can be combined with biogenic CO<sub>2</sub> to create methane in a process called methanation. The result is a renewable substitute for natural gas also referred to as synthetic natural gas (SNG). Both GH<sub>2</sub> (up to a blend limit that may reach 20%) and SNG (potentially up to a blend limit of 100%) can be injected onto the natural gas grid to reduce the carbon intensity of system gas.

## Status

Three hypothetical electrolyzer projects were defined (size, location, electric supply sources). The (RoDEO) model developed and run by the National Renewable Energy Laboratory (NREL) was used to optimize the operating schedules of the electrolyzers to minimize hydrogen production cost based on the cost of input electricity. The result of this analysis confirmed the general feasibility of producing natural gas substitutes within the target price range and provided estimates of the quantities of produced fuel to be injected onto the natural gas grid.

## Results

Air quality analysis was conducted at the local and regional levels assuming hydrogen reaches the maximum allowed blend limit of 20% by volume to bound the impacts. Impacts were assessed based on NO<sub>x</sub> emissions impacts of hydrogen methane blends and methane-CO<sub>2</sub> (SNG proxy) blends measured in parallel projects. SNG shows reduction in NO<sub>x</sub> formation for all burner types and so does not present an air quality concern. In contrast, some common burner types show reduced NO<sub>x</sub> formation with hydrogen blends and other burner types show increases. An inventory of burner types and replacement trends is needed to ensure that deployment of hydrogen blends for greenhouse gas (GHG) mitigation does not lead to upward pressure on secondary 8-hour ozone and PM<sub>2.5</sub> levels in the South Coast Air Basin. The best and worst case 8-hour ozone results are shown below.

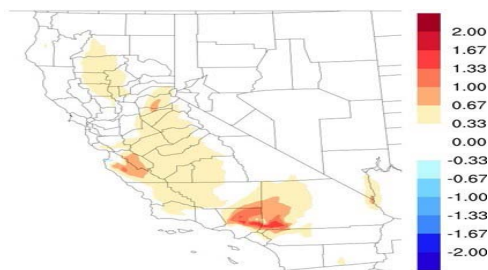


Figure 1: Worst-case increase in summer average MD8H ozone (ppb) for 20% hydrogen blend on the gas grid

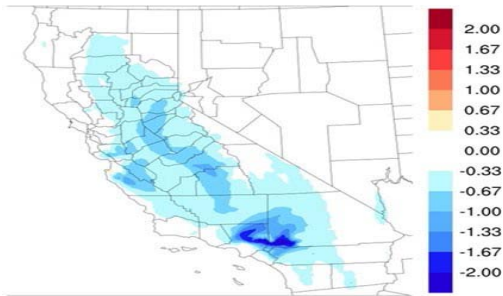


Figure 2: Best-case decrease in summer average MD&H ozone (ppb) for 20% hydrogen blend on the gas grid

and regulations for deployment of these important resources fully considers air quality impact along with safety, reliability and GHG reductions is key to achieving an equitable energy transition. This project is important to establishing the foundations for the development of air quality policies to support a truly sustainable deployment of renewable hydrogen and methane.

## Benefits

The work shed light on the potential for upward pressure on NO<sub>x</sub> and secondary ozone and PM<sub>2.5</sub> concentrations that could result from injecting hydrogen into the natural gas grid while also showing the reduced NO<sub>x</sub> is possible from hydrogen blends. Given the potential GHG benefits of green hydrogen, future technical and policy analysis should focus on ensuring that hydrogen deployment results in net negative emissions. This can be accomplished by design specifications for hydrogen-ready burners and combustors, aftertreatment requirements and deployment of non-combustion conversion devices such as fuel cells.

## Project Costs

The total planned project cost was \$500,000 with \$100,000 to be provided by South Coast AQMD and \$400,000 from other related efforts funded by the California Energy Commission and the U.S. Department of Energy. The project was completed within the agreed budget.

## Commercialization and Applications

Introduction of zero and low-carbon fuels to decarbonize the fuel provided over the natural gas grid is a key strategy for achieving deep decarbonization. A growing number of national strategies including those of Canada, the United Kingdom and the European Union are embracing these solutions. The current U.S. Department of Energy Hydrogen Shot and the local green hydrogen initiative, HyDeal LA, demonstrate growing momentum for the deployment of these solutions driven in large part by rapidly declining costs of decarbonized gaseous fuel.

Proceedings are ongoing at the California Public Utilities Commission to establish regulatory frameworks for the introduction of hydrogen and synthetic methane on the gas grid as they have done for biomethane. Ensuring that the policies



## **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 Benefits

Criteria Pollutant Emission Reduction potential continues to receive the highest priority for projects that facilitate NOx 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 leverages funds available through several state and federal programs, as well as overall health benefits in reducing exposure to Ozone and PM2.5, especially in 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 the assessed importance of a particular technology. Some key metrics that are considered include Infrastructure Constructability, which evaluates the potential of fuel or energy for the technology and readiness of associated infrastructure, and Technology Readiness, which includes research and development of the technology and large scale deployments that consider ability for near-term implementation and operational compatibility for 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 technology research, development, demonstration and deployment projects. In an effort to accelerate the demonstration and deployment, especially of pre-commercialization technologies, local, state and federal incentive programs are crucial, but may be underfunded to enable large scale deployments.

Staff has developed an approach to evaluating 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 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 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 Satisfactory to Excellent for Technology Maturity, Poor to Excellent for 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/<br>Duty Cycle Fulfillment<br>Capability | Operations Compatibility | Relative Cost & Economic Sustainability | Incentives Available |
| <b>Electric/Hybrid Technologies &amp; Infrastructure</b>                                  |                      |                         |                 |                                     |                      |   |                          |   |                      |
| Plug-In Hybrid Heavy-Duty Trucks with Zero-Emission Range                                 | ●                    | ○                       | ●               | ●                                   | ○                    | ●   | ●                        | ●                                       | ●                    |
| Heavy-Duty Zero-Emission Trucks   | ●                    | ●                       | ●               | ●                                   | ○                    | ●   | ○                        | ●                                       | ●                    |
| Medium-Duty Zero-Emission Trucks  | ●                    | ●                       | ●               | ●                                   | ○                    | ○   | ●                        | ●                                       | ●                    |
| Medium- and Heavy-Duty Zero-Emission Buses  | ●                    | ●                       | ●               | ●                                   | ○                    | ●   | ○                        | ●                                       | ●                    |
| Light-Duty Zero-Emission Vehicles   | ●                    | ●                       | ●               | ●                                   | ●                    | ●   | ●                        | ○                                       | ●                    |
| Plug-In Hybrid Light-Duty Vehicles with Zero-Emission Range                               | ●                    | ○                       | ●               | ●                                   | ●                    | ●   | ●                        | ●                                       | ●                    |
| Infrastructure  | -                    | -                       | -               | ●                                   | ●                    | ●   | ●                        | ●                                       | ●                    |
| <b>Hydrogen &amp; Fuel Cell Technologies &amp; Infrastructure</b>                         |                      |                         |                 |                                     |                      |   |                          |   |                      |
| Heavy-Duty Trucks   | ●                    | ●                       | ●               | ○                                   | ●                    | ○   | ●                        | ●                                       | ●                    |
| Heavy-Duty Buses  | ●                    | ●                       | ●               |                                     | ●                    | ●   | ●                        | ●                                       | ●                    |
| Off-road – Locomotive/Marine  | ●                    | ●                       | ●               | ○                                   | ○                    | ●   | ●                        | ●                                       | ●                    |
| Light-Duty Vehicles   | ●                    | ●                       | ●               |                                     | ●                    | ○   | ○                        | ●                                       | ●                    |
| Infrastructure – Production, Dispensing, Certification                                    | -                    | -                       | -               | ○                                   | ○                    | ●   |                          | ●                                       | ●                    |
| <b>Engine Systems</b>   |                      |                         |                 |                                     |                      |   |                          |   |                      |
| Ultra-Low Emission Medium- and Heavy-Duty Renewable Diesel Vehicles                       | ●                    | ●                       | ●               | ●                                   | ○                    | ●   | ●                        | ●                                       | ●                    |
| Renewable Gaseous and Alternative Fuel Ultra-Low Emission Medium- and Heavy-Duty Vehicles | ●                    | ●                       | ●               | ●                                   | ●                    | ●   | ●                        | ●                                       | ●                    |
| Ultra-Low Emission Off-Road Applications  | ●                    | ●                       | ●               | ●                                   | ○                    | ●   | ●                        | ●                                       | ●                    |
| <b>Fueling Infrastructure &amp; Deployment</b>  |                      |                         |                 |                                     |                      |   |                          |   |                      |
| Production of Renewable Natural Gas – Biowaste/Feedstock                                  | ●                    | ●                       | ●               | ●                                   | ●                    | ●   | ●                        | ●                                       | ●                    |
| Synthesis Gas to Renewable Natural Gas  | ●                    | ●                       | ●               | ●                                   | ●                    | ●   | ●                        | ○                                       | ○                    |
| Expansion of Infrastructure/Stations/Equipment/RNG Transition                             | ●                    | ●                       | ●               | ●                                   | ●                    | ●   | ●                        | ●                                       | ○                    |
| <b>Stationary Clean Fuel Technologies</b>   |                      |                         |                 |                                     |                      |   |                          |   |                      |
| Low-Emission Stationary & Control Technologies  | ●                    | ●                       | ●               | ●                                   | ○                    | ○   | ●                        | ○                                       | ●                    |
| Renewable Fuels for Stationary Technologies   | ○                    | ●                       | ●               | ●                                   | ○                    | ○   | ○                        | ○                                       | ●                    |
| Vehicle-to-Grid or Vehicle-to-Building/Storage  | ●                    | ●                       | ●               | ○                                   | ○                    | ●   | ○                        | ●                                       | ●                    |
| <b>Emission Control Technologies</b>  |                      |                         |                 |                                     |                      |   |                          |   |                      |
| Alternative/Renewable Liquid Fuels  | ○                    | ●                       | ●               | ●                                   | ●                    | ●   | ●                        | ●                                       | ○                    |
| Advanced Aftertreatment Technologies  | ●                    | ○                       | ●               | ○                                   | ○                    | ●   | ●                        | ●                                       | ○                    |
| Lower-Emitting Lubricant Technologies   | ○                    | ○                       | ●               | -                                   | ●                    | ●   | ●                        | ●                                       | ○                    |
| ● Excellent    ● Good    ○ Satisfactory    ● Poor    ● Unacceptable                       |                      |                         |                 |                                     |                      |   |                          |   |                      |

## **Appendix E**

### **List of Acronyms**

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## LIST OF ACRONYMS

|  |  |
|--|--|
| 3B-MAW—3-bin moving average windows  | CHE—cargo handling equipment   |
| AB—Assembly Bill   | CMAQ—community multi-scale air quality   |
| AC—absorption chiller  | CNG—compressed natural gas   |
| ACT – American Clean Truck regulation  | CNGVP—California Natural Gas Vehicle Partnership                                     |
| ADA—American with Disabilities Act   | CO <sub>2</sub> —carbon dioxide  |
| AER—all-electric range   | CO—carbon monoxide   |
| AFRC—air/fuel ratio control  | ComZEV—Commercial Zero-Emission Vehicle  |
| AFVs—alternative fuel vehicles   | CPA—Certified Public Accountant  |
| AGL – Academy of Global Logistics  | C-PORT – Commercialization of POLB Off-Road<br>Technology                            |
| ALPR – automated license plate recognition   | CPUC—California Public Utilities Commission  |
| APCD—Air Pollution Control District  | CRADA-Cooperative Research and Development<br>Agreement                              |
| AQMD—Air Quality Management District   | CRDS—cavity ring-down spectroscopy   |
| AQMP—Air Quality Management Plan   | CRT—continuously regenerating technology   |
| ARB—Air Resources Board  | CSC—city suburban cycle  |
| ARRA—American Recovery & Reinvestment Act  | CTE – Center for Transportation and the Environment                                  |
| AWMA—Air & Waste Management Association  | CVAG—Coachella Valley Association of<br>Governments                                  |
| BACT—best available control technology   | CWI—Cummins Westport, Inc.   |
| BATS – blended aftertreatment system   | CY—calendar year   |
| BEB—battery electric bus   | DAC – disadvantaged community  |
| BET – battery electric tractor   | DC—direct connection   |
| BET—battery electric truck   | DC – direct current  |
| BEV—battery electric vehicle   | DCFC—direct connection fast charger  |
| BSNO <sub>x</sub> —brake specific NO <sub>x</sub>  | DCM—dichloromethane  |
| BMEP – brake mean effective pressure   | DEF—diesel exhaust fluid   |
| BMS—battery management system  | DEG—diesel equivalent gallons  |
| CAP – Clean Air Protection   | DERA – Diesel Emissions Reduction Act  |
| CAAP—Clean Air Action Plan   | DGE—diesel gallon equivalents  |
| CAFR—Comprehensive Annual Financial Report   | DF—deterioration factor  |
| CaFCP—California Fuel Cell Partnership   | DME—dimethyl ether   |
| CARB—California Air Resources Board  | DMS—Division of Measurement Standards  |
| CATI—Clean Air Technology Initiative   | DMV—Department of Motor Vehicles   |
| CBD—Central Business District (cycle) - a Dyno test<br>cycle for buses                   | DOC—diesel oxidation catalysts   |
| CCF—California Clean Fuels   | DOE—Department of Energy   |
| CCHP—combined cooling, heat and power  | DOT—Department of Transportation   |
| CCV—closed crankcase ventilation   | DPF—diesel particulate filters   |
| CDA—cylinder deactivation  | D-PMag – dual permanent magnet motor   |
| CDFR/DMS—California Department of Food<br>&Agriculture/Division of Measurement Standards | DPT3—Local Drayage Port Truck (cycle) - where<br>3=local (whereas 2=near-dock, etc.) |
| CEC—California Energy Commission   | DRC—Desert Resource Center   |
| CE-CERT—College of Engineering – Center for<br>Environmental Research and Technology     | DRI—Desert Research Institute  |
| CEMS—continuous emission monitoring system   | ECM—emission control monitoring  |
| CERP – Community Emission Reduction Plan   | EDD—electric drayage demonstration   |
| CEQA—The California Environmental Quality Act  | EDTA—Electric Drive Transportation Association                                       |
| CFCI—Clean Fuel Connection, Inc.   | EERE – Energy Efficiency and Renewable Energy  |
| CFD—computational fluid dynamic  | EGR—exhaust gas recirculation  |
| CHBC—California Hydrogen Business Council  | EIA—Energy Information Administration  |

## LIST OF ACRONYMS (cont'd)

|  |   |
|--|---|
| EIN—Energy Independence Now  | HHDDT—heavy heavy-duty diesel truck schedule                        |
| EMFAC—Emission FACTors   | HMI – Human Machine Interface                                       |
| EPRI—Electric Power Research Institute   | HPLC—high-performance liquid chromatography                         |
| E-rEV—extended-range electric vehicles   | HRSC – heat recovery steam cycle                                    |
| ESD—emergency shut down  | HT—high throughput  |
| ESS—energy storage system  | HTFCs—high-temperature fuel cells                                   |
| EV—electric vehicle  | H2NIP—Hydrogen Network Investment Plan                              |
| EVSE—electric vehicle supply equipment   | HTPH—high throughput pretreatment and enzymatic hydrolysis          |
| FCEB – fuel cell electric bus  | HyPPO—Hydrogen Progress, Priorities and Opportunities report        |
| FCET – fuel cell electric truck  | Hz—Hertz  |
| FCEBCC - Fuel Cell Electric Bus Commercialization Consortium                   | ICE—internal combustion engine                                      |
| FCEV – fuel cell electric vehicle  | ICEV—internal combustion engine vehicle                             |
| FCTO – Fuel Cell Technologies Office   | ICT – Innovative Clean Transit Regulation                           |
| FCV—fuel cell vehicle  | ICU—inverter-charger unit   |
| FTA—Federal Transit Administration   | ICTC—Interstate Clean Transportation Corridor                       |
| FTP—federal test procedures  | ITS – intelligent transportation system                             |
| G2V—grid-to-vehicle  | IVOC—intermediate volatility organic compound                       |
| g/bhp-hr—grams per brake horsepower per hour                                   | JETSI - Joint Electric Truck Scaling Initiative                     |
| GC/MS—gas chromatography/mass spectrometry                                     | kg—kilogram   |
| GCW—gross combination weight   | kWh – kilowatt-hour   |
| GCVW—gross container vehicle weight  | LADOT—City of Los Angeles Dept. of Transportation                   |
| GDI—gasoline direct injection  | LADWP—Los Angeles Department of Water and Power                     |
| GGE—gasoline gallon equivalents  | LAEDC – Los Angeles Economic Development Corporation                |
| GGRF—Greenhouse Gas Reduction Relief Fund                                      | LA Metro – Los Angeles County Metropolitan Transportation Authority |
| GH2 – green hydrogen   | LBCT – Long Beach Container Terminal                                |
| GHG—greenhouse gas   | LCA—life cycle assessment   |
| GNA—Gladstein, Neandross & Associates, LLC                                     | LCFS—Low Carbon Fuel Standard                                       |
| Go-Biz – Governor’s Office of Business and Economic Development                | LED – low emission diesel   |
| GPCI – Green Paradigm Consulting, Inc.   | LFP – lithium iron phosphate  |
| GPU—gas processing unit  | Li—lithium ion  |
| GREET- Greenhouse Gasses, Regulated Emissions and Energy Use in Transportation | LIGHTS – Low Impact Green Heavy Transport Solutions                 |
| GTI – Gas Technology Institute   | LIMS—Laboratory Information Management System                       |
| GTL—gas to liquid  | LLC—low load cycle  |
| GVW – gross vehicle weight   | LLNL—Lawrence Livermore National Laboratory                         |
| GVWR—gross vehicle weight rating   | LNG—liquefied natural gas   |
| H&SC—California Health and Safety Code   | LO-SCR—light-off selective catalytic reduction                      |
| HCCI—Homogeneous Charge Combustion Ignition                                    | LPG—liquefied petroleum gas or propane                              |
| HCD – hydrogen contaminant detector  | LRUSA – Landi Renzo USA Corporation                                 |
| HCHO - formaldehyde  | LSM—linear synchronous motor  |
| HCNG—hydrogen-compressed natural gas (blend)                                   | LSV—low-speed vehicle   |
| HD – heavy duty  | LUV—local-use vehicle   |
| HDD – heavy-duty diesel  | LVP—low vapor pressure  |
| HDDT—highway dynamometer driving schedule                                      | MATES—Multiple Air Toxics Exposure Study                            |
| HD-FTP—Heavy-Duty Federal Test Procedure                                       | MCE—multi cylinder engine   |
| HD I/M – heavy-duty inspection and maintenance                                 |   |
| HD-OBD—heavy-duty on-board diagnostics   |   |



## LIST OF ACRONYMS (cont'd)

|  |   |
|--|---|
| MCFC—molten carbonate fuel cells                                       | OCTA—Orange County Transit Authority                                  |
| MD—medium duty   | OEHHA—Office of Environmental Health Hazard Assessment                |
| MECA—Manufacturers of Emission Controls Association                    | OEM—original equipment manufacturer                                   |
| MOA—Memorandum of Agreement  | One-off—industry term for prototype or concept vehicle                |
| MOVES—Motor Vehicle Emission Simulator                                 | PAH—polycyclic aromatic hydrocarbons                                  |
| MPa—MegaPascal   | PbA—lead acid   |
| MPFI—Multi-Port Fuel Injection   | PCM—powertrain control module   |
| MPG—miles per gallon   | PEMFC—proton exchange membrane fuel cell                              |
| MPGde—miles per gallon diesel equivalent                               | PEMS—portable emissions measurement system                            |
| MSRC—Mobile Source Air Pollution Reduction Review Committee            | PEV—plug-in electric vehicle  |
| MSW—municipal solid wastes   | PFI – port fuel injection   |
| MY—model year  | PHET – plug in hybrid electric tractor                                |
| MTA—Metropolitan Transportation Authority (Los Angeles County “Metro”) | PHET—plug-in hybrid electric truck                                    |
| NAAQS—National Ambient Air Quality Standards                           | PHEV—plug-in hybrid vehicle   |
| NAFA—National Association of Fleet Administrators                      | PM—particulate matter   |
| NAICS – North American Industry Classification System                  | PM – permanent magnet   |
| NFPA—National Fire Protection Association                              | PM2.5—particulate matter ≤ 2.5 microns                                |
| NCP—nonconformance penalty   | PM10—particulate matter ≤ 10 microns                                  |
| NEV—neighborhood electric vehicles                                     | POH – Port of Hueneme   |
| NextSTEPS—Next Sustainable Transportation Energy Pathways              | POLA – Port of Los Angeles  |
| NG/NGV—natural gas/natural gas vehicle                                 | POLB – Port of Long Beach   |
| NGO—non-governmental organization                                      | PON – Program Opportunity Notice                                      |
| NH <sub>3</sub> —ammonia   | POS—point of sale   |
| Nitro-PAHs – nitrated polycyclic aromatic hydrocarbons                 | ppm—parts per million   |
| NHTSA—National Highway Traffic Safety Administration                   | ppb—parts per billion   |
| NMC – nickel manganese cobalt  | PSI—Power Solutions International                                     |
| NMHC—non-methane hydrocarbon   | PTR-MS—proton transfer reaction-mass spectrometry                     |
| NO—nitrogen monoxide   | QVM – qualified vehicle modifiers                                     |
| NO <sub>2</sub> —nitrogen dioxide                                      | R&D – research and development  |
| NO + NO <sub>2</sub> —nitrous oxide                                    | RD&D—research, development and demonstration                          |
| NOPA—Notice of Proposed Award  | RDD&D (or RD3)—research, development, demonstration and deployment    |
| NO <sub>x</sub> —oxides of nitrogen                                    | REMD – roadside emissions monitoring device                           |
| NRC—National Research Council  | RFA – Renewable Fuels Association                                     |
| NREL—National Renewables Energy Laboratory                             | RFI – Request for Information   |
| NRTC – non-road-tested cycle   | RFP—Request for Proposal  |
| NSPS—new source performance standard                                   | RFS—renewable fuel standards  |
| NSR—new source review  | RI—reactive intermediates   |
| NZ—near zero   | RMC – ramped modal cycle  |
| NZE – near zero emission   | RMC-SET— ramped modal cycle supplemental emissions test               |
| O <sub>3</sub> - ozone   | RNG—renewable natural gas   |
| OBD—on-board diagnostics   | ROG – reactive organic gases  |
| OCS—overhead catenary system   | RPS – Rail Propulsion Systems   |
|  | RTP/SCS—Regional Transportation Plan/Sustainable Communities Strategy |

### LIST OF ACRONYMS (cont'd)

|   |  |
|---|--|
| S2S – Shore to Store  | UCR—University of California, Riverside  |
| SAE—Society of Automotive Engineers                                       | UCR/CE-CERT—UCR/College of Engineering/Center<br>for Environmental Research & Technology |
| SB—Senate Bill  | UCLA—University of California, Los Angeles   |
| SCAB—South Coast Air Basin or “Basin”                                     | UDDS—urban dynamometer driving schedule  |
| SCAG – Southern California Association of<br>Governments                  | $\mu\text{g}/\text{m}^3$ —microgram per cubic meter                                      |
| SCAQMD—South Coast Air Quality Management<br>District                     | ULEV—ultra low emission vehicle  |
| SCFM—standard cubic feet per minute                                       | ULSD – ultra low sulfur diesel   |
| SCE – single cylinder engine  | UPS—United Postal Service  |
| SCE—Southern California Edison  | U.S.—United States   |
| SCE – Southern Counties Express   | U.S.EPA—United States Environmental Protection<br>Agency                                 |
| SCR—selective catalytic reduction   | USTS – United States Training Ship   |
| SCRT - Selective Catalytic Regenerating Technology                        | V2B—vehicle-to-building  |
| SCCRT - Selective Catalytic Continuously<br>Regenerating Technology       | V2G—vehicle-to-grid  |
| SHR—steam hydrogasification reaction                                      | V2G/B—vehicle-to-building functionality  |
| SI—spark ignited  | VMT—vehicle miles traveled   |
| SI-EGR—spark-ignited, stoichiometric, cooled exhaust<br>gas recirculation | VOC—volatile organic compounds   |
| SIP—State Implementation Plan   | V-PER – vessel performance management package  |
| SJVAPCD—San Joaquin Valley Air Pollution Control<br>District              | VPP—virtual power plant  |
| SMR – steam methane reforming   | WAIRE - Warehouse Actions and Investments to<br>Reduce Emissions Program                 |
| SNG – synthetic natural gas   | WGS – water gas shift  |
| SOAs—secondary organic aerosols   | WVU—West Virginia University   |
| SOC – state-of-charge   | ZANZEFF – Zero and Near Zero Emission Freight<br>Facilities                              |
| SoCalGas—Southern California Gas Company (A<br>Sempra Energy Utility)     | ZE – zero emission   |
| SOFC – solid oxide fuel cells   | ZEB – zero-emission bus  |
| START – Sustainable Terminals Accelerating Regional<br>Transportation     | ZECT—Zero Emission Cargo Transport   |
| SULEV—super ultra-low emission vehicle                                    | ZEDT – Zero Emission Drayage Truck   |
| SUV—sports utility vehicle  | ZEV—zero emissions vehicle   |
| SwRI – Southwest Research Institute                                       |  |
| TAC – toxic air contaminants  |  |
| TAO—Technology Advancement Office   |  |
| TAP— (Ports’) Technology Advancement Program                              |  |
| TC—total carbon   |  |
| TCO – total cost of ownership   |  |
| TEMS—transportable emissions measurement system                           |  |
| THC—total hydrocarbons  |  |
| TLS – Toyota Logistics Services   |  |
| 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  |  |
| UCI – University of California, Irvine                                    |  |

**ATTACHMENT E**

**RESOLUTION NO. 22-\_\_\_\_\_**

**A Resolution of the Governing Board of the South Coast Air Quality Management District (South Coast AQMD) determining that Proposed Amended Rule 1115 – Motor Vehicle Assembly Line Coating Operations, is exempt from the requirements of the California Environmental Quality Act (CEQA).**

**A Resolution of the South Coast AQMD Governing Board amending Rule 1115 Motor Vehicle Assembly Line Coating Operations.**

**WHEREAS**, the South Coast AQMD Governing Board finds and determines that Proposed Amended Rule 1115 is considered a “project” as defined by CEQA; and

**WHEREAS**, the South Coast AQMD has had its regulatory program certified pursuant to Public Resources Code Section 21080.5 and CEQA Guidelines Section 15251(l) and has conducted a CEQA review and analysis of Proposed Amended Rule 1115 pursuant to such program (South Coast AQMD Rule 110); and

**WHEREAS**, the South Coast AQMD Governing Board finds and determines after conducting a review of the proposed project in accordance with CEQA Guidelines Section 15002(k) – General Concepts, the three-step process for deciding which document to prepare for a project subject to CEQA, and CEQA Guidelines Section 15061 – Review for Exemption, procedures for determining if a project is exempt from CEQA, that Proposed Amended Rule 1115 is exempt from CEQA; and

**WHEREAS**, the South Coast AQMD Governing Board finds and determines that, it can be seen with certainty that there is no possibility that Proposed Amended Rule 1115 may have any significant effects on the environment, and is therefore exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption; and

**WHEREAS**, the South Coast AQMD staff has prepared a Notice of Exemption for Proposed Amended Rule 1115 that is completed in compliance with CEQA Guidelines Section 15062 – Notice of Exemption; and

**WHEREAS**, Proposed Amended Rule 1115 and supporting documentation, including but not limited to, the Notice of Exemption, the Board Letter, and Final Staff Report, were presented to the South Coast AQMD Governing Board and the South Coast AQMD Governing Board has reviewed and considered this information, as well as has taken and considered staff testimony and public comment prior to approving the project; and

**WHEREAS**, the South Coast AQMD Governing Board finds and determines, taking into consideration the factors in Section (d)(4)(D) of the Governing Board Procedures (codified as Section 30.5(4)(D)(i) of the Administrative Code), that there were no modifications to Proposed Amended Rule 1115 since the Notice of Public Hearing was published; and

**WHEREAS**, Proposed Amended Rule 1115 will be submitted for inclusion into the State Implementation Plan; and

**WHEREAS**, Health and Safety Code Section 40727 requires that prior to adopting, amending or repealing a rule or regulation, the South Coast AQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the Final Staff Report; and

**WHEREAS**, the South Coast AQMD Governing Board has determined that a need exists to amend Rule 1115 – Motor Vehicle Assembly Line Coating Operations to revise emission limits of volatile organic compounds for coatings used in the automotive assembly line processes and for other miscellaneous materials used at motor vehicle assembly coating operations to fulfill Reasonably Available Control Technology requirements; and

**WHEREAS**, the South Coast AQMD Governing Board obtains its authority to adopt, amend, or repeal rules and regulations from California Health and Safety Code Sections 39002, 39616, 40000, 40001, 40440, 40702, 40725 through 40728, 40920.6, and 41508, as well as the Clean Air Act; and

**WHEREAS**, the South Coast AQMD Governing Board finds that there is an ozone problem that Proposed Amended Rule 1115 will alleviate and will promote the attainment or maintenance of state or federal ambient air quality standards; and

**WHEREAS**, the South Coast AQMD Governing Board has determined that Proposed Amended Rule 1115 is written and displayed so that its meaning can be easily understood by persons directly affected by it; and

**WHEREAS**, the South Coast AQMD Governing Board has determined that Proposed Amended Rule 1115 is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations; and

**WHEREAS**, the South Coast AQMD Governing Board has determined that Proposed Amended Rule 1115 does not impose the same requirements as any existing state or federal regulations, and the proposed amended rule is necessary and proper to execute the powers and duties granted to, and imposed upon, the South Coast AQMD; and

**WHEREAS**, the South Coast AQMD Governing Board, in amending Rule 1115, references the following statute which the South Coast AQMD hereby implements, interprets or makes specific: California Health and Safety Code Sections 39002, 40001, 40702, 40440(a), and 40725 through 40728.5, and Clean Air Act Section 110; and

**WHEREAS**, Health and Safety Code Section 40727.2 requires the South Coast AQMD to prepare a written analysis of existing federal air pollution control requirements applicable to the same source type being regulated whenever it adopts, or amends a rule, and the South Coast AQMD's comparative analysis of Proposed Amended Rule 1115 is included in the Final Staff Report; and

**WHEREAS**, the South Coast AQMD Governing Board has determined that the Socioeconomic Impact Assessment is not required, pursuant to Health and Safety

Code Section 40440.8 or 40728.5, because Proposed Amended Rule 1115 will not have a significant impact on air quality or emissions limitations; and

**WHEREAS**, the South Coast AQMD staff conducted a public workshop on January 6, 2022 regarding Proposed Amended Rule 1115; and

**WHEREAS**, the public hearing has been properly noticed in accordance with all provisions of California Health and Safety Code Sections 40440.5 and 40725; and

**WHEREAS**, the South Coast AQMD Governing Board has held a public hearing in accordance with all provisions of law; and

**WHEREAS**, the South Coast AQMD specifies the Planning and Rules Manager of Rule 1115 as the custodian of the documents or other materials which constitute the record of proceedings upon which the adoption of these proposed amendments is based, which are located at the South Coast Air Quality Management District, 21865 Copley Drive, Diamond Bar, California; and

**NOW, THEREFORE BE IT RESOLVED**, that the South Coast AQMD Governing Board does hereby determine, pursuant to the authority granted by law, that Proposed Amended Rule 1115 is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption. This information was presented to the South Coast AQMD Governing Board, whose members exercised their independent judgment and reviewed, considered and approved the information therein prior to acting on Proposed Amended Rule 1115; and

**BE IT FURTHER RESOLVED**, that the South Coast AQMD Governing Board does hereby adopt, pursuant to the authority granted by law, Proposed Amended Rule 1115 as set forth in the attached, and incorporated herein by reference; and

**BE IT FURTHER RESOLVED**, that the South Coast AQMD Governing Board requests that Proposed Amended Rule 1115 be submitted into the State Implementation Plan; and

**BE IT FURTHER RESOLVED**, that the Executive Officer is hereby directed to forward a copy of this Resolution and Proposed Amended Rule 1115 and supporting documentation to the California Air Resources Board for approval and subsequently submitted to the U.S. Environmental Protection Agency for inclusion into the State Implementation Plan.

DATE: \_\_\_\_\_

\_\_\_\_\_  
CLERK OF THE BOARDS

(Adopted March 2, 1979)(Amended December 5, 1980)(Amended March 16, 1984)  
(Amended March 2, 1990)(Amended August 2, 1991)(Amended March 6, 1992)  
(Amended May 12, 1995)(Amended March 4, 2022)

**PROPOSED AMENDED RULE 1115**

**MOTOR VEHICLE ASSEMBLY LINE  
COATING  
OPERATIONS**

(a) ~~Purpose and Applicability~~

The purpose of Rule 1115 is to reduce volatile organic compound (VOC) emissions that result from coating operations conducted on motor vehicle assembly lines. ~~This rule applies to all assembly line coating operations, conducted during the manufacturing of new motor vehicles.~~

(b) Applicability

The provisions of this rule shall apply to an owner or operator engaged in assembly line coating operations conducted during the manufacturing of new motor vehicles and other automotive parts that are coated during the vehicle assembly process as well as during associated solvent cleaning operations. This rule does not apply to activities subject to Rule 1151 – Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations.

(~~b~~c) Definitions

For the purpose of this rule, the following definitions shall apply:

- (1) ADHESIVE means any chemical substance that is applied for the purpose of bonding two surfaces together other than by mechanical means.
- (2) ANTIRUST COATING means a coating that is specifically labeled and formulated to be applied to a metal substrate to prevent the oxidation of the metal and not applied during the assembly line process.
- (~~13~~) APPLICATION LINE ~~is~~ means that portion of a motor vehicle assembly production line which applies surface coatings and other coatings to motor vehicle bodies, hoods, fenders, cargo boxes, doors, and grill opening panels.
- (~~24~~) ASSEMBLY LINE ~~is~~ means an arrangement of industrial equipment and workers in which the product passes from one specialized operation to another until complete, by either automatic or manual means.
- (~~35~~) BASECOAT ~~is~~ means a pigmented topcoat which is the first topcoat applied as part of a multistage topcoat system.

- (46) BASECOAT/CLEARCOAT (BC/CC) ~~is~~ means a topcoat consisting of a ~~base coat~~ basecoat portion and a ~~clear coat~~ clearcoat portion.
- (7) BEDLINER means a multi-component coating applied to a cargo bed after the application of topcoat and outside of the topcoat operation to provide additional durability.
- (58) CAPTURE EFFICIENCY ~~is~~ means the percentage of volatile organic compounds used, emitted, evolved, or generated by the operation, that are collected and directed to an air pollution control device.
- (9) CAVITY WAX means a coating applied into the cavities of the vehicle primarily for the purpose of enhancing corrosion protection.
- (610) CLEARCOAT ~~is~~ means a topcoat which contains no pigments or only transparent pigments and which is the final topcoat applied as part of a multistage topcoat system.
- (711) COATING ~~is~~ means a material which is applied to a surface in order to beautify and/or protect such surface.
- (12) DEADENER means a coating applied to selected vehicle surfaces primarily for the purpose of reducing the sound of road noise in the passenger compartment.
- (13) ELECTRODEPOSITION means a process of applying a protective, corrosion-resistant waterborne primer on exterior and interior surfaces that provides thorough coverage of recessed areas. It is a dip coating method that uses an electrical field to apply or deposit the conductive coating onto the part. ~~ELECTROPHORETIC APPLIED PRIMER is an undercoat applied by dipping the component in a coating bath with an electrical potential difference between the component and the bath.~~
- (914) EXEMPT COMPOUNDS ~~are~~ means any of the following compounds: those compounds defined as Exempt Compounds in as defined in Rule 102 – Definition of Terms.

(A)

Group I

trifluoromethane (HFC-23)

chlorodifluoromethane (HCFC-22)

dichlorotrifluoroethane (HCFC-123)

2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124)

pentafluoroethane (HFC-125)

1,1,2,2-tetrafluoroethane (HFC-134)

~~tetrafluoroethane (HFC-134a)~~

~~dichlorofluoroethane (HCFC-141b)~~

~~chlorodifluoroethane (HCFC-142b)~~

~~1,1,1-trifluoroethane (HFC-143a)~~

~~1,1-difluoroethane (HFC-152a)~~

~~cyclic, branched, or linear, completely fluorinated alkanes;  
cyclic, branched, or linear, completely fluorinated ethers with no  
unsaturations;~~

~~cyclic, branched, or linear, completely fluorinated tertiary amines with no  
unsaturations; and~~

~~sulfur-containing perfluorocarbons with no unsaturations and with sulfur  
bonds only to carbon and fluorine~~

(B)

Group II

methylene chloride

carbon tetrachloride

1,1,1-trichloroethane (methyl chloroform)

trichlorotrifluoroethane (CFC-113)

dichlorodifluoromethane (CFC-12)

trichlorofluoromethane (CFC-11)

dichlorotetrafluoroethane (CFC-114)

chloropentafluoroethane (CFC-115)

~~Use of Group II compounds may be restricted in the future because they are toxic, potentially toxic, or are upper-atmosphere ozone depleters, or cause other environmental impacts. By January 1, 1996, production of chlorofluorocarbons (CFC), 1,1,1-trichloroethane (methyl chloroform), and carbon tetrachloride will be phased out in accordance with the Code of Federal Regulation Title 40, Part 82 (December 10, 1993). Specifically, the District Board has established a policy to phase out chlorofluorocarbons (CFC) on or before 1997.~~

- (401) FINAL REPAIR ~~is~~ means the operations performed and coating(s) applied to
- 5) completely-assembled motor vehicles, or to parts that are not yet on a completely assembled motor vehicle, to correct damage or imperfections in the coating. ~~the final coating applied to correct topcoat imperfections prior to shipment.~~
- (16) FLEXIBLE COATING means a coating applied to polyurethane or vinyl substrate to protect the substrate from damage or to repair the substrate.
- (17) GASKET/GASKET SEALING MATERIAL means a fluid applied to coat a gasket or replace and perform the same function as a gasket. Automobile and



light-duty truck gasket/gasket sealing material includes room temperature vulcanization (RTV) seal material.

- (18) GLASS BONDING PRIMER means a primer applied to the windshield or other glass, or to body openings, to prepare the glass or body opening for the application of glass bonding adhesives or the installation of adhesive bonded glass. Automotive and light-duty truck glass bonding primer includes glass bonding/cleaning primers that perform both functions (cleaning and priming of the windshield or other glass, or body openings) prior to the application of adhesive or the installation of adhesive bonded glass.
- (19) HIGH-VOLUME, LOW-PRESSURE (HVLP) SPRAY EQUIPMENT means equipment used to apply materials by means of a spray gun which is designed to atomize 100 percent by air pressure only and intended to be operated, and which is operated, between 0.1 and 10.0 pounds per square inch gauge (psig) of air atomizing pressure measured dynamically at the center of the air cap and at the air horns and is capable of achieving a transfer efficiency of a minimum of 65%.
- (20) LUBRICATING WAX/COMPOUND means a protective lubricating material applied to vehicle hubs and hinges.
- (442) METALLIC/IRIDESCENT TOPCOAT is—means a topcoat which contains  
1) iridescent particles, composed of either metal as metallic particles or silicon as mica particles, in excess of 5 g/L (0.042 lb/gal) as applied, where such particles are visible in the dry film.
- (442) MIDCOAT is—means a semi-transparent topcoat which is the middle topcoat  
2) applied as part of a three-stage topcoat system.
- (432) MOTOR VEHICLES are—means any self-propelled vehicles, including, but not  
3) limited to, motorcycles, passenger cars, light-duty trucks and vans, medium-duty and heavy-duty vehicles as defined in Section 1900, Title 13, of the California Administrative Code Code of Regulations. Additional examples include, but are not limited to, automobiles, buses, golf carts, tanks, and armored personnel carriers.all passenger cars, light duty trucks, medium duty vehicles and heavy-duty vehicles as defined in Section 1900, Title 13, California Administrative Code.
- (442) MULTISTAGE TOPCOAT SYSTEM is—means any basecoat/clearcoat topcoat  
4) system or any three-stage topcoat system, manufactured as a system, and used as specified by the manufacturer.
- (452) OVERALL CONTROL EFFICIENCY is—means the efficiency of an emission  
5) control system at which an equivalent or greater level of VOC reduction will be achieved so that the VOC emissions resulting from the use of coatings subject to

this rule comply with the VOC emission limits established by the rule and includes consideration of both the capture efficiency and the efficiency of the control technology.~~the product of capture and control efficiencies.~~

- (26) PLASTIC PART means a polymer-based component added or installed onto a motor vehicle during the manufacturing process. It does not include any adhesives used to attach a plastic part to a vehicle.
- (162) PRIMER is any or all coatings beneath the topcoat~~means any coating applied~~  
7) prior to the applications of a topcoat for the purpose of corrosion resistance and/or adhesion of the topcoat.
- (16) SPRAY PRIMER is any primer, except primer surfacer, that is applied by spraying.
- (172) PRIMER SURFACER is~~means an intermediate protective coating applied over~~  
8) the electrodeposition primer and under the topcoat. Primer-surfacer provides adhesion, protection, and appearance properties to the total finish. Primer-surfacer may also be called guide coat or surfacer.~~a primer coat applied over an electrophoretically applied primer.~~
- (29) PRIMER SURFACER OPERATIONS may include other coating(s) (e.g., anti-chip, lower-body anti-chip, chip-resistant edge primer, spot primer, blackout, deadener, interior color, basecoat replacement coating, etc.) that is (are) applied in the same spray booth(s).
- (30) SEALER means a high viscosity material generally, but not always, applied in the paint shop after the body has received an electrodeposition primer coating and before the application of subsequent coatings (e.g., primer-surfacer). The primary purpose of an automotive sealer is to fill body joints completely so that there is no intrusion of water, gases or corrosive materials into the passenger area of the body compartment. Such materials are also referred to as sealant, sealant primer, or caulk.
- (31) SOLIDS TURNOVER RATIO ( $R_T$ ) means the ratio of total volume of coating solids that is added during electrodeposition in a calendar month divided by the total volume design capacity of the system.
- (193) SOLVENT CLEANING OPERATION is~~means~~  
2) the removal of loosely held uncured adhesives, uncured inks, uncured coatings, and contaminants which include, but are not limited to, dirt, soil, and grease from parts, products, tools, machinery, equipment, and general work areas. Each distinct method of cleaning in a cleaning process which consists of a series of cleaning methods shall constitute a separate solvent cleaning operation.

- (203) THREE-STAGE TOPCOAT SYSTEM ~~is~~ means a topcoat system composed of
  - 3) a basecoat portion, a midcoat portion, and a transparent clearcoat portion.
- (243) TOPCOAT ~~is~~ means the final coating applied to provide the final color and/or a
  - 4) protective finish. The topcoat may be a monocoat color or basecoat/clearcoat system. In-line repair and two-tone are part of topcoat. the final coating applied for the purpose of establishing the final color and/or protective surface. This includes all multistage topcoat systems, metallic/iridescent topcoats, and final repair coatings.
- (223) TRANSFER EFFICIENCY ~~is~~ means the ratio of the ~~weight (or volume)~~ of coating solids adhering to an object to the total ~~weight (or volume)~~ of coating solids used in the application process expressed as a percentage.
- (36) TRUNK INTERIOR COATING means a coating outside of the primer-surfacer and topcoat operations, applied to the trunk interior to provide chip protection.
- (37) UNDERBODY COATING means a coating applied to the undercarriage or firewall to prevent corrosion and/or provide chip protection.
- (38) VOC OF COATING LESS WATER AND LESS EXEMPT COMPOUNDS, OR REGULATORY VOC, means the weight of VOC per combined volume of VOC and coating solids and shall be calculated by the following equation:

$$\frac{\text{VOC OF COATING LESS WATER AND LESS EXEMPT COMPOUNDS}}{\text{(expressed in grams per liter or pounds per gallon)}} = \frac{W_v - W_w - W_{ec}}{V_m - V_w - V_{ec}}$$

- Where: W<sub>v</sub> = Weight of volatile compounds
- W<sub>w</sub> = Weight of water
- W<sub>ec</sub> = Weight of exempt compounds
- V<sub>m</sub> = Volume of material
- V<sub>w</sub> = Volume of water
- V<sub>ec</sub> = Volume of exempt compounds

Weight is expressed in either grams or pounds.

Volume is expressed in either liters or gallons.

- (39) VOC OF MATERIAL, OR ACTUAL VOC, means the weight of VOC per volume of material and shall be calculated by the following equation:

$$\frac{\text{VOC OF MATERIAL}}{\text{(expressed in grams per liter or pounds per gallon)}} = \frac{W_v - W_w - W_{ec}}{V_m}$$

Where:  $W_v$  = Weight of volatile compounds

$W_w$  = Weight of water

$W_{ec}$  = Weight of exempt compounds

$V_m$  = Volume of material

Weight is expressed in either grams or pounds.

Volume is expressed in either liters or gallons.

- (40) VOC WEIGHT PER VOLUME OF SOLIDS DEPOSITED means the ratio of the VOC of material expressed in pounds per gallon (or grams per liter) to the amount of solids deposited during the application of a coating and shall be calculated by the following equation:

$$\frac{\text{VOC}_{dep}}{\text{TE} \times \text{V}\%_{solid}} = \frac{\text{VOC}_{mat}}{\text{TE} \times \text{V}\%_{solid}}$$

Where:  $\text{VOC}_{dep}$  = VOC weight per volume of solids deposited

$\text{VOC}_{mat}$  = VOC of material

TE = Transfer efficiency (%)

$\text{V}\%_{solid}$  = Volume percent of solids in the coating

- (234) VOLATILE ORGANIC COMPOUND (VOC) ~~is~~ means the same as defined in 1) Rule 102 – Definition of Terms ~~any volatile compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds.~~

- (42) WEATHERSTRIP ADHESIVE means an adhesive applied to weatherstripping materials for the purpose of bonding the weatherstrip material to the surface of the vehicle.

- (43) WHEEL TOPCOAT APPLICATION means a process where a coating is applied to the rims of tires installed on a motor vehicle.

(ed) Requirements

- (1) VOC Content of Coatings and VOC Emission Limits

- (A) ~~A~~ An person ~~owner or operator of a motor vehicle assembly line shall not apply any electrophoretic primer, in any motor vehicle application line, which has a VOC content in excess of 145 grams per liter (1.2 lb/gal) of~~

~~coating, less water and less exempt compounds.~~ a coating or miscellaneous material used at motor vehicle coating operations that has a VOC content in excess of the limits specified in Table 1 or Table 2 of this subdivision, except as provided in paragraph (d)(2).

- ~~(B) A person shall not apply any final repair coating, in any motor vehicle application line, which has a VOC content in excess of 580 grams per liter (4.8 lb/gal) of coating, less water and less exempt compounds.~~
- ~~(C) A person shall not apply any spray primer, primer surfacer and/or topcoat in any motor vehicle application line that result in VOC emissions in excess of 1.80 kilograms per liter (15.0 lb/gal) of applied solids.~~

**Table 1: VOC Emission Limits for Motor Vehicle Assembly Coating Operations**

| <u>Assembly Coating Process</u>  | <u>VOC Emission Limit</u>   |  |                                    |
|--|---|--|------------------------------------|
| <u>Electrodeposition Primer operations (including application area, spray/rinse stations, and curing oven)</u> | <u>Solids Turnover Ratio (<math>R_T</math>) <math>\geq 0.16</math></u>                        | <u><math>0.040 &lt; R_T &lt; 0.160</math></u>  | <u><math>R_T &lt; 0.040</math></u> |
|  | <u>0.084 kg VOC per liter (0.7 lb/gal) of solids deposited</u>                                | <u><math>0.084 \times 350^{0.160 - R_T}</math> kg VOC per liter (<math>0.084 \times 350^{0.160 - R_T} \times 8.34</math> lb/gal) of solids deposited</u> | <u>No VOC emission limit</u>       |
| <u>Primer-Surfacer operations (including application area, flash off area, and oven)</u>                       | <u>1.44 kg VOC per liter (12.0 lb VOC/gal) of solids deposited</u>                            |  |                                    |
| <u>Topcoat operations (including application area, flash-off area, and oven)</u>                               |   |  |                                    |
| <u>Combined Primer-Surfacer and Topcoat operations</u>   |   |  |                                    |
| <u>Final Repair operations</u>   | <u>0.580 kg VOC per liter (4.8 lb VOC/gal) of Coating less water and less exempt solvents</u> |  |                                    |

**Table 2: VOC Content Limits for Miscellaneous Materials Used in Motor Vehicle Assembly Coating Operations (Grams of VOC per Liter of Coating Less Water and Less Exempt Compounds, as Applied)**

| <u>Material</u>                           | <u>VOC Emission Limit, as Applied<br/>grams per liter (lbs/gal)</u> |
|---|---|
| <u>Glass Bonding<br/>Primer</u>           | <u>900 (7.5)</u>  |
| <u>Adhesive</u>                           | <u>250 (2.1)</u>  |
| <u>Cavity Wax</u>                         | <u>650 (5.4)</u>  |
| <u>Sealer</u>                             | <u>650 (5.4)</u>  |
| <u>Deadener</u>                           | <u>650 (5.4)</u>  |
| <u>Gasket/Gasket<br/>Sealing Material</u> | <u>200 (1.7)</u>  |
| <u>Underbody Coating</u>                  | <u>650 (5.4)</u>  |
| <u>Trunk Interior<br/>Coating</u>         | <u>650 (5.4)</u>  |
| <u>Bedliner</u>                           | <u>200 (1.7)</u>  |
| <u>Weatherstrip<br/>Adhesive</u>          | <u>750 (6.3)</u>  |
| <u>Lubricating<br/>Wax/Compound</u>       | <u>700 (5.8)</u>  |

- (2) ~~An person~~ owner or operator may comply with the requirements of paragraph (ed)(1) by means of an Alternative Emission Control Plan pursuant to Rule 108 – Alternative Emission Control Plans.
- (3) Approved Emission Control System  
~~An person~~ owner or operator may comply with the provisions of paragraph (ed)(1) by using an approved emission control system for reducing VOC emissions, consisting of collection and control devices, provided such emission control system is approved pursuant to Rule 203 – Permit to Operate, in writing

by the Executive Officer, for reducing emissions of VOC. The approved emission control system shall reduce the VOC emissions resulting from the use of coatings by an equivalent or greater level to that which would have been achieved by the provisions of paragraph (e)(1).

The required efficiency of an emission control system at which an equivalent or greater level of VOC reduction will be achieved shall be calculated by the following equation:

$$C.E. = [ 1 - \left\{ \frac{(VOC_{LWc})}{(VOC_{LWn,MAX})} \times \frac{1 - (VOC_{LWn,MAX} / D_{n,MAX})}{1 - (VOC_{LWc} / D_c)} \right\} ] \times 100$$

- Where:
- C.E. = Overall Control Efficiency, percent
  - VOC<sub>LWc</sub> = VOC Limit of Rule 1115, less water and less exempt compounds, pursuant to subdivision (e).
  - VOC<sub>LWn,MAX</sub> = Maximum VOC content of non-compliant coating used in conjunction with a control device, less water and exempt compounds.
  - D<sub>n,MAX</sub> = Density of solvent, reducer, or thinner contained in the non-compliant coating.
  - D<sub>c</sub> = Density of corresponding solvent, reducer, or thinner used in the compliant coating system = 880 g/L.

(4) Carcinogenic Materials

A person shall not manufacture motor vehicle assembly coatings for use in the South Coast AQMD in which nickel, cadmium or hexavalent chromium is introduced, used, or included as a pigment or as an agent to impart any property or characteristic to the motor vehicle assembly coatings during manufacturing, distribution, or use of the applicable motor vehicle assembly coatings.

(5) Transfer Efficiency

(A) An owner or operator of an assembly line coating operation shall not apply coatings to any motor vehicle or any associated parts or components to a motor vehicle on an assembly line except by the use of one of the following methods:

- (i) electrostatic application, or
- (ii) high-volume, low-pressure (HVLP) spray, or
- (iii) brush, dip, or roller, or

(iv) spray gun application, provided the owner or operator demonstrates that the spray gun meets the HVLP definition in paragraph (c)(19) in design and use. A satisfactory demonstration must be based on the manufacturer's published technical material on the design of the spray gun and by a demonstration of the operation of the spray gun using an air pressure tip gauge from the manufacturer of the spray gun, or

(v) any such other automotive coating application methods as demonstrated, in accordance with the provisions of subparagraph (f)(2) capable of achieving equivalent or better transfer efficiency than the automotive coating application method listed in clause (d)(5)(A)(ii), provided written approval is obtained from the Executive Officer prior to use.

(B) An owner or operator shall not apply any automotive coating by any of the methods listed in subparagraph (d)(5)(A) unless the automotive coating is applied with properly operating equipment, operated according to procedures recommended by the manufacturer and in compliance with applicable permit conditions, if any.

(46) Solvent Cleaning Operations; Storage and Disposal of VOC-containing Materials.

Solvent cleaning of application equipment, parts, products, tools, machinery, equipment, general work areas, and the storage and disposal of VOC-containing materials used in solvent cleaning operations shall be ~~carried out pursuant to~~ subject to Rule 1171 -- *Solvent Cleaning Operations*.

(e) Recordkeeping

(1) Recordkeeping for VOC Emissions

An owner or operator shall maintain records of automotive coating usage pursuant to South Coast AQMD Rule 109 – *Recordkeeping for Volatile Organic Compound Emissions* to demonstrate compliance with the emission limits in subdivision (d), and shall at a minimum include the following information:

(A) Material name and manufacturer; and

(B) Current manufacturer specification sheets, safety data sheets, technical data sheets, or air quality data sheets, which list the actual VOC, regulatory VOC, and solids content, for each ready-to-spray automotive coating (based on the manufacturer's stated mix ratio), and automotive coating components.



(C) Current manufacturer specification sheets, safety data sheets, technical data sheets, or air quality data sheets, which list the actual VOC and regulatory VOC for Miscellaneous Materials Used at Motor Vehicle Assembly Coating Operations

(2) Recordkeeping for Emission Control Systems

An owner or operator using an emission control system shall maintain records, available upon request by the Executive Officer, of key system operating parameters which will demonstrate continuous operation and compliance of the emission control system during periods of VOC emission producing activities. "Key system operating parameters" are those parameters necessary to ensure or document compliance with paragraph (d)(3), including, but not limited to, temperatures, pressure drop, and air flow rates.

(ef) Methods of Analysis

(1) Determination of VOC and solids content

The VOC and solids content of materials subject to the provisions of the rule shall be determined by the following methods:

(A) United States Environmental Protection Agency USEPA Reference Method 24, ([Code of Federal Regulations (CFR) Title 40, Part 60, Appendix A]). The exempt compound content shall be determined by SCAQMD South Coast AQMD Test Method 303 (Determination of Exempt Compounds) contained in the South Coast SCAQMD AQMD "Laboratory Methods of Analysis for Enforcement Samples" manual or;

(B) South Coast SCAQMD AQMD Test Method 304 [Determination of Volatile Organic Compounds (VOCs) in Various Materials] contained in the South Coast SCAQMD AQMD "Laboratory Methods of Analysis for Enforcement Samples" manual; or

(C) American Society of Testing and Materials (ASTM) Test D2369 – Standard Test Method for Volatile Content of Coatings.

(ED) Exempt Perfluorocarbon Compounds

The following classes of compounds:

cyclic, branched, or linear, completely fluorinated alkanes;

cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;

cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and

sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine, will be analyzed as exempt compounds for compliance with paragraph (c), only when manufacturers specify which individual compounds are used in the coating formulation. In addition, the manufacturers must identify the United States Environmental Protection Agency, California Air Resources Board, and the District approved test methods used to quantify the amount of each exempt compound.

~~(2) Determination of Compliance, Including Transfer Efficiency~~

~~Determination of compliance, including transfer efficiency, to verify compliance with subparagraph (c)(1)(C) shall be conducted as prescribed in EPA Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light Duty Truck Topcoat Operations, dated December 1988.~~

(2) Determination of Transfer Efficiency

The transfer efficiency of alternative automotive coating application methods, as defined by clause (d)(5)(A)(v), shall be determined in accordance with the South Coast AQMD method "Spray Equipment Transfer Efficiency Test Procedure for Equipment User, May 24, 1989," and South Coast AQMD "Guidelines for Demonstrating Equivalency With District Approved Transfer Efficiency Spray Gun September 26, 2002."

(3) Determination of Efficiency of Emission Control System

(A) The capture efficiency of the emissions control system as specified in paragraph (ed)(3) shall be determined by the procedures presented in the USEPA U.S. EPA technical guidance document, "Guidelines for Determining Capture Efficiency, January 9, 1995." Notwithstanding the test methods specified by the Guidelines, any other method approved by the USEPA U.S. EPA, the California Air Resources Board, and the South Coast SCAQMD AQMD Executive Officer may be substituted.

(B) The efficiency of the control device of the emission control system as specified in paragraph (ed)(3) and the VO<sub>5</sub>C content in the control device exhaust gases, measured and calculated as carbon, shall be determined by the USEPA U.S. EPA Test Methods 25, 25A, or South Coast SCAQMD AQMD Method 25.1 (Determination of Total Gaseous Non-Methane

Organic Emissions as Carbon) as applicable. USEPA U.S. EPA Test Method 18, or ARB Method 422 shall be used to determine emissions of exempt compounds.

(4) Multiple Test Methods

When more than one test method or set of methods are specified for any testing, a violation of any requirement of this rule established by any one of the specified test methods or set of test methods shall constitute a violation of the rule.

(g) Rule 442 Applicability

Any motor vehicle application line exempt from all or a portion of this rule shall comply with the provisions of Rule 442 – Usage of Solvents.

(fh) Exemptions

(†) The provisions of paragraph (ed)(1) of this rule shall not apply to the following manufacturing ~~operations~~ uses:

(A) ~~Other coating operations not associated with applying body primer, and topcoat coatings to exterior sheet metal and body.~~

(B) ~~Use of:~~

(i1) ~~Wheel Topcoat Application~~

(ii2) ~~Antirust Coatings~~

(iii) ~~Trunk Coatings~~

(iv) ~~Interior Coatings~~

(iii3) ~~Flexible Coatings~~

(vi) ~~Sealers and Deadeners~~

(iv4) ~~Plastic Parts~~

(v) ~~Accent and Stripe Coatings~~

(h) ~~Recordkeeping Daily Record of Coating and Solvent Usage~~

~~Daily records of coating and solvent usage shall be maintained pursuant to Rule 109.~~

# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

## Final Staff Report

### Proposed Amended Rule 1115 – Motor Vehicle Assembly Line Coating Operations

March 2022

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Planning, Rule Development, and Area Sources  
Sarah Rees, Ph.D.

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

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Mayor, Wildomar  
Cities of Riverside County

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Senate Rules Committee Appointee

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County of Orange

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WAYNE NASTRI

## **BACKGROUND**

Rule 1115 – Motor Vehicle Assembly Line Coating Operations was adopted on March 2, 1979, with the purpose of reducing emissions of volatile organic compounds (VOCs) that result from the coating operations conducted on motor vehicle assembly lines during the manufacturing of new motor vehicles.

In 2015, the United States Environmental Protection Agency (U.S. EPA) lowered the 8-hour Ozone National Ambient Air Quality Standard (NAAQS or Standard) to 70 parts per billion (ppb). The South Coast Air Basin (Basin) is classified as an “extreme” nonattainment area and the Coachella Valley located in Riverside County is classified as a “severe-15” nonattainment area with respect to the 2015 Ozone Standard. The Clean Air Act (CAA) requires that areas classified as moderate nonattainment or higher must develop and submit a demonstration that their current air pollution regulations and emission sources fulfill Reasonably Available Control Technology (RACT) requirements.

The RACT demonstration provides a comparison of the South Coast AQMD rules and regulations with the guidelines established by the U.S. EPA as well as with the existing regulations from other air agencies within California and throughout the United States. The purpose of the RACT demonstration is to review, and where applicable, update an agency’s existing regulations to meet the current state of the science and emission controls.

In 2008, The the U.S. EPA issued Control Techniques Guidelines (CTG) for Automobile and Light-Duty Truck Assembly Coatings that are more stringent than the VOC emission limits contained in the current South Coast AQMD Rule 1115. In addition, the VOC emission limits in Rule 1115 for several coating types are less stringent than those in the corresponding rules from other regulatory agencies. To fulfill RACT requirements, Proposed Amended Rule (PAR) 1115 will address these deficiencies.

## **REGULATORY HISTORY FOR RULE 1115**

Since its adoption, Rule 1115 has been amended six times. The rule was last amended on May 12, 1995 to include provisions that:

- Added a purpose and applicability section
- Reduced VOC limits to be in line with CTG limits prepared by the U.S. EPA, that were applicable at the time
- Added the requirement to use U.S. EPA’s “Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Topcoat Operation”
- Added specification for U.S. EPA approved capture and control efficiency source test method
- Included recordkeeping requirement for emission control systems

## **PUBLIC PROCESS**

The development of PAR 1115 has been conducted through a public process. A Public Workshop was held on January 6, 2022, with the associated comment period closing on January 19, 2022. The purpose of the Public Workshop was to present the proposed rule to the public and to other stakeholders and to receive any comments related to the proposal. One public comment was received during the Public Workshop (see Appendix A).

## **SUMMARY OF PROPOSAL**

PAR 1115 will update the VOC limits for coatings used in automotive assembly line processes and for other miscellaneous materials used at motor vehicle assembly coating operations to comply with RACT requirements. The update will incorporate the VOC limits recommended in the U.S. EPA 2008 CTG for Automobile and Light-Duty Truck Assembly Coatings (2008 CTG). The update will also include new terms and definitions and will update existing terms per definitions contained in the 2008 CTG and other sources. In addition, recordkeeping and testing requirements will be updated.

## **PROPOSED AMENDMENTS TO RULE 1115**

Rule 1115 was last amended on May 12, 1995. As part of this current rulemaking effort, the rule will be amended to reflect the recommendations contained in the 2008 CTG, include new sections and definitions based on terms introduced by the 2008 CTG, and be revised for clarity.

### Revised Purpose – Subdivision (a)

Previously, Rule 1115 combined the purpose and applicability of the rule into one subsection. Consistent with other source-specific rules, purpose and applicability will be separated into two distinct subdivisions. The purpose remains to reduce VOC emissions from motor vehicle assembly line coating operations.

### New Applicability – Subdivision (b)

PAR 1115 adds a new subdivision describing the applicability of the rule. The provisions of the rule shall apply to an owner or operator engaged in assembly line coating operations conducted during the manufacturing of new motor vehicles and other automotive parts that are coated during the vehicle assembly process as well as during associated solvent cleaning operations. This rule does not apply to activities subject to Rule 1151 – Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations.

New and Modified Definitions – Subdivision (c)

PAR 1115 incorporates VOC limits recommended in the U.S. EPA 2008 CTG for Automobile and Light-Duty Truck Assembly Coatings. As such, several new terms are introduced and defined in this subdivision based on the terms and definitions contained in the 2008 CTG. The following terms and definitions are considered new to Rule 1115:

- Adhesive
- Bedliner
- Cavity Wax
- Deadener
- Gasket/Gasket Sealing Material
- Glass Bonding Primer
- Lubricating Wax/Compound
- Primer
- Primer Surfacer Operations
- Sealer
- Solids Turnover Ratio ( $R_T$ )
- Trunk Interior Coating
- Underbody Coating
- Weatherstrip Adhesive

In addition to incorporating new terms in subdivision (c), several other existing terms in Rule 1115 were updated based on the terms and definitions contained in the 2008 CTG. The following terms and definitions are updated and revised for Rule 1115:

- Electrodeposition (formerly Electrophoretic Applied Primer)
- Final Repair
- Primer Surfacer
- Topcoat

In addition to incorporating new and revised terms in subdivision (c) based on the 2008 CTG, several other existing terms were updated and revised to be consistent with definitions contained in other source-specific South Coast AQMD rules. The following terms were updated for Rule 1115 based on reference to definitions contained in South Coast AQMD Rule 1151:

- Exempt Compound
- High-Volume, Low-Pressure (HVLP) Spray Equipment
- Motor Vehicles
- VOC of Coating Less Water and Less Exempt Compounds, or Regulatory VOC
- VOC of Material, or Actual VOC
- Volatile Organic Compound

Lastly, PAR 1115 includes definitions for terms contained in the rule but that were not previously defined:

- Antirust Coating
- Flexible Coating



- Overall Control Efficiency
- Plastic Part
- VOC Weight Per Volume of Solids Deposited
- Wheel Topcoat Applications

Updated and New Requirements – Subdivision (d)

PAR 1115 will include new, and update existing, VOC limits as recommended in the 2008 CTG issued by the U.S. EPA for Automobile and Light-Duty Truck Assembly Coatings. When compared to the VOC emission limits recommended in the CTG, the VOC limits in Rule 1115 are less stringent except for coatings used for final repair activity – see Table 1. For example, for a spray primer, primer surfacer, or topcoat, Rule 1115 limits VOC emissions to 15.0 lb/gal of applied solids versus the 2008 CTG limits VOC emissions to 12.0 lb/gal. On the other hand, for final repair coatings, the VOC limits for Rule 1115 and the 2008 CTG are equivalent at 4.8 lb/gal of coating, less water and less exempt compounds.

| <b>Table 1: Comparison of 2008 CTG Recommended VOC Emission Limits for Automobile and Light-Duty Truck Assembly Coatings and South Coast AQMD Rule 1115</b> |  |   |                       |  |
|---|--|---|-----------------------|--|
| <b>Assembly Coating Process</b>   | <b>CTG Recommended VOC Emission Limit</b>  |   |                       | <b>Rule 1115 Limit</b>   |
| Electrodeposition primer (EDP) operations (including application area, spray/rinse stations, and curing oven)   | Solids turnover ratio ( $R_T$ )>0.16:  | 0.040< $R_T$ <0.160:  | $R_T$ <0.040:         | No reference to turnover ratio   |
|   | 0.084 kg VOC/liter (0.7 lb/gal) coating solids applied   | 0.084X350 <sup>0.160-<math>R_T</math></sup> kg VOC/liter (0.084x350 <sup>0.160-<math>R_T</math></sup> x 8.34 lb/gal) coating solids applied | No VOC emission limit | 0.145 kg VOC/liter (1.2 lb/gal) of coating, less water and less exempt compounds |
| Primer-surfacer operations (including application area, flash-off area, and oven)   | 1.44 kg of VOC/liter of deposited solids (12.0 lbs VOC/gal deposited solids) on a daily weighted average basis |   |                       | 1.80 kg of VOC/liter of deposited solids (15.0 lbs VOC/gal deposited solids)     |
| Topcoat operations (including application area,   | 1.44 kg VOC/liter of deposited solids (12.0 lb VOC/gal deposited solids) on a daily weighted average basis     |   |                       | 1.80 kg of VOC/liter of deposited solids   |

|   |   |  |
|---|---|--|
| flash-off area, and oven)                       |   | (15.0 lbs VOC/gal deposited solids)  |
| Final repair operations                         | 0.58 kg VOC/liter (4.8 lb VOC/gallon of coating) less water and less exempt solvents on a daily weighted average basis or as an occurrence weighted average | 0.58 kg VOC/liter (4.8 lb VOC/gallon of coating) less water and less exempt solvents |
| Combined primer-surfacer and topcoat operations | 1.44 kg VOC/liter of deposited solids (12.0 lb VOC/gal deposited solids) on a daily weighted average basis  | N/A  |

In addition, the 2008 CTG provided VOC limits for other miscellaneous coatings and materials used at motor vehicle assembly lines. For these miscellaneous coatings and materials, Rule 1115 either did not have any limits or in some coatings' categories, provided an explicit exemption from any VOC limit. For example, the 2008 CTG had VOC limits for trunk coatings, interior coatings, sealers, and deadeners whereas Rule 1115 specifically exempted these coatings. Table 2 lists the U.S. EPA 2008 CTG recommended VOC content limits for miscellaneous materials used at motor vehicle assembly coating operations.

| <b>Table 2: U.S. EPA 2008 Control Techniques Guidelines<br/>VOC Content Limits for Miscellaneous Materials Used at Motor<br/>Vehicle Assembly Coating Operations<br/>(Grams of VOC per Liter of Coating Less Water and Less Exempt<br/>Compounds, as Applied)</b> |   |
|---|---|
| <b>Material</b>   | <b>VOC Emission Limit, as Applied, in<br/>grams per liter (pounds per gallon)</b> |
| Glass Bonding Primer  | 900 (7.5)   |
| Adhesive  | 250 (2.1)   |
| Cavity Wax  | 650 (5.4)   |
| Sealer  | 650 (5.4)   |
| Deadener  | 650 (5.4)   |
| Gasket/Gasket Sealing<br>Material   | 200 (1.7)   |
| Underbody Coating   | 650 (5.4)   |
| Trunk Interior Coating  | 650 (5.4)   |

|                          |           |
|--------------------------|-----------|
| Bedliner                 | 200 (1.7) |
| Weatherstrip Adhesive    | 750 (6.3) |
| Lubricating Wax/Compound | 700 (5.8) |

As part of its analysis, staff reviewed the VOC limits established in other air districts for coatings used in the automotive assembly process. Three air districts within California and three agencies from outside California were compared (see Appendix B).

- \* Bay Area Air Quality Management District (California)
- \* San Joaquin Valley Unified Air Pollution Control District (California)
- \* Antelope Valley Air Quality Management District (California)
- \* Texas Administrative Code
- \* Michigan Administrative Code
- \* Commonwealth of Pennsylvania Code

In general, the VOC requirements recommended for coatings used in automotive assembly line processes by the 2008 CTG are followed by the San Joaquin Valley Unified APCD, Antelope Valley AQMD, the Commonwealth of Pennsylvania, and the State of Texas. The San Joaquin Valley Unified APCD and the Antelope Valley AQMD also included VOC limits for other miscellaneous materials used at motor vehicle assembly coating operations, following the 2008 CTG recommendations.

To fulfill RACT requirements, Rule 1115 is being amended to meet the VOC limits recommended by the 2008 CTG. Comparing the current limits to the proposed amended rule, the VOC limits will be lowered from 15.0 pounds of VOC per gallon of deposited solids to 12.0 pounds of VOC per gallon of deposited solids for any spray primer, primer surfacer or topcoat in any vehicle application line. A new calculation for the VOC limit of material used in the electrodeposition process, in line with the 2008 CTG, is also added. This new calculation provides a variable approach based on the solids' turnover ratio as a method to account for the solids deposited during this process. PAR 1115 also includes previously unregulated coating categories such as trunk coatings, interior coatings, sealers, and deadeners, and adds categories consistent with the 2008 CTG.

To prevent emissions of nickel, cadmium or hexavalent chromium, paragraph (d)(4) is added to prohibit the manufacture of motor vehicle assembly coatings that use cadmium or hexavalent chromium as a pigment or as an agent to impart any property or characteristic to the coating. Currently, staff during site visits did not find or observe any facility, subject to Rule 1115, that uses coatings that contain cadmium or hexavalent chromium.

A new section is also added to clarify transfer efficiency and the methods of application. This section was incorporated from the provision contained in South Coast AQMD Rule 1151 – Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations, paragraph (d)(6). PAR 1115 includes subparagraph (d)(5)(B) which requires that any application method be conducted with equipment that is properly operated according to the procedures recommended by the manufacturer and in compliance with applicable permit conditions, if any. Because several of the proposed emissions limits for non-miscellaneous materials used at motor vehicle assembly coating operations rely on the amounts of applied solids, it is important that the equipment be operated properly to ensure the amount of VOC per gallon of solids deposited is accurately calculated. ~~The following example illustrates the issue.~~

The following example illustrates the issue of the transfer efficiency effect on the calculated lbs VOC per gallon of solid deposited. ~~For example~~In this example, a facility applies a topcoat using an HVLP spray gun. The topcoat has a ~~VOC mass~~VOC of material equal to 3.5 pounds of VOC per gallon of material and a volume percent of solids equal to 50%. Typically, a properly operated HVLP spray gun has a minimum transfer efficiency of 65%. If the spray gun, however, was not properly operated and only achieved an efficiency of 50%, then what should have been calculated as 10.8 pounds of VOC per gallon of solids deposited would be calculated as 14.0 pounds of VOC per gallon of solids deposited instead. See sample calculation below.

Formula to Calculate lb VOC per Gallon of Solid Deposited

$$\text{VOC}_{\text{dep}} = \frac{\text{VOC}_{\text{mat}}}{\text{TE} \times \text{V}\%_{\text{solid}}}$$

|  | <u>Case 1</u>                                   | <u>Case 2</u>                                   |
|--|---|---|
| <u>VOC of Material (VOC<sub>mat</sub>)</u><br>(lbs/gal)                      | <u>3.5</u>                                      | <u>3.5</u>                                      |
| <u>Solids Content (V%<sub>solid</sub>)</u><br>(%)                            | <u>50</u>                                       | <u>50</u>                                       |
| <u>Transfer Efficiency (TE)</u><br>(%)                                       | <u>65</u>                                       | <u>50</u>                                       |
| <u>VOC Emitted (VOC<sub>dep</sub>)</u><br>(lb VOC/Gallon of Solid Deposited) | $\frac{3.5}{(0.50 \times 0.65)}$<br><u>10.8</u> | $\frac{3.5}{(0.50 \times 0.50)}$<br><u>14.0</u> |

Updated Recordkeeping – Subdivision (e)

PAR 1115 moves the recordkeeping section of the rule from subdivision (g) to subdivision (e) to align the format to current formatting of South Coast AQMD source-specific rules. In addition,

the recordkeeping requirements are updated to include provisions that are like those contained in South Coast AQMD Rule 1151.

Owners or operators are required to keep manufacturer specification sheets, safety data sheets, technical data sheets, or other air quality data sheets that contain the necessary information to determine compliance with the emission limits. For example, to calculate VOC per gallon of solids deposited, information on the VOC of material, transfer efficiency, and volume percent of solids in the coating is needed.

#### Modified Methods of Analysis – Subdivision (f)

The determination of VOC and solids content of a coating can be made using three different options, ~~if needed~~. These are given as U.S. EPA Method 24, South Coast AQMD Test Method 304, or American Society of Testing and Materials (ASTM) D2369.

PAR 1115 also includes a section on the determination of transfer efficiency. If an operator uses an application method that is not through either electrostatic application, brush, dip, roller, HVLP, or HVLP-equivalent, but through an alternative method, then the operator of such equipment will have to show that the transfer efficiency meets at least HVLP equivalency. The HVLP transfer equivalency is considered to be a minimum of 65%.

#### Moved Rule 442 Applicability – Subdivision (g)

PAR 1115 moves the Rule 442 Applicability section of the rule from subdivision (d) to subdivision (g) to align the format to current formatting of South Coast AQMD source-specific rules.

#### Modified Exemptions – Subdivision (h)

PAR 1115, in line with the 2008 CTG, removes the exemption for trunk coatings, interior coatings, sealers and deadeners. In addition, the exemption for accent and stripe coatings is removed. Staff considers the use of accent and stripe coatings as subject to the VOC limitations of a basecoat, if applied during the assembly process.

### **AFFECTED FACILITIES**

Rule 1115 applies to facilities that operate motor vehicle assembly line coatings operations. Within the jurisdiction of the South Coast AQMD, staff identified nine facilities that are subject to Rule 1115:

- Amrep (Ontario)
- El Dorado National (Riverside)

- Fortress Resources, Royal Truck Bodies (Carson)
- Harbor Truck Bodies (Brea)
- Karma Automotive (Moreno Valley)
- Marathon Industries (Santa Clarita)
- Spartan Motors GTB (Montebello)
- TABC, Inc (Long Beach)
- Taylor Dunn Manufacturing (Anaheim)

As part of the rule development process, staff visited facilities affected by the proposed amendments. During the visits, staff audited the coatings used at the facilities. The audit consisted of observing what coatings were being used on site and reviewing the technical data sheets (TDSs) for coatings used in the assembly line process. Based on the information contained in the TDSs, staff assessed the reported VOC content of the coatings. In addition, staff observed the type of VOC control devices, if present, that were used by the facility. For example, staff noted that several facilities utilize regenerative thermal oxidizers to control VOC emissions from their process lines.

## **EMISSION REDUCTIONS AND COST EFFECTIVENESS**

Although PAR 1115 is proposing to lower the VOC emission limits for coatings used in the motor vehicle assembly line and to include VOC emission limits for miscellaneous materials used at motor vehicle assembly coating operations, there are no anticipated emissions reductions or costs associated with the proposal.

During site visits to facilities subject to PAR 1115, staff noted that operators were already using coatings that would meet the proposed VOC emission limits and using an equivalent HVLP or better transfer-efficient application method. ~~It was~~Staff also noted that compliant coatings were sold by different manufacturers. Thus, the coatings manufacturing industry can provide viable and compliant material without incurring additional production costs to comply with PAR 1115.

In addition to using coatings compliant with PAR 1115, staff noted that facilities that used high volumes of coatings had installed emissions control equipment. To reduce the overall amount of emissions emitted from the facility, several operators had installed thermal oxidizers or equivalent. Thermal oxidizers destroy VOC emissions through incineration and usually operate with a 90% or greater destruction efficiency. Thermal oxidizers therefore provide~~The net effect on the VOC content of a coating, through the use of thermal oxidizers, is~~ a significant reduction of VOC on a per gallon basis for a coating.

Finally, staff noted that coatings used by facilities do not contain cadmium or hexavalent chromium.

## **CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)**

Pursuant to the California Environmental Quality Act (CEQA) Guidelines Sections 15002(k) and 15061, the proposed project (PAR 1115) is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3). A Notice of Exemption has been prepared pursuant to CEQA Guidelines Section 15062 and if PAR 1115 is approved, the Notice of Exemption will be filed for posting with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino counties, and with the State Clearinghouse of the Governor's Office of Planning and Research.

## **SOCIOECONOMIC ANALYSIS**

The Proposed Amended Rule 1115 does not impose any additional costs to the affected facilities and does not result in any adverse socioeconomic impacts.

## **DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727**

### *Requirements to Make Findings*

California Health & Safety Code Section 40727 requires that prior to adopting, amending, or repealing a rule or regulation, the South Coast AQMD Governing Board make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report. In order to determine compliance with Sections 40727 and 40727.2, a written analysis is required comparing the proposed rule with existing regulations.

The draft findings are as follows:

### *Necessity*

PAR 1115 is necessary to comply with the Clean Air Act, which requires areas subject to the Ozone National Ambient Air Quality Standard and classified as moderate nonattainment or higher to develop and submit a demonstration that their current air pollution regulations and emission sources fulfill the Reasonably Available Control Technology (RACT) requirements. The purpose of the RACT demonstration is to review and, where applicable, update an agency's existing regulations to meet the current state of the science and emission controls. Rule 1115 contains limits that are less stringent than those in the corresponding rules from other regulatory agencies. To fulfill RACT requirements, South Coast AQMD is amending Rule 1115 to address these deficiencies.

### *Authority*

The South Coast AQMD obtains its authority to adopt, amend, or repeal rules and regulations pursuant to H&SC Sections 39002, 40000, 40001, 40440, 40702, 40725 through 40728, 40920.6, and 41508.

#### *Clarity*

PAR 1115 is written or displayed so that its meaning can be easily understood by the persons directly affected by them.

#### *Consistency*

PAR 1115 is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions or state or federal regulations.

#### *Non-Duplication*

PAR 1115 will not impose the same requirements as any existing state or federal regulations. The proposed amended rules are necessary and proper to execute the powers and duties granted to, and imposed upon, the South Coast AQMD.

#### *Reference*

In amending this rule, the following statutes which the South Coast AQMD hereby implements, interprets or makes specific are referenced: H&SC Sections 39002, 40001, 40406, 40702, and 40440(a).

### **COMPARATIVE ANALYSIS**

Under H&SC Section 40727.2, the South Coast AQMD is required to perform a comparative written analysis when adopting, amending, or repealing a rule or regulation. The comparative analysis is relative to existing federal requirements, existing or proposed South Coast AQMD rules and air pollution control requirements and guidelines which are applicable to motor vehicle assembly line coating operations. Because PAR 1115 does impose new or more stringent emissions limits or standard, and other air pollution control monitoring, reporting or recordkeeping requirements, a comparative analysis is required. The analysis is provided in Appendix B of this report.

### **INCREMENTAL COST EFFECTIVENESS**



California H&S Code Section 40920.6 requires an incremental cost-effectiveness analysis for BARCT rules or emission reduction strategies when there is more than one control option which would achieve the emission reduction objective of the proposed amendments, relative to ozone, CO, SO<sub>x</sub>, NO<sub>x</sub>, and their precursors. The proposed amendment will not trigger the need for control, as facilities are already meeting the limits, so there is no more stringent control option upon which an incremental cost-effectiveness would be calculated. Therefore, this provision does not apply to the proposed amendment.

## APPENDIX A

### PUBLIC COMMENTS RECEIVED AT THE PUBLIC WORKSHOP

1. During the PAR 1115 Public Workshop held on January 6, 2022, Thomas Kiang Lao, President and Senior Environmental Engineer for UniVersal Engineering requested clarification on the VOC limit for coatings used on an automobile console or dashboard which are made of plastic, composite, and metal as referenced in Table 2 of the proposed amended rule.

**Response:** Consistent with the 2008 VOC limits as recommended in the U.S. EPA's 2008 CTG issued by the U.S. EPA for Automobile and Light-Duty Truck Assembly Coatings, staff did not include a specific category in PAR 1115 for coatings used on an automobile console or dashboard which are made of plastic, composite, and metal. Moreover, staff retained in paragraph (h)(4), an existing exemption from the provisions of the rule for coatings used on plastic parts. However, although this activity may not be regulated under PAR 1115, staff notes that South Coast AQMD Rule 1145 – Plastic, Rubber, Leather, and Glass Coatings regulates VOC emissions from the application of coatings to any plastic, rubber, leather, or glass product. Rule 1145 does not provide an exemption for automobile manufacturing activities and may apply for such activity.

No other public comments were received at the Public Workshop.

**APPENDIX B**

**Table B-1: Comparison of Rules for Automobile Assembly Line Coatings in Other Regulatory Jurisdictions**

|   | <b>PAR 1115</b>   | <b>U.S. EPA</b>   | <b>Bay Area AQMD</b>           | <b>San Joaquin Valley Unified APCD</b>                                      | <b>Antelope Valley AQMD</b>   | <b>State of Texas</b>   | <b>State of Michigan</b>            | <b>Commonwealth of Pennsylvania</b>   |
|---|---|---|--------------------------------|---|---|---|-------------------------------------|---|
|   | Proposed Amended Rule   | 2008 Control Technology Guidelines  | Regulation 8 Rule 13 §8-13-302 | Rule 4602   | Rule 1151.1   | Texas Admin Code §115.453 (a)(3)                              | Mich Admin Code §R336.1610 Rule 610 | 25 Pa Code Chapter 129 §129.52e   |
| <b>Assembly Coating Process</b>   |   |   |                                |   |   |   |                                     |   |
| <b>VOC Emission Limits</b>  |   |   |                                |   |   |   |                                     |   |
| Electrodeposition primer (EDP) operations (including application area, spray/rinse stations, and curing oven)<br>When solids turnover ratio ( $R_T$ )>0.16: | 0.7 pound per gallon (lb/gal) of coating solids applied                     | 0.7 pound per gallon (lb/gal) of coating solids applied                     | N/A                            | 0.7 pound per gallon (lb/gal) of coating solids applied                     | 0.7 pound per gallon (lb/gal) of coating solids applied                     | 0.7 pound per gallon (lb/gal) of coating solids applied       | N/A                                 | 0.7 pound per gallon (lb/gal) of coating solids applied                     |
| EDP operations (including application area, spray/rinse stations, and curing oven)<br>When $0.040 < R_T < 0.160$ :  | $0.084 \times 350^{0.160-R_T} \times 8.34$ lb/gal of coating solids applied | $0.084 \times 350^{0.160-R_T} \times 8.34$ lb/gal of coating solids applied | N/A                            | $0.084 \times 350^{0.160-R_T} \times 8.34$ lb/gal of coating solids applied | $0.084 \times 350^{0.160-R_T} \times 8.34$ lb/gal of coating solids applied | $0.7 \times 350^{0.160-R_T}$ lb/gal of coating solids applied | N/A                                 | $0.084 \times 350^{0.160-R_T} \times 8.34$ lb/gal of coating solids applied |
| EDP operations (including application area, spray/rinse stations, and curing oven)<br>When $R_T < 0.040$ :  | No VOC limit  | No VOC limit  | N/A                            | No VOC limit  | No VOC limit  | No VOC limit  | N/A                                 | No VOC limit  |

|  |   |   |  |   |   |   |   |   |
|--|---|---|--|---|---|---|---|---|
| Prime Electrodeposition Process  | N/A   | N/A   | 1.2 lb<br>VOC/gal of<br>coating (minus<br>water as<br>applied) | N/A   | N/A   | N/A   | 1.2 lb<br>VOC/gal of<br>coating (minus<br>water as<br>applied)  | N/A   |
| Primer-surfacer operations<br>(including application area,<br>flash-off area, and oven)  | 12.0 lb<br>VOC/gal of<br>solids<br>deposited                              | 12.0 lb<br>VOC/gal of<br>solids<br>deposited                              | 15.0 lb<br>VOC/gal of<br>solids<br>deposited                   | 12.0 lb<br>VOC/gal of<br>solids<br>deposited                              | 12.0 lb<br>VOC/gal of<br>solids<br>deposited                              | 12.0 lb<br>VOC/gal of<br>solids<br>deposited                              | 14.9 lb<br>VOC/gal of<br>solids<br>deposited                    | 12.0 lb<br>VOC/gal of<br>solids<br>deposited                              |
| Topcoat operations<br>(including application area,<br>flash-off area, and oven)  | 12.0 lb<br>VOC/gal of<br>solids<br>deposited                              | 12.0 lb<br>VOC/gal of<br>solids<br>deposited                              | 15.0 lb<br>VOC/gal of<br>solids<br>deposited                   | 12.0 lb<br>VOC/gal of<br>solids<br>deposited                              | 12.0 lb<br>VOC/gal of<br>solids<br>deposited                              | 12.0 lb<br>VOC/gal of<br>solids<br>deposited                              | 14.9 lb<br>VOC/gal of<br>solids<br>deposited                    | 12.0 lb<br>VOC/gal of<br>solids<br>deposited                              |
| Final repair operations  | 4.8 lb<br>VOC/gal of<br>coating (minus<br>water and<br>exempt<br>solvent) | 4.8 lb<br>VOC/gal of<br>coating (minus<br>water and<br>exempt<br>solvent) | 4.8 lb<br>VOC/gal of<br>coating (minus<br>water)               | 4.8 lb<br>VOC/gal of<br>coating (minus<br>water and<br>exempt<br>solvent) | 4.8 lb<br>VOC/gal of<br>coating (minus<br>water and<br>exempt<br>solvent) | 4.8 lb<br>VOC/gal of<br>coating (minus<br>water and<br>exempt<br>solvent) | 4.82 lb<br>VOC/gal of<br>coating (minus<br>water as<br>applied) | 4.8 lb<br>VOC/gal of<br>coating (minus<br>water and<br>exempt<br>solvent) |
| Combined primer-surfacer<br>and topcoat operations   | 12.0 lb<br>VOC/gal of<br>solids<br>deposited                              | 12.0 lb<br>VOC/gal of<br>solids<br>deposited                              | N/A  | 12.0 lb<br>VOC/gal of<br>solids<br>deposited                              | 12.0 lb<br>VOC/gal of<br>solids<br>deposited                              | 12.0 lb<br>VOC/gal of<br>solids<br>deposited                              | N/A   | 12.0 lb<br>VOC/gal of<br>solids<br>deposited                              |
| <b>Miscellaneous Materials<br/>Used in the Automotive<br/>Assembly Line Process</b><br><b>VOC Emission Limits</b><br>Grams/liter (pounds/gallon) |   |   |  |   |   |   |   |   |
| Glass Bonding Primer   | 900 (7.5)   | 900 (7.5)   | N/A  | 900 (7.5)   | 900 (7.5)   | (7.51)  | N/A   | 900 (7.5)   |
| Adhesive   | 250 (2.1)   | 250 (2.1)   | N/A  | 250 (2.1)   | 250 (2.1)   | (2.09)  | N/A   | 250 (2.1)   |

|   |  |   |   |   |   |  |  |               |
|---|--|---|---|---|---|--|--|---------------|
| Cavity Wax                                  | 650 (5.4)  | 650 (5.4)   | N/A   | 650 (5.4)   | 650 (5.4)   | (5.42)   | N/A  | 650 (5.4)     |
| Sealer                                      | 650 (5.4)  | 650 (5.4)   | N/A   | 650 (5.4)   | 650 (5.4)   | (5.42)   | N/A  | 650 (5.4)     |
| Deadener                                    | 650 (5.4)  | 650 (5.4)   | N/A   | 650 (5.4)   | 650 (5.4)   | (5.42)   | N/A  | 650 (5.4)     |
| Gasket/Gasket Sealing Material              | 200 (1.7)  | 200 (1.7)   | N/A   | 200 (1.7)   | 200 (1.7)   | (1.67)   | N/A  | 200 (1.7)     |
| Underbody Coating                           | 650 (5.4)  | 650 (5.4)   | N/A   | 650 (5.4)   | 650 (5.4)   | (5.42)   | N/A  | 650 (5.4)     |
| Trunk Interior Coating                      | 650 (5.4)  | 650 (5.4)   | N/A   | 650 (5.4)   | 650 (5.4)   | (5.42)   | N/A  | 650 (5.4)     |
| Bedliner                                    | 200 (1.7)  | 200 (1.7)   | N/A   | 200 (1.7)   | 200 (1.7)   | (1.67)   | N/A  | 200 (1.7)     |
| Weatherstrip Adhesive                       | 750 (6.3)  | 750 (6.3)   | N/A   | 750 (6.3)   | 750 (6.3)   | (6.26)   | N/A  | 750 (6.3)     |
| Lubricating Wax/Compound                    | 700 (5.8)  | 700 (5.8)   | N/A   | 700 (5.8)   | 700 (5.8)   | (5.84)   | N/A  | 700 (5.8)     |
| <b>Determination of Transfer Efficiency</b> |  |   |   |   |   |  |  |               |
|   | Transfer efficiency of alternative automotive coating application methods, determined in accordance with the South Coast AQMD method "Spray Equipment Transfer Efficiency Test Procedure for Equipment User, May 24, 1989," and South Coast AQMD | Determination of transfer efficiency shall be as prescribed in EPA "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Topcoat Operations, dated December 1988." | Determination of transfer efficiency shall be as prescribed in EPA "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Topcoat Operations, dated December 1988." | Any other coating application method which is demonstrated to the APCO to be capable of achieving at least 65 percent transfer efficiency. The transfer efficiency shall be determined in accordance with the SCAQMD method "Spray Equipment Transfer Efficiency Test | Transfer efficiency of alternative coating application methods determined in accordance with the SCAQMD method "Spray Equipment Transfer Efficiency Test Procedure for Equipment User," May 24, 1989 and SCAQMD "Guidelines for Demonstrating | The owner or operator shall demonstrate that either the application system being used is equivalent to the transfer efficiency of an HVLP spray or that the application system being used has a transfer efficiency of at least 65%. | Department approval of the transfer efficiency test method is required | Not specified |

|                            |  |               |               |   |   |   |               |               |
|----------------------------|--|---------------|---------------|---|---|---|---------------|---------------|
|                            | “Guidelines for Demonstrating Equivalency With District Approved Transfer Efficiency Spray Gun”, September 26, 2002.”  |               |               | Procedure for Equipment User,” May 24, 1989   | Equivalency With District Approved Transfer Efficiency Spray Gun”, September 26, 2002.  |   |               |               |
| <b>Application Methods</b> |  |               |               |   |   |   |               |               |
|                            | <p>Application by:</p> <ul style="list-style-type: none"> <li>(i) Electrostatic application</li> <li>(ii) HVLP spray equipment</li> <li>(iii) Brush, dip, or roller</li> <li>(iv) Satisfactory demonstration of a spray gun meeting HVLP definition</li> <li>(v) Approved HVLP equivalent</li> </ul> | Not specified | Not specified | <p>Application by:</p> <ul style="list-style-type: none"> <li>(i) Brush, dip, or roller</li> <li>(ii) Electrostatic application</li> <li>(iii) EDP</li> <li>(iv) Flow Coating</li> <li>(v) Continuous Coating</li> <li>(vi) HVLP spray equipment</li> <li>(vii) Other coating method demonstrated to be capable of achieving 65% transfer efficiency</li> </ul> | <p>Application by:</p> <ul style="list-style-type: none"> <li>(i) Brush, dip, or roller</li> <li>(ii) Electrostatic application</li> <li>(iii) Flow Coating</li> <li>(iv) Continuous Coating</li> <li>(v) HVLP spray equipment</li> </ul> | <p>Application by:</p> <ul style="list-style-type: none"> <li>(1) Electrostatic application</li> <li>(2) HVLP spray equipment</li> <li>(3) Flow coat</li> <li>(4) Roller coat</li> <li>(5) Dip coat</li> <li>(6) Brush</li> <li>(7) Approved HVLP equivalent</li> </ul> | Not specified | Not specified |
| <b>Record Keeping</b>      |  |               |               |   |   |   |               |               |

|  |  |  |  |   |  |  |   |               |
|--|--|--|--|---|--|--|---|---------------|
|  | An owner or operator shall maintain records of automotive coating usage pursuant to South Coast AQMD Rule 109 – Recordkeeping for Volatile Organic Compound Emissions to demonstrate compliance with the emission limits | Recommend that any State RACT Rules that allow for averaging include appropriate recordkeeping and reporting requirements. | The person shall maintain and have available during an inspection, a current list of coatings in use which provides all of the coating data necessary to evaluate compliance | The operator shall maintain records on a daily basis, and have available at all times, a current list of coatings in use which provides all of the coating data necessary to evaluate compliance per Sections 6.1.1, 6.1.2 and 6.2. | Maintain and have available during an inspection, a current list of Coatings and solvents in use which provides all of the Coating data necessary to evaluate compliance | Provides the VOC content of coatings may be determined by using analytical data from the MSDS, and if necessary the dilution solvent. Owner/operator may use data from the MSDS as a compliance alternative to testing. Relying on the MSDS is sufficient to ensure continuous compliance with the control requirements in §115.453 and extends option to owners and operators of all surface coating categories | A person who is responsible for the operation of a coating line that is subject to this rule shall obtain current information and keep records necessary for the determination of compliance with this rule | Not specified |
|--|--|--|--|---|--|--|---|---------------|

APPENDIX C

COMMENT LETTER RECEIVED ON 2/17/2022



February 17<sup>th</sup>, 2022

Mr. Michael Krause  
South Coast Air Quality Management District  
[MKrause@aqmd.gov](mailto:MKrause@aqmd.gov)

Re: Public Comments Rule 1115—Motor Vehicle Assembly Line Coating Operations

RadTech is pleased to comment on the district’s proposed amendments to Rule 1115. RadTech International is the trade association for the Ultraviolet/ Electron Beam/Light Emitting Diode (UV/EB/LED) industry. The organization represents over 800 members nationwide involved in a myriad of markets ranging from solar panel manufacturing to finger nail polish and the technology also plays a role in motor vehicle assembly line coating operations.

1-1

Unlike conventional inks and coatings, UV/EB/LED products do not evaporate. Instead, they are specifically formulated to react to energy. The nature of the process is such that virtually no Volatile Organic Compounds (VOCs) are generated. The materials are generally high viscosity and thus there are no regulatory concerns with generation of particulate matter from spraying. Additionally, UV/EB processes are **all-electric** and thus do not produce combustion contaminants such as NOx, SOx and Greenhouse Gases.

**Requested Proposed Rule Language Changes**

RadTech believes that Rule 1115 presents an opportunity for the district to achieve voluntary emission reductions above and beyond those presently required in the rule, through regulatory flexibility that will encourage conversion to UV/EB/LED.

1-2

**Request for Exemption**

Our materials are typically well below 50 grams/liter in VOC content which is minimal compared to the proposed limits. We respectfully request that UV/EB/LED materials be exempted from the rule requirements. An exemption would be an incentive for businesses to voluntarily choose UV/EB/LED technology resulting in additional emission reductions for the South Coast Basin.

1-3

Recordkeeping requirements are burdensome on businesses and in the case of UV/EB/LED operations, are not crucial because the materials are well below the rule limits. Exempting energy curable materials from overly prescriptive recordkeeping requirements will alleviate regulatory burdens on the SCAQMD’s business community and benefit air quality.

1-4



**Definition**

We would very much appreciate the inclusion of a definition for energy curable materials in the rule. We propose a definition like the one in other SCAQMD rules (R1130, R1168):

1-5

*ENERGY CURABLE MATERIALS are single component reactive products that cure upon exposure to visible-light, ultraviolet light, or to an electron beam.*

**Test Method**

The Environmental Protection Agency and the SCAQMD have long recognized that EPA Method 24 is not suitable for thin film UV/EB/LED Materials. Consistent with other district rules, RadTech urges the inclusion of ASTM D7767-11 as suitable test method for UV/EB/LED products subject to Rule 1115. We propose the following language:

1-6

*The VOC content of thin film Energy Curable Adhesives and Sealants may be determined by manufacturers using ASTM Test Method 7767 Standard Test Method to Measure Volatiles from Radiation Curable Acrylate Monomers, Oligomers, and Blends and Thin Coatings Made from Them.*

**Transfer Efficiency**

UV/EB/LED products have higher viscosities than conventional solvent products. The rationale behind transfer efficiency requirements is to control VOC emissions that can take place during spraying operations. But, given the fact that UV/EB/LED materials do not have emissions like conventional solvent processes, facilities should not be required to the same level of regulation for transfer efficiency purposes. We urge an exemption for UV/EB/LED materials with viscosities of 650 centipoise or above, from the transfer efficiency requirements of the rule.

1-7

UV/EB materials not only meet, but far exceed any proposed rule requirements and any added flexibility to companies that choose these pollution preventive processes will encourage voluntary emission reductions thereby furthering the district's mission. We look forward to a productive rulemaking.

1-8

Sincerely,

Rita M. Loof

Director, Environmental Affairs

### Response to Comment 1-1

During the rulemaking process for PAR 1115, staff visited multiple facilities subject to the rule. Staff did not observe UV/EB/LED technology in use during their visits. Staff would welcome the opportunity to contact operators of facilities engaged in motor vehicle assembly line coating operations that use the technology. Further research would be needed to ascertain viability of this technology for motor vehicle assembly lines, which is outside the scope and purpose of the current rule rulemaking effort.

### Response to Comment 1-2

Thank you for your comment.

### Response to Comment 1-3

Staff acknowledges the typically low VOC content of UV/EB/LED processes. Exemptions are included in rules for operations where there are challenges with complying with rule requirements. Materials cited in the comment letter that have a VOC content less than 50 grams/liter would be well below the proposed VOC limits in PAR 1115, therefore the addition of an exemption is not necessary. The current rule does not preclude UV/EB/LED materials from being used to comply with the rule. Further, staff does not see any incentive difference between a compliant process and an exempt process.

### Response to Comment 1-4

Recordkeeping forms the basis to determine compliance with rules, including exemptions, and permit conditions. South Coast AQMD Rule 109 – Recordkeeping of Volatile Organic Compounds in Organic Material does include a limited exemption for any cleaning solvent subject to Rule 1171 – Solvent Cleaning Operations or Rule 1122 – Solvent Degreasers provided the material contains 50 grams of VOC per liter of material or less. Staff could consider an exemption for UV/EB/LED materials during the next amendment to Rule 109.

### Response to Comment 1-5

South Coast AQMD rules do not typically include a defined term that is not referenced anywhere in the rule. As stated in response to comment 1-3, the current rule does not preclude UV/EB/LED materials to be used to comply with the rule, therefore, it is not listed in the rule and does not warrant a definition.

### Response to Comment 1-6

ASTM Test Method 7767-11 determines the VOC content of the individual components of UV/EB/LED materials and can be used by manufacturers when they are estimating the VOC content of their fully formulated products. The method cannot be used to demonstrate compliance of a fully formulated (commercial) product as it is applied in the field. The South Coast AQMD laboratory cannot independently perform this analysis and have confidence that the results

accurately reflect the composition of the fully formulated product. ASTM Test Method 7767-11 can serve as a useful test that manufacturers can use to estimate the VOC content of their materials, and the rule does not preclude manufacturers of UV/EB/LED materials from using Test Method 7767-11. However, since this method cannot be used for compliance purposes, it is not listed under the test method compliance section in the rule.

#### Response to Comment 1-7

PAR 1115 provides multiple methods to demonstrate compliance to the transfer efficiency requirements in the proposed rule. To consider a change to the transfer efficiency requirements, staff would have to conduct considerable research into the impacts of the change and provide public process. Research would include visiting facilities that are using EV/EB/LED materials for motor vehicle assembly line coating operations, conferring with South Coast AQMD source test engineers, potentially conducting source tests, and holding further meetings with stakeholders. This request is outside the scope of this rule amendment.

#### Response to Comment 1-8

The current rulemaking effort was initiated with the purpose of updating the rule to meet Reasonable Available Control Technologies (RACT) requirements. In the future, staff welcomes the opportunity to work with the commentor to evaluate UV/EB/LED technology and its potential applicability to this industry.

ATTACHMENT H



**South Coast  
Air Quality Management District**

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

**SUBJECT: NOTICE OF EXEMPTION FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT**

**PROJECT TITLE: PROPOSED AMENDED RULE 1115 – MOTOR VEHICLE ASSEMBLY LINE COATING OPERATIONS**

Pursuant to the California Environmental Quality Act (CEQA) Guidelines, the South Coast Air Quality Management District (South Coast AQMD), as Lead Agency, has prepared a Notice of Exemption pursuant to CEQA Guidelines Section 15062 – Notice of Exemption for the project identified above.

If the proposed project is approved, the Notice of Exemption will be filed for posting with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino Counties. The Notice of Exemption will also be electronically filed with the State Clearinghouse of the Governor's Office of Planning and Research for posting on their CEQAnet Web Portal which may be accessed via the following weblink: <https://ceqanet.opr.ca.gov/search/recent>. In addition, the Notice of Exemption will be electronically posted on the South Coast AQMD's webpage which can be accessed via the following weblink: <http://www.aqmd.gov/nav/about/public-notices/ceqa-notices/notices-of-exemption/noe---year-2022>.

**NOTICE OF EXEMPTION FROM THE  
CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)**

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|  |   |
|--|---|
| <b>To:</b> County Clerks for the Counties of Los Angeles, Orange, Riverside and San Bernardino; and Governor's Office of Planning and Research – State Clearinghouse | <b>From:</b> South Coast Air Quality Management District<br>21865 Copley Drive<br>Diamond Bar, CA 91765 |
|--|---|

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**Project Title:** Proposed Amended Rule 1115 – Motor Vehicle Assembly Line Coating Operations

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**Project Location:** The proposed project is located within the South Coast Air Quality Management District's (South Coast AQMD) jurisdiction, which includes the four-county South Coast Air Basin (all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties), and the Riverside County portion of the Salton Sea Air Basin and the non-Palo Verde, Riverside County portion of the Mojave Desert Air Basin.

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**Description of Nature, Purpose, and Beneficiaries of Project:** Amendments to Rule 1115 are proposed that will update the volatile organic compound (VOC) emission limits for coatings used in automotive assembly line processes and for other miscellaneous materials used at motor vehicle assembly coating operations to comply with the United States Environmental Protection Agency's Reasonably Available Control Technology requirements and their recommended 2008 Control Techniques Guidelines for Automobile and Light-Duty Truck Assembly Coatings. Other amendments are proposed that will: 1) separate the previously combined purpose and applicability subdivision into two parts; 2) revise the applicability requirements to include automotive parts that are coated during the vehicle assembly process as well as during associated solvent cleaning operations and exclude activities that would be subject to Rule 1151 - Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations; 3) add new and modify existing definitions of terms; 4) update recordkeeping requirements; 5) revise the methods of analysis to include an additional test method for determining VOC and solids content of coatings and to update the criteria for determining transfer efficiency; and 6) delete the exemptions for trunk coatings, interior coatings, sealers and deadeners, and accent and stripe coatings.

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|  |  |
|--|--|
| <b>Public Agency Approving Project:</b><br>South Coast Air Quality Management District | <b>Agency Carrying Out Project:</b><br>South Coast Air Quality Management District |
|--|--|

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**Exempt Status:** CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption

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**Reasons why project is exempt:** South Coast AQMD, as Lead Agency, has reviewed the proposed project pursuant to: 1) CEQA Guidelines Section 15002(k) – General Concepts, the three-step process for deciding which document to prepare for a project subject to CEQA; and 2) CEQA Guidelines Section 15061 – Review for Exemption, procedures for determining if a project is exempt from CEQA. Operators of all nine facilities subject to Rule 1115 are currently using coatings that comply with the proposed VOC emission limits and are applying these coatings using equivalent high-volume, low-pressure or other more transfer-efficient application method such that no physical modifications are expected to occur as a result of the proposed project. Thus, it can be seen with certainty that implementing the proposed project would not cause a significant adverse effect on the environment. Therefore, the proposed project is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption.

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**Date When Project Will Be Considered for Approval (subject to change):**

South Coast AQMD Governing Board Public Hearing: March 4, 2022

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|   |  |   |                               |
|---|--|---|-------------------------------|
| <b>CEQA Contact Person:</b><br>Kevin Ni | <b>Phone Number:</b><br>(909) 396-2462 | <b>Email:</b><br><a href="mailto:kni@aqmd.gov">kni@aqmd.gov</a> | <b>Fax:</b><br>(909) 396-3982 |
|---|--|---|-------------------------------|

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|   |  |   |                               |
|---|--|---|-------------------------------|
| <b>Rule Contact Person:</b><br>Rodolfo Chacon | <b>Phone Number:</b><br>(909) 396-2726 | <b>Email:</b><br><a href="mailto:rchacon@aqmd.gov">rchacon@aqmd.gov</a> | <b>Fax:</b><br>(909) 396-3982 |
|---|--|---|-------------------------------|

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**Date Received for Filing:** \_\_\_\_\_ **Signature:** (Signed and Dated Upon Board Approval)  
Barbara Radlein  
Program Supervisor, CEQA  
Planning, Rule Development, and Area Sources



# Proposed Amended Rule 1115 Motor Vehicle Assembly Line Coating Operations

Board Meeting

March 4, 2022





# Rule Background

- Rule 1115 applies to coatings used in assembly line operations (automatic and manual)
- Nine facilities subject to Rule 1115
- Rule last amended in 1995
- Rule amendment will address Reasonably Available Control Technology (RACT) deficiencies



# Proposed Rule Amendments

- Clean Air Act requires non-attainment areas to conduct RACT assessment
- RACT assessment compares existing South Coast AQMD rules with U.S. EPA guidelines and with similar regulations from other air agencies
- Rule 1115 identified as not meeting RACT
- Proposed rule amendments will:
  - Harmonize with U.S. EPA CTG VOC emission limits for coatings and miscellaneous materials
  - Add and update definitions
  - Clarify transfer efficiency requirements
  - Require records on-site for compliance determination
  - Eliminate exemptions that are no longer applicable



# Comparison of Proposed Changes

Changes VOC limits for:

- Electrodeposition primer
- Primer-surfacer and topcoat

Includes new VOC limits for:

- Combined primer-surfacer and topcoat
- Miscellaneous Materials

| Coating Category                     | Proposed Change  |
|--------------------------------------|--|
| Electrodeposition primer (EDP)       | General limit from 1.2 lb VOC/gal to 0.7 lb VOC/gal of deposited solids                      |
| Primer-surfacer and topcoat          | Lowers limit from 15.0 lb VOC/gal of deposited solids to 12.0 lb VOC/gal of deposited solids |
| Combined primer-surfacer and topcoat | New limit - 12.0 lb VOC/gal of deposited solids  |
| Miscellaneous Materials Categories   | New limits incorporating 2008 U.S. EPA guidance  |

- Other California air districts and other agencies across the country utilize these same limits
- Products available on the market and in use that meet these limits

# Anticipated Impacts

## **Current Operations:**

- Use compliant coatings
- Utilize compliant application equipment (HVLP)
- Equipped with air pollution controls (thermal oxidizers) at higher volume facilities

## **Impacts from Rule Amendment:**

- No additional costs expected
- No modifications that would cause a significant adverse effect on the environment
- No adverse socioeconomic impacts anticipated

# Key Issue

On February 17<sup>th</sup> staff received comment letter requesting:

- Exemption for UV/EB/LED materials
- Inclusion of Energy Curable Materials definition
- Inclusion of thin film UV/EB/LED test methods
- Exclusion of transfer efficiency requirements for UV/EB/LED materials

UV/EB/LED materials may be used provided the coatings meet VOC emission limits in PAR 1115 and clean-up solvents meet requirements in existing rules

- Exemption could result in backsliding



# Staff Recommendation

Adopt resolution:

- Determining that PAR 1115 is exempt from the requirements of CEQA
- Amending Rule 1115

BOARD MEETING DATE: March 4, 2022

AGENDA NO. 31

**PROPOSAL:** Approve and Adopt Technology Advancement Office Clean Fuels Program 2021 Annual Report and 2022 Plan Update, Resolution and Membership Changes for Clean Fuels 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 2021 and 2022 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 18, 2022; Recommended for Approval

**RECOMMENDED ACTIONS:**

1. Approve and adopt the attached Technology Advancement Office Clean Fuels Program 2021 Clean Fuels Annual Report and 2022 Plan Update and include it in the South Coast AQMD's Clean Fuels Program;
2. Adopt the attached Resolution finding that the Technology Advancement Office Clean Fuels Program Plan Update for 2022 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
4. Receive and file membership changes to the Technology Advancement Advisory Group.

Wayne Nastri  
Executive Officer

## **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 to achieve these standards. The 2016 AQMP projects that a 45 percent reduction in NO<sub>x</sub> by 2023 and an additional 55 percent reduction by 2031 is required, to achieve state and national air quality standards, 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. Staff has initiated work on the 2022 AQMP, which will need significant NO<sub>x</sub> reductions from mobile sources to achieve federal and state ambient air quality standards.

California Health and Safety Code (H&SC) 40448.5(e) requires Clean Fuels Program to consider 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 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 South Coast AQMD in achieving federal and state air quality standards.

The South Coast AQMD Technology Advancement Office (TAO) Clean Fuels Program is an integral part of strategies to achieve the significant NO<sub>x</sub> reductions called for in the 2016 AQMP. In its first 32 years, from 1988 to 2020, the Clean Fuels Program leveraged \$231.6 million into \$1.14 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 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, as well as other incentive programs, provide a unique synergy to push market penetration of the technologies developed and demonstrated by the Clean Fuels Program. This synergy enables South Coast AQMD to act as a leader in both technology development and commercialization efforts targeting reduction of criteria and toxic pollutants.

H&SC Section 40448.5.1 requires that South Coast AQMD 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, 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 2021 Annual Report and 2022 Plan Update and, as part of the Board's consideration of the 2022 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 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 adopt a Resolution finding that proposed projects do not duplicate any past or present programs (Attachment A); 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 (Attachment B); and approve and adopt the

combined TAO Clean Fuels Program 2021 Annual Report and 2022 Plan Update (Attachment C).

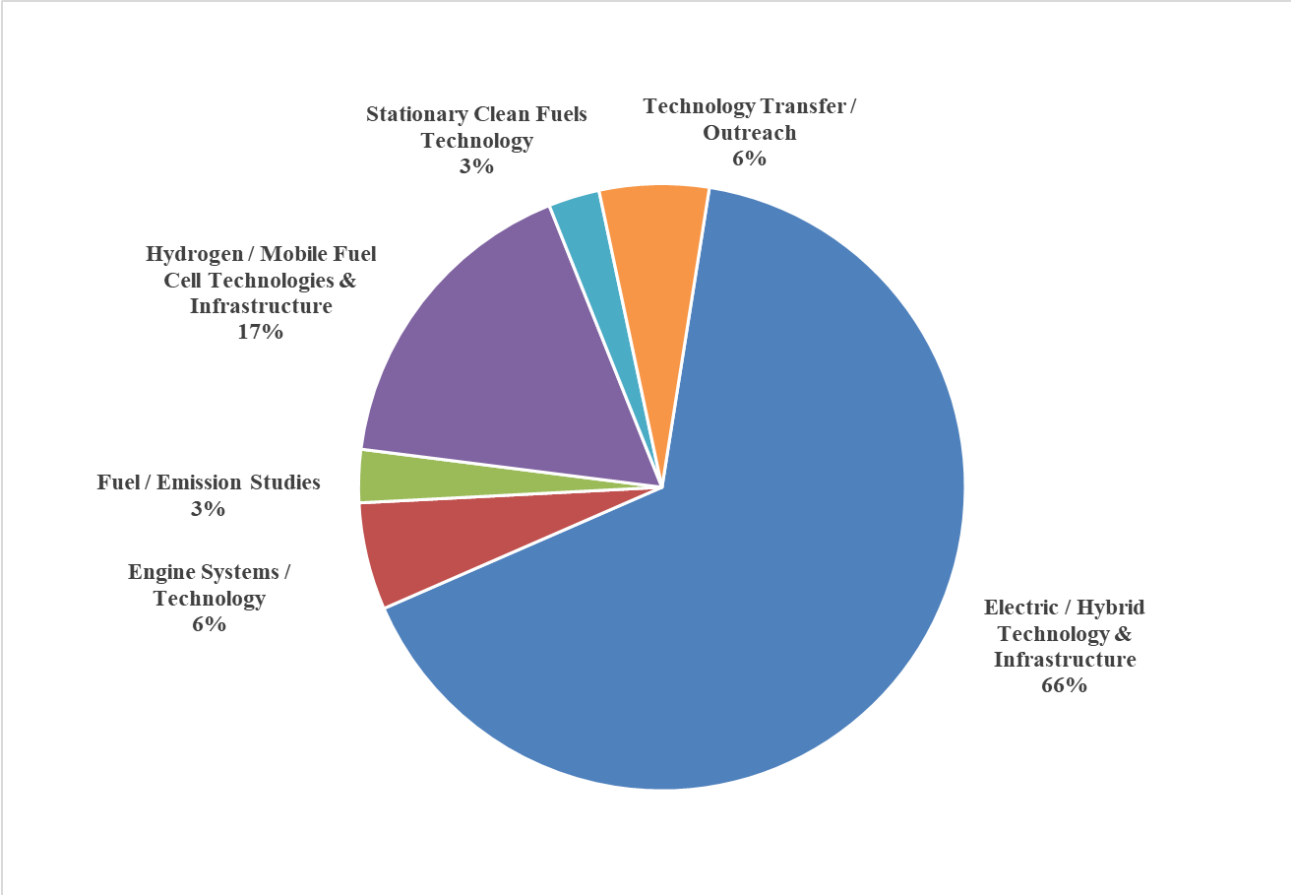
*Clean Fuels Program Annual Report 2021*

The Annual Report covers projects and progress of the Program for calendar year 2021 consistent with 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 vehicle 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.

Under the Clean Fuels Program during 2021, 19 new projects or studies were executed and 5 continuing contracts were modified, adding additional dollars to sponsor research, development, demonstration and deployment (RD<sup>3</sup>) projects and technology assessment and transfer contracts for alternative and clean fuel technologies. The South Coast AQMD contribution to these projects was approximately \$10.6 million, with total project costs of \$253 million, which includes coordinated funding from other governmental agencies, private sector, academia and research institutions. The \$10.6 million includes approximately \$4.3 million recognized into the Clean Fuels Fund as pass-through funds from project partners to facilitate project administration by the Clean Fuels Program. 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 2021.





**Figure 1: Distribution of Executed Clean Fuels Program Contracts in CY 2021 (\$10.6M)**

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 year being reported.

During 2021, the South Coast AQMD supported a variety of projects and technologies, ranging from near-term to long-term RD<sup>3</sup> 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 2021 included demonstrations of zero emission trucks and EV infrastructure, zero emission cargo handling vehicle demonstrations, deployment of pre-commercial fuel cell transit buses, natural gas engine emissions and efficiency improvements, and microgrid technology development. Similar to the last few years, the significant project scopes with substantial outside cofunding of a few key contracts executed in the reporting year resulted in higher than average leveraging of Clean Fuels dollars. Typical leveraging has been \$4 for every \$1 in Clean Fuels funding. In 2021, leveraging was approximately \$1 of Clean Fuels funds to \$39 of outside funds.

In addition to the new projects, 24 RD<sup>3</sup> and seven technology assessments and transfer/outreach projects were completed in 2021. Summaries of each of the technical

projects completed in 2021 are provided in Appendix C of the combined Clean Fuels Program Annual Report and Plan Update.

The Clean Fuels Program in 2021 continued to leverage other outside opportunities with the South Coast AQMD securing new awards over \$48.7 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 RD<sup>3</sup> effort implemented under 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 lead in the development of 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 2022*

The attached Clean Fuels Program Draft Plan Update identifies potential projects to be considered for funding during 2022. The proposed projects reflect promising low, near-zero and zero emissions technology applications that are emerging in different source categories. This update includes a number of proposed projects, not all of which are expected to be funded in the current fiscal year given the available budget. Some of the proposed projects for 2022 include but are not limited to: 1) Large deployment projects of heavy duty zero emission battery electric trucks and infrastructure; 2) Continue microgrid demonstrations to support large heavy duty truck deployment projects; 3) Support advanced high power quick charge infrastructure to support heavy duty BET's; 4) Development and demonstration for long range fuel cell electric trucks; 5) Develop pathways and demonstrate green hydrogen production; and 6) Heavy-duty diesel truck replacements with near-zero emissions natural gas trucks. Projects not funded in 2022 may be considered for funding in subsequent years.

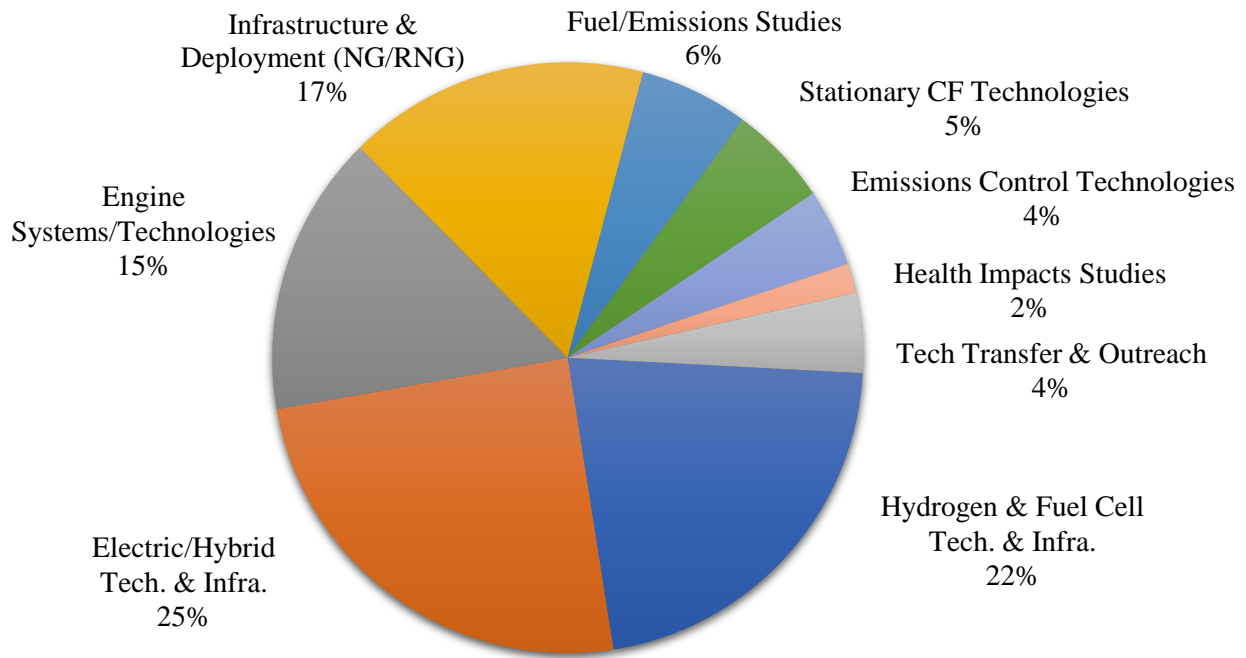
In addition to identifying proposed projects to be considered for funding, the Draft Plan Update confirms nine key technical areas of highest priority to the South Coast AQMD. These high priority areas are listed below based on the proposed funding distribution shown in Figure 2:

- Hydrogen and Fuel Cell Technologies and Infrastructure;
- Electric and Hybrid Vehicle Technologies (including charging infrastructure);
- Engine Systems (particularly in the heavy-duty vehicle sector);
- Infrastructure and Deployment (compressed and liquid natural gas);
- Fuel and Emissions Studies;
- Stationary Clean Fuels Technologies (including renewables);
- Emissions Control Technologies;
- Health Impacts Studies; and
- Technology Transfer/Assessment and Outreach.

These priorities represent areas where South Coast AQMD funding will have the greatest impact. In keeping with the diverse and flexible “technology portfolio” approach, these priorities may shift during the year to capture opportunities such as cost-sharing by the state government, the federal government or other entities; or address specific technology issues which affect residents within the South Coast AQMD’s jurisdiction.

Figure 2 depicts the potential distribution of South Coast AQMD Clean Fuels funds, based on projected program costs of \$21.8 million for the nine project areas discussed previously. The expected actual project expenditures for 2022 will be 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, and near-term versus long-term benefits with the constraints on available South Coast AQMD funding. Specific contract awards throughout 2022 will be based on this proposed allocation, the quality of proposals received and evaluation of projects against standardized criteria, and 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 project cost-sharing.

These technical priorities will necessarily be balanced by funding availability and the availability of qualified projects. Revenues from several sources support the South Coast AQMD’s Technology Advancement program. The principal revenue source is the Clean Fuels Program, which under H&SC Section 40448.5 and Vehicle Code Section 9250.11 establishes mechanisms to collect revenues from mobile and stationary sources to support the program’s objectives, albeit with constraints on the use of the funds. Grants and cost-sharing revenue contracts from various government agencies, such as CARB, CEC, National Renewable Energy Laboratory, U.S. EPA and DOE, also support technology advancement efforts and these agencies may be asked to cost-share.



**Figure 2: Projected Funding Distribution for Potential Projects in 2022 (\$21.8M)**

As required, the Annual Report and Plan Update have been reviewed by the SB 98 Clean Fuels Advisory Group. Staff recommends Board approval of the Clean Fuels Program Annual Report for 2021 and adoption of the Clean Fuels Program Plan Update for 2022 as well as finding that the proposed projects do not duplicate programs of other organizations specified in the H&SC provision.

**Attachments**

- A. Resolution
- B. Qualifications and Expertise of Proposed New Advisory Group Members
- C. TAO Clean Fuels Program 2021 Annual Report and 2022 Plan Update

## ATTACHMENT A

### RESOLUTION NO. 22-

**A Resolution of the Governing Board (the Board) of the South Coast Air Quality Management District (South Coast AQMD) approving the Technology Advancement Office Clean Fuels Program Annual Report for 2021 and adopting the Clean Fuels Program Plan Update for 2022.**

**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;

**WHEREAS**, Health and Safety Code Sections 40404 and 40448.5 require the South Coast AQMD to coordinate and manage a Clean Fuels Program to accelerate the utilization of clean-burning fuels within the South Coast Air Basin;

**WHEREAS**, Health and Safety Code Section 40512 and Vehicle Code Section 9250.11 authorize funding for the South Coast AQMD Clean Fuels Program;

**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;

**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;

**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;

**WHEREAS**, Health and Safety Code Section 40448.5.1 requires that the South Coast AQMD 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 South Coast AQMD, 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;

**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;

**WHEREAS**, notice has been provided to interested parties and the public at least 30 days prior to the 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 2021;

**BE IT FURTHER RESOLVED** that the Board approves the Technology Advancement Office Clean Fuels Program Plan Update for 2022; and

**BE IT FURTHER RESOLVED** that the Board hereby directs staff to forward the Technology Advancement Office Clean Fuels Program Annual Report 2021 and Plan Update 2022 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>Ken Kelly<br/>National Renewable<br/>Energy Laboratory</p> | <p>Ken Kelly is National Renewable Energy Laboratory’s (NREL) Chief Engineer for Commercial Vehicle Electrification. He has 30 years of experience working on clean transportation research and integrated deployment of renewables at NREL. While at NREL, Ken has conducted research in a wide array of advanced vehicle and transportation technologies including medium- and heavy-duty vehicle technologies; alternative fuel vehicle emissions; hybrid electric vehicle systems; advanced heat transfer technologies; computer aided engineering and robust design methods. He has authored or co-authored over 100 technical publications in these research areas. Ken has extensive experience working with fleets, industry partners and government agencies on advanced transportation topics including California-based projects with South Coast Air Quality Management District, Ports of Long Beach and Los Angeles, Los Angeles World Airports, several transit agencies, California Air Resources Board, and California Energy Commission. He recently spent two years on assignment at the Hawaii State Energy Office as NREL’s Senior Project Leader of the Hawaii Clean Energy Initiative (HCEI). Ken holds M.S. and B.S degrees in Mechanical Engineering from Ohio University. His industry experience includes work as a manufacturing engineer at Swagelok Corporation and at Sun Power Inc. specializing in Stirling engine technologies.</p> |
|---|---|

*\*The charter of the CFAG requires membership changes to be approved by the full South Coast AQMD Board.*

**Technology Advancement Advisory Group\*\***

|   |   |
|---|---|
| <p>Bill Robertson, Ph.D.<br/>California Air Resources<br/>Board</p> | <p>Bill Robertson is CARB’s Vehicle Program Specialist for heavy duty programs working as an advisor across engine and vehicle standards, zero emissions, and technology demonstration. As a liaison to allied states and international partners on electrification and emissions standards for heavy duty he works to accelerate the market for, and achieve the benefits of, rapid transition to sustainable transportation solutions. He has been with CARB for 17 years. Prior to his current role, he spent a decade in emissions measurement and evaluation of technology and alternative fuels at CARB’s heavy duty chassis dynamometer laboratory. He holds a Ph.D. in Physical Chemistry from Yale University, a B.S. in Chemistry from Andrews University, and performed post-doctoral research on aerosol chemistry at University of California, Irvine.</p> |
|---|---|

*\*\*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 2021**  
**ANNUAL REPORT & 2022 PLAN UPDATE**

## South Coast Air Quality Management District Governing Board

|                                  |  |
|----------------------------------|--|
| <b><i>Chair:</i></b>             | BEN BENOIT<br>Mayor, Wildomar<br>Cities of Riverside County                                  |
| <b><i>Vice Chair:</i></b>        | VANESSA DELGADO<br>Senate Rules Committee Appointee  |
| <b><i>Members:</i></b>           | MICHAEL A. CACCIOTTI<br>Mayor, South Pasadena<br>Cities of Los Angeles County/Eastern Region |
|                                  | ANDREW DO*<br>Supervisor, Fifth District<br>County of Orange                                 |
|                                  | GIDEON KRACOV*<br>Governor's Appointee   |
|                                  | SHEILA KUEHL<br>Supervisor, Third District<br>County of Los Angeles                          |
|                                  | LARRY MCCALLON*<br>Mayor, Highland<br>Cities of San Bernardino County                        |
|                                  | VERONICA PADILLA-CAMPOS*<br>Speaker of the Assembly Appointee                                |
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|                                  | NITHYA RAMAN<br>Council Member, Fourth District<br>City of Los Angeles Representative        |
|                                  | REX RICHARDSON**<br>Vice Mayor, Long Beach<br>Cities of Los Angeles County/Western Region    |
|                                  | CARLOS RODRIGUEZ*<br>Mayor, Yorba Linda<br>Cities of Orange County                           |
|                                  | JANICE RUTHERFORD<br>Supervisor, Second District<br>County of San Bernardino                 |
| <b><i>Executive Officer:</i></b> | WAYNE NASTRI   |

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## South Coast Air Quality Management District

### Technology Advancement Office

Matt Miyasato, Ph.D., Chief Technologist & Deputy Executive Officer  
Science & Technology Advancement

Aaron Katzenstein, Ph.D., Assistant Deputy Executive Officer  
Technology Advancement Office

Daniel Garcia, Technology Implementation Manager  
Joseph Impullitti, Technology Demonstration Manager  
Walter Shen, Inspections & Community Projects Manager  
Mei Wang, Contracts & Outreach Manager

Phil Barroca, Program Supervisor  
Sam Cao, Ph.D., Program Supervisor  
Ping Gui, Program Supervisor  
Seungbum Ha, Ph.D., Program Supervisor  
Maryam Hajbabaei, Ph.D., Program  
Supervisor  
Patricia Kwon, Program Supervisor  
Tom Lee, Program Supervisor  
Joseph Lopat, Program Supervisor  
Lisa Mirisola, Program Supervisor  
Yuh Jiun Tan, Program Supervisor  
Alyssa Yan, Program Supervisor

Christina Kusnandar, Sr. Staff Specialist  
Ash Nikravan, Sr. Staff Specialist  
Frances Maes, Staff Specialist

Arnold Peneda, Air Quality Specialist  
David Chen, Air Quality Specialist  
Darren Ha, Air Quality Specialist  
Justin Joe, Air Quality Specialist  
Charlize Li, Air Quality Specialist  
Alicia Ibarra Martinez, Air Quality  
Specialist  
Krystle Martinez, Air Quality Specialist  
Greg Ushijima, Air Quality Specialist  
Nick Volpone, Air Quality Specialist  
Fan Xu, Air Quality Specialist  
Andrew Yoon, Air Quality Specialist

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Benigna Taylor, Contracts Assistant  
Cynthia Snyder, Sr. Office Assistant  
Ma Fe Ruivivar, 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 the 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 nitrogen oxides (NO<sub>x</sub>) emission reductions called for in the 2016 Air Quality Management Plan (AQMP) because it affords 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 powered 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 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 \$231.6 million into over \$1.14 billion in projects.

As technologies move towards commercialization, such as battery and fuel cell electric trucks, the Clean Fuels Program has been able to partner with large original equipment manufacturers (OEMs), such as Daimler, Volvo, Hyundai and Peterbilt to deploy these vehicles in larger numbers. These OEM partnerships allow the Program to leverage their research, product development, customer relationships, and financial resources needed to move advanced technologies from the laboratories to the field and into customers’ hands. The OEMs have the resources and capabilities to design, engineer, test, manufacture, market, distribute and service quality products under brand names that are trusted. This is the type of scale needed to achieve emission reductions needed to attain national ambient air quality standards (NAAQS).

While South Coast AQMD aggressively seeks to leverage funds, it plays a leadership role in technology development and commercialization, along with its partners, to accelerate the reduction of criteria pollutants. The TAO Clean Fuels Program has traditionally supported a portfolio of technologies at different technology readiness levels. This helps with the development of new technologies across many different mobile sectors in need of new technologies that provide emission reductions and health benefits. This approach enhances the region’s chances of achieving the NAAQS.

California Health and Safety Code (H&SC) 40448.5(e) calls for the Clean Fuels Program to consider factors such as: current and projected economic costs and availability of fuels; cost-effectiveness of emission reductions associated with clean fuels compared with other pollution control alternatives; 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.

California 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 Program accomplishments in the prior calendar year (CY) and the Clean Fuels Plan Update looks ahead at proposed projects for the next CY, re-calibrating the technical emphasis of the Program.

## Setting the Stage

The overall strategy of TAO’s Clean Fuels Program is largely based on emission reduction technology needs identified in the AQMP and the South Coast AQMD Board directives to protect the health of almost 18 million residents (nearly half the population of California) in the Basin. The AQMP, which will be updated in 2022, is the long-term regional “blueprint” that identifies the 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). South Coast AQMD recently initiated efforts for updating the AQMP and is coordinating the efforts with the California Air Resources Board’s (CARB) revised 2020 Mobile Source Strategy.

Ground level ozone (a key component of photochemical smog) is created by a chemical reaction between NO<sub>x</sub> and volatile organic compound (VOC) emissions in sunlight. The primary driver for ozone formation in the Basin is NO<sub>x</sub> emissions, and mobile sources contribute approximately 88 percent of the NO<sub>x</sub> emissions in this region, as shown in Figure 1. Furthermore, NO<sub>x</sub> emissions, along with VOC emissions, also lead to the secondary formation of PM<sub>2.5</sub> [particulate matter measuring 2.5 microns or less in size, expressed as micrograms per cubic meter (µg/m<sup>3</sup>)].

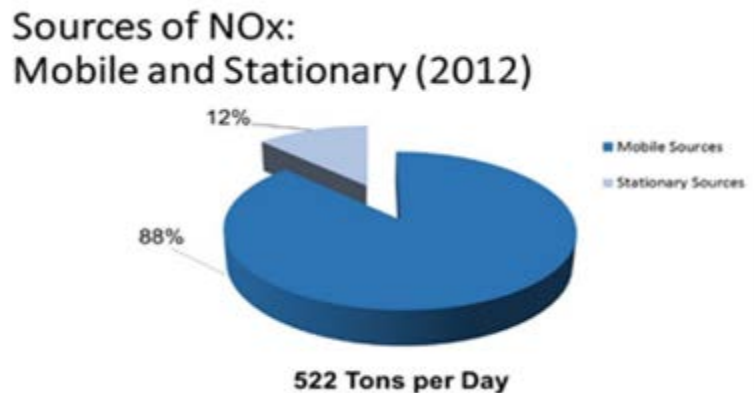
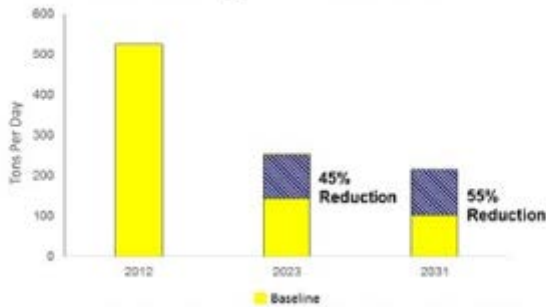


Figure 1: Sources of NO<sub>x</sub> 2012 Base Year

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 clean fuel mobile and stationary advanced technologies to achieve health-based air quality standards. The 2016 AQMP identifies a 45 percent reduction in NO<sub>x</sub> is required by 2023 and an additional 55 percent reduction by 2031 to achieve NAAQS for (8-hour) ozone of 80 parts per billion (ppb) and 75 ppb, respectively. Figure 2 illustrates these needed NO<sub>x</sub> reductions in the Basin. The majority of NO<sub>x</sub> reductions must come from mobile sources, both on-road 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 California’s San Joaquin (Central Valley)).

### Basin Total NO<sub>x</sub> Emissions



8-hour Ozone strategy targeting 2023 will ensure 1-hour attainment in 2022 as well as 24-hour and annual attainment in 2019 and 2025, respectively

Figure 2: Total NO<sub>x</sub> Reductions Needed

For the first time, the 2016 AQMP identified a means to achieving the NAAQS through regulations and incentives for near-zero and zero emission mobile source technologies that are commercial or nearing commercialization. This strategy 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 and federal efforts in developing regulations for on- and off-road vehicles and equipment are expected to significantly reduce NO<sub>x</sub> emissions, but are insufficient to achieve the 2023 and 2031 ozone attainment deadlines.

## Clean Fuels Program

The Clean Fuels Program, established in California H&SC 40448.5, is an important mechanism to encourage and accelerate the advancement and commercialization of clean fuels in both stationary 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 near-term and long-term emission reduction benefits. 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 2021 Clean Fuels Annual Report and Draft 2022 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 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.

## 2021 Annual Report

In CY 2021, the South Coast AQMD Clean Fuels Program executed 19 new contracts, projects or studies and modified 5 continuing projects adding dollars toward research, development, demonstration and deployment projects as well as technology assessment and transfer of alternative fuel and clean fuel technologies. Table 2 shows our major funding partners in CY 2021. Table 3 lists the 24 projects or studies, which are further described in this report. The South Coast AQMD Clean Fuels Program contributed over \$10.6 million in partnership with other governmental organizations, private industry, academia and research institutes, and interested parties, with total project costs of approximately \$253 million. The \$10.6 million includes over \$4.3 million recognized into the Clean Fuels Fund as pass-through funds from project partners to facilitate project administration by the Clean Fuels Program. Table 4 provides information on this outside funding received into the Clean Fuels Fund. Additionally, in CY 2021, the Clean Fuels Program continued to leverage other outside funding opportunities, securing new awards totaling \$48.7 million from federal, state and local funding opportunities. Table 5 provides a comprehensive summary of these federal, state and local revenues awarded to the South Coast AQMD during CY 2021. Like the last several years, the significant project scope of a few key contracts executed in 2021 resulted in higher than average leveraging of Clean Fuels dollars. Typical historical leveraging is \$4 for every \$1 in Clean Fuels funding. In 2021, South Coast AQMD exceeded this upward trend with nearly \$39 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 NAAQS.

The projects or studies executed in 2021 included a diverse mix of advanced technologies. The following core areas of technology advancement for 2021 executed contracts (in order of funding percentage) include:

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

The chart on page 26 shows the distribution by percentage of executed agreements in 2021 across these core technologies.

During CY 2021, 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 battery electric and hybrid electric technologies and infrastructure to develop and demonstrate medium- and heavy-duty vehicles in support of transitioning to near-zero and zero emissions goods movement; 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 24 executed contracts and projects, 24 research, development, demonstration and deployment projects or studies and 7 technology assessment and transfer contracts were completed in 2021, as listed in Table 8. Appendix C includes two-page summaries of the technical projects completed in 2021. As of January 1, 2022, there were 109 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, 2022, after approval by the South Coast AQMD Board.

## 2022 Plan Update

The Clean Fuels Program is re-evaluated annually to develop the annual Plan Update based on a reassessment of the technology progress and direction for the agency. The Program continually seeks to support the development and deployment of cost-effective clean fuel technologies with increased collaboration with OEMs to achieve 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, emission reduction potential and co-funding opportunities. For several years, the state has focused a great deal of attention on climate change and petroleum reduction goals, but the South Coast AQMD has remained committed to developing, demonstrating and commercializing technologies that reduce criteria pollutants, specifically NO<sub>x</sub> and toxic air contaminants (TACs). Most of these technologies address the Basin's need for NO<sub>x</sub> and TAC reductions and also garner reductions in greenhouse gases (GHG) and petroleum use. Due to these co-benefits, South Coast AQMD has been successful in partnering with the state and public/private partnerships to leverage its Clean Fuels funding extensively.

To identify technology and project opportunities where funding can make a significant difference in deploying cleaner technologies in the Basin, the South Coast AQMD engages in outreach and networking efforts. 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 and Requests for Information (RFIs) to determine the current state of various technologies and their development and commercialization challenges. 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 efforts are included conceptually within the Draft 2022 Plan Update. Assembly Bill (AB) 617<sup>1</sup> 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 and incentives to accelerate the deployment of cleaner technologies. Cleaner technologies such as near-zero and zero emission heavy-duty trucks are now included in the Community Emission Reduction Plans (CERPs) for these AB 617 communities, and an RFP for zero emission heavy-duty truck program will be released in 2022. CARB adopted two critical milestone regulations for reducing emissions from on-road heavy-duty mobile sources in 2020, the Advanced Clean Truck (ACT) regulation which mandates an increasingly higher percentage of zero emission truck sales starting in 2024 and the Omnibus Low NO<sub>x</sub> regulation which requires lower exhaust NO<sub>x</sub> standards on heavy-duty engines starting in 2024. CARB is also working on the Heavy-Duty Vehicle Inspection and Maintenance Program as well as the Advanced Clean Fleets regulation for Board consideration in 2022.

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<sup>1</sup> <https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/about>

Despite these major efforts, NO<sub>x</sub> emission reductions in the South Coast AQMD are still expected to fall short of the levels necessary to meet ozone attainment target deadlines.

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 significant emission reductions over the next five to ten years. Areas of focus include:

- developing and demonstrating technologies to reduce emissions from goods movement and port-related activities, including near-zero and zero emission drayage trucks and infrastructure;
- developing and demonstrating ultra-low NO<sub>x</sub>, gaseous and liquid renewable fueled, large displacement/high efficiency engines and heavy-duty zero emission engine technologies;
- developing, demonstrating and deploying advanced, low-NO<sub>x</sub> natural gas and propane engines as well as near-zero and zero emission technologies for high horsepower applications;
- mitigating criteria pollutant emissions from the production of 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 non-plug-in hybrid) technologies across light-, medium- and heavy-duty platforms;
- establishing large-scale hydrogen refueling and electric vehicle (EV) charging infrastructure to support light-, medium- and heavy-duty zero emission vehicles;
- ultra-fast charging for heavy duty battery electric vehicles; and
- developing and demonstrating zero emission microgrids that utilize electric energy storage systems and onsite clean power generation to support transportation electrification demands associated with goods movement and freight handling activities.

Table 9 (page 75) lists potential projects across nine core technologies by funding priority:

1. Hydrogen/Mobile Fuel Cell Technologies and Infrastructure (especially large-scale refueling and production facilities) and stations that support medium and heavy-duty vehicles;
2. Engine Systems/Technologies (emphasizing alternative and renewable fuels for truck and rail applications);
3. Electric/Hybrid Vehicle Technologies and Infrastructure (emphasizing battery electric and hybrid electric trucks and container transport technologies with zero emission operations);
4. Fueling Infrastructure and Deployment (predominantly renewable natural gas and renewable fuels);
5. Stationary Clean Fuel Technologies (including microgrids that support EV and Hydrogen infrastructure and renewables);
6. Fuel and Emission Studies;
7. Emission Control Technologies that support low emitting diesel engines;
8. Health Impact Studies within disadvantaged communities; and
9. Technology Transfer/Assessment and Outreach.

These potential projects for 2022 total \$21.8 million of Clean Fuels funding, with the anticipation of total project costs of \$167.5 million, leveraging more than \$4 for every \$1 of Clean Fuel funds spent. Some proposed projects may also be funded by other funding sources, such as state and federal grants for clean fuel technologies, incentive programs such as AB 617 Community Air Protection (CAP) funding, Volkswagen Mitigation and Carl Moyer volatile organic compound (VOC), and NO<sub>x</sub> mitigation funds.

# CLEAN FUELS PROGRAM

## Background and Overview

### Program Background

The Basin, which comprises all of Orange County and the urban portions of Los Angeles, San Bernardino and Riverside counties, has the worst air quality in the nation due to a combination of factors, including high vehicle population, high vehicle miles traveled within the region, and geographic and atmospheric conditions favorable for photochemical oxidant (smog) formation. This region, which encompasses the South Coast Air Basin as well as small portions of the Mojave Desert and Salton Sea Air Basins, is home to almost 18 million residents (nearly half the population of California). Due to this confluence of factors, which present unique challenges, the state legislature enabled the South Coast AQMD to implement the Clean Fuels Program to accelerate the implementation and commercialization of clean fuels and advanced mobile source technologies.

In 1988, SB 2297 (Rosenthal) was signed into law (Chapter 1546). It initially established a “five-year program to increase the use of clean fuels,” but subsequent legislation extended and eventually removed the sunset clause for the Program. That legislation also reaffirmed existence of the Technology Advancement Office (TAO) to administer the Clean Fuels Program. The TAO Clean Fuels Program is an integral part of the South Coast AQMD’s effort to achieve the significant NO<sub>x</sub> reductions called for in the 2016 AQMP.

California H&SC section 40448.5(e) calls for the Clean Fuels Program to consider, among other factors, the current and projected economic costs and availability of fuels, the cost-effectiveness of emission reductions associated with clean fuels compared with other pollution control alternatives, the use of new pollution control technologies in conjunction with traditional fuels as an alternative means of reducing emissions, potential effects on public health, ambient air quality, visibility within the region, and other factors determined to be relevant by the South Coast AQMD. The Legislature recognized the need for flexibility, allowing focus on a broad range of technology areas, including cleaner fuels, vehicles and infrastructure, which helps the South Coast AQMD continue to make progress toward achieving its clean air goals.

In 1999, further state legislation was passed which amended the Clean Fuels Program. Specifically, as stated in the H&SC section 40448.5.1(d), the South Coast AQMD must submit to the Legislature, on or before March 31 of each year, an annual report that includes:

1. A description of the core technologies that the South Coast AQMD considers critical to ensure attainment and maintenance of ambient air quality standards and a description of the efforts made to overcome barriers to commercialization of those technologies;
2. An analysis of the impact of the South Coast AQMD’s Clean Fuels Program on the private sector and on research, development and commercialization efforts by major automotive and energy firms, as determined by the South Coast AQMD;
3. A description of projects funded by the South Coast AQMD, including a list of recipients, subcontractors, cofunding sources, matching state or federal funds and expected and actual results of each project advancing and implementing clean fuels technology and improving public health;
4. The title and purpose of all projects undertaken pursuant to the Clean Fuels Program, the names of the contractors and subcontractors involved in each project and the amount of money expended for each project;
5. A summary of the progress made toward the goals of the Clean Fuels Program; and



6. Funding priorities identified for the next year and relevant audit information for previous, current and future years covered by the project.

Furthermore, H&SC section 40448.5.1(a)(2) requires the South Coast AQMD to find that the proposed program and projects funded as part of the Clean Fuels Program will not duplicate any other past or present program or project funded by the state board and other government and utility entities. This finding does not prohibit funding for programs or projects jointly funded with another public or private agency where there is no duplication. Concurrent with adoption and approval of the annual report and plan update every year, the Board will consider the efforts TAO has undertaken in the prior year to ensure no such duplication has occurred then make a finding through a Resolution attesting such.

The following section describes the various panels of external experts that help review the Clean Fuels Program every year.

## **Program Review**

In 1990, the South Coast AQMD initiated an annual review of its technology advancement program by an external panel of experts. That external review process has evolved, in response to South Coast AQMD policies and legislative mandates, into two external advisory groups. The Technology Advancement Advisory Group (one of six standing Advisory Groups that make up the South Coast AQMD Advisory Council) is made up of stakeholders representing industry, academia, regulatory agencies, the scientific community and environmental non-governmental organizations (NGOs). 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 in CY 2019 staff recommended 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. With the addition of the Port representatives, there are currently 13 members on the Technology Advancement Advisory Group.

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 are listed in Appendix A, with proposed changes, duly noted, subject to either South Coast AQMD Board approval or the Board's Technology Committee, per the advisory group's charters.

The review process of the Clean Fuels Program now includes, at minimum: 1) two full-day retreats of the both Advisory Groups, typically in the summer and winter; 2) review by other technical experts; 3) occasional technology forums or roundtables bringing together interested parties to discuss specific technology areas; 4) review by the Technology Committee of the South Coast AQMD Board; 5) a public hearing of the Annual Report and Plan Update before the full South Coast AQMD Board, along with adoption of the Resolution finding that the proposed program and projects funded as part of the Clean Fuels Program will not duplicate any other past or present program or project funded by the state board and other government and utility entities, as required by the H&SC; and 6) finally submittal of the Clean Fuels Program Annual Report and Plan Update to the Legislature by March 31 of every year.

## The Need for Advanced Technologies & Cleaner Fuels

Achieving federal and state clean air standards in Southern California will require emission reductions from both mobile and stationary sources beyond those expected using current technologies.

Ground level ozone (a key component of smog) is created by a chemical reaction between NO<sub>x</sub> and volatile organic compound (VOC) emissions in sunlight. This is noteworthy because the primary driver for ozone formation in the Basin is NO<sub>x</sub> emissions, and mobile sources contribute approximately 88 percent of the NO<sub>x</sub> emissions in this region, as shown in Figure 1. Furthermore, NO<sub>x</sub> emissions, along with VOC emissions, also lead to the formation of PM<sub>2.5</sub> [particulate matter measuring 2.5 microns or less in size, expressed as micrograms per cubic meter (μg/m<sup>3</sup>)], 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. Environmental Protection Agency (U.S. EPA), are projected to require additional long-term control measures for both NO<sub>x</sub> and VOC.

The need for advanced mobile source technologies and clean fuels is best illustrated by Figure 2 which

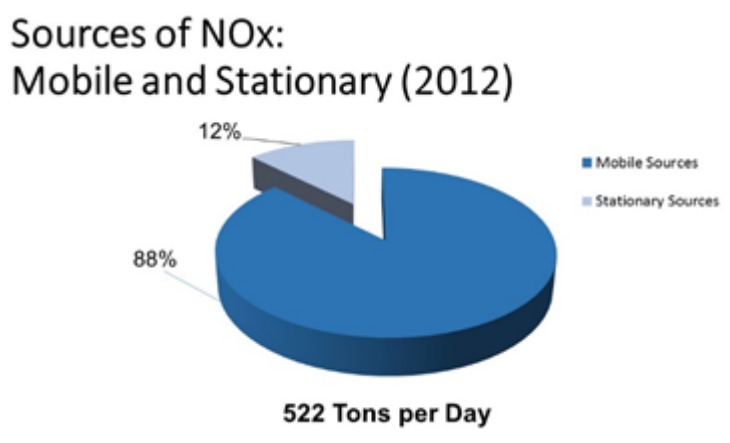
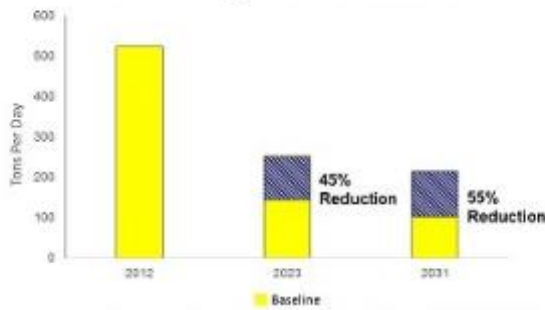


Figure 1: Sources of NO<sub>x</sub> 2012 Base Year

## Basin Total NO<sub>x</sub> Emissions



8-hour Ozone strategy targeting 2023 will ensure 1-hour attainment in 2022 as well as 24-hour and annual attainment in 2019 and 2025, respectively

**Figure 2: Total NO<sub>x</sub> Reductions Needed**

technologies (both zero and near-zero) and deploying these technologies into fleets, requiring cleaner and renewable fuels, and ensuring continued clean performance in use. Current state efforts in developing regulations for on- and off-road vehicles and equipment are expected to reduce NO<sub>x</sub> emissions significantly, but not sufficiently to meet the South Coast AQMD needs, especially in terms of timing.

Health studies also indicate a greater need to reduce NO<sub>x</sub> emissions and toxic air contaminant emissions. For example, the goal of South Coast AQMD's Multiple Air Toxics Exposure Study (MATES) IV, completed in 2015, like the prior three MATES efforts, was to assess air toxic levels, update risk characterization, and determine gradients from selected sources. However, MATES IV added ultrafine PM and black carbon monitoring components as well. The study found a dramatic decrease in ambient levels of diesel particulate matter and other air toxics. Diesel PM was still the major driver of air toxics health risks. While the levels and exposures decreased, a revision to the methods used to estimate cancer risk from toxics developed by the California Office of Health Hazard Identification increased the calculated risk estimates from these exposures by a factor of up to three. In late 2017, South Coast AQMD initiated MATES V to update the emissions inventory of toxic air contaminants and modeling to characterize risks, including measurements and analysis of ultrafine particle concentrations from major roadways and the regional carcinogenic risk from exposure of air toxics. The MATES V report is expected to be finalized by the end of 2021.

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 TAO.

As technologies move towards commercialization, such as battery electric and fuel cell trucks, the Clean Fuels Program has been able to partner with large original equipment manufacturers (OEMs), such as Daimler, Volvo and Kenworth, in order to eventually deploy these vehicles in increasingly 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

identifies just how far NO<sub>x</sub> emissions must be reduced to meet federal standards by 2023 and 2031. The 2016 AQMP's estimate of needed NO<sub>x</sub> reductions will require the South Coast AQMD Clean Fuels Program to encourage and accelerate advancement of clean transportation technologies that are used as control strategies in the AQMP. Given this contribution, significant cuts in pollution from these sources are needed, therefore proposed AQMP mobile source strategies call for establishing requirements for cleaner

standards, large numbers of advanced technology clean-fueled vehicles must be deployed across our region and state.

Once advanced technologies and cleaner fuels are commercial-ready, there needs to be a concerted effort to get them into the marketplace and onto the roads. The South Coast AQMD's Carl Moyer Program, which was launched in 1988, helps achieve these results. The two programs produce a unique synergy, with the Carl Moyer Program (and other incentive programs, such as Proposition 1B-Goods Movement and the Community Air Protection Program<sup>2</sup>) providing incentives to push market penetration of the technologies developed and demonstrated by the Clean Fuels Program. This synergy enables the South Coast AQMD to play a leadership role in both technology development and commercialization efforts targeting reduction of criteria pollutants. Funding for both research, development, demonstration and deployment (RD<sup>3</sup>) projects as well as incentives remains a concern given the magnitude of additional funding identified in the 2016 AQMP to achieve federal ozone air quality standards.

## **Emission Reductions Resulting from Clean Fuels Program**

The Clean Fuels Program has encouraged projects that increase the utilization of clean-burning fuels over the 33-year lifetime of the program. Many of the technologies that were supported during the early years of the program, are only now seeing commercial deployments, e.g. fuel cell buses, while others saw great success only to be eventually phased out, e.g., methanol buses and vehicles. Of which all the technologies that the Clean Fuels Program have supported, there are two more recent technologies that have been commercialized and are providing emissions benefits through incentives programs, namely the ultra-low NOx (near-zero emission or NZE) natural gas engines and zero emission (ZE) trucks.

The Clean Fuels Program has been supporting the development of low and near-zero emission heavy-duty natural gas engines since the early 2000's. In 2003, South Coast AQMD conducted a joint project with the California Energy Commission (CEC), the U.S. DOE and the National Renewable Energy Laboratory (NREL) to advance development of heavy-duty natural gas engines to meet the upcoming 2010, 0.2 g/bhp-hr NOx standard. The result was the Cummins-Westport, Inc (CWI) 8.9-liter engine that certified to 0.2 g NOx/bhp-hr, three years before the mandated 2010 national standard. In 2013, recognizing the need for accelerated NOx reductions in the heavy-duty sector, South Coast AQMD, CEC, and SoCalGas issued a joint solicitation to develop and demonstrate a NZE engine for commercial use. CWI won that bid and developed and commercialized the 0.02 g/bhp-hr NOx 8.9-liter natural gas engine (L9N), the first of its kind. Additional projects with CEC, SoCalGas and Clean Energy produced the CWI 11.9-liter NZE engine (ISX12N) certified in 2018 for port fleet operations, also first of its kind, including a 20-truck demonstration project at the San Pedro Bay Ports. These engines are now commercially available and offered by all of the major truck manufacturers.

The Clean Fuels Program has also been supporting the development of ZE heavy-duty vehicles including battery electric trucks (BETs) and fuel cell electric trucks (FCETs). The DOE funded Zero Emission Cargo Transport 1 (ZECT 1) project developed and demonstrated class 8 battery electric trucks. The ZECT 1 project gave birth to many other EV and hybrid truck projects, including ones later funded by CARB's Greenhouse Gas Reduction Fund (GGRF) Zero Emission Drayage Truck (ZEDT) project, which demonstrated 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. More recently, the Clean Fuels Program has co-funded large Daimler and Volvo battery electric truck projects. Daimler has deployed 14 Class 8 eCascadia and six Class 6 eM2 trucks in 2019 and installed seven DC fast charging stations at fleet locations. Volvo is also deploying 23

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<sup>2</sup> <http://www.aqmd.gov/home/programs/business/business-detail?title=vehicle-engine-upgrades>

Class 8 trucks and installing DC fast charging infrastructure as part of their Low Impact Green Heavy Transport Solutions (LIGHTS). Finally, South Coast AQMD was awarded the joint CARB-CEC Pilot project to demonstrate 100 battery electric trucks and charging infrastructure for two fleets, NFI and Schneider. Both the Volvo VNR battery electric truck and DTNA's eCascadia will be widely commercially available in the next few years. Examples of some of the vehicles that South Coast AQMD has helped develop and demonstrated with funding from various partners are show in the figure below. The pathway to cleaner air is clear, for near- and mid- term, near-zero NOx engines, hybrids and clean diesel are expected to provide the greatest reduction where in the long term, battery electric and hydrogen fuel cell will play a dominant role.



**Figure 3: Clean Fuel Technology Trucks that South Coast AQMD and Partners have Helped Develop and Demonstrated**

To quantify some of the emissions benefit from NZE and ZE truck deployments, Table 1 summarizes the emissions reductions as result of the technologies directly supported by the Clean Fuels Program.



South Coast AQMD staff compiled incentive program data from our Technology Incentives Group to calculate the NO<sub>x</sub> emissions reductions associated with deployment of NZE and ZE heavy-duty vehicles in the Basin. Note that all that programs below required scrappage, that meant each vehicle deployed eliminated an older diesel truck, and the emission reductions are based on the program guidelines established by CARB.

**Table 1: Emissions Benefit from NZE and ZE Truck Deployments**

| South Coast AQMD Incentive Programs | NZE (# of Trucks) | ZE (# of Trucks) | NO <sub>x</sub> Reductions (tpy) |
|-------------------------------------|-------------------|------------------|----------------------------------|
| VW*                                 | 47                | 93               | 28                               |
| Lower Emission School Bus           | 280               | 95               | 70                               |
| Proposition 1B                      | 925               | 112              | 444                              |
| Carl Moyer                          | 255               | 10               | 109                              |
| <b>Total</b>                        | <b>1,507</b>      | <b>310</b>       | <b>651</b>                       |

Although the emission reductions may seem modest, these technologies represent almost 4% of the total emission reductions for on-road heavy-duty diesel trucks in 2023<sup>3</sup>, and the numbers will only continue to grow, thanks in part to the support by 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 2021, the funds available through each of these mechanisms were as follows:

- Mobile sources (DMV revenues) \$13,719,320
- Stationary sources (emission fee surcharge) \$279,570

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 CARB, the 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 4 lists the supplemental grants and revenues totaling over \$4.3 million for contracts executed in CY 2021.

Table 5 lists the federal, state and other revenue totaling \$48.7 million awarded to the South Coast AQMD in 2021 for projects that are part of the overall Clean Fuels Program's RD<sup>3</sup> efforts, even if for

<sup>3</sup> 1.69 tpd reductions vs. 44.5 tpd in on-road heavy-duty diesel inventory in 2023.

financial tracking purposes the revenue is recognized into another special revenue fund other than the Clean Fuels Fund (Fund 31).

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 \$231.6 million into over \$1.14 billion in projects. For 2021, the Clean Fuels Program leveraged \$1 of Clean Fuels Funds to nearly \$39 of outside funding. This atypical leverage was the result of a few key significant project awards in 2021. Specifically, the \$31.5 million heavy-duty battery electric truck project, which includes a nearly \$20 million award to the South Coast AQMD from US EPA Airshed grant as well as two projects with substantial cofunding of \$117 million from CARB and CEC. 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 2021 are listed in Table 2.

## **2021 Overview**

This report summarizes the progress of the South Coast AQMD Clean Fuels Program for CY 2021. 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 2021. During the period between January 1 and December 31, 2021, the South Coast AQMD executed 19 new contracts/agreements, projects or studies and modified 5 continuing projects adding dollars during CY 2021 that support clean fuels and advanced zero, near-zero and low emission technologies (see Table 3). The South Coast AQMD Clean Fuels Program contribution for these projects was \$10.6 million, inclusive of approximately \$4.3 million received into the Clean Fuels Fund as cost-share for contracts executed in this reporting period. Total project costs are almost \$253 million. The Clean Fuels contribution and total number of contracts executed in 2021 have been less than previous years largely due the effects of the COVID pandemic that impacted many of our partners business operations. Due to government lockdowns many projects have been delayed or canceled and future projects put on hold. We look forward to 2022 for a resurgence in business activity, more completed projects and newly executed projects.

The projects executed in 2021 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 4), but also funds awarded to the South Coast AQMD for projects that fall within the scope of the Clean Fuels Program’s RD<sup>3</sup> efforts but may have been recognized (received) into another special revenue fund for financial tracking purposes (nearly \$48.7 million in 2021, see Table 5). For example, in 2021, the South Coast AQMD was awarded nearly \$30 million by CARB, CEC and project partners for a zero-emission drayage truck and infrastructure pilot project, \$10.7 million from CARB and CEC to develop and demonstrate capture and control system for oil tankers, \$4.1 million from US EPA for a zero-emission freight line-haul locomotive and \$3.6 million from US EPA for long-range class 8 fuel cell trucks with total project costs of over \$103 million. These projects will advance the commercialization of electric and fuel cell trucks, ocean going vessels emission reduction technology. 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 2022 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 support with a focus on medium and heavy duty vehicles (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 2021 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 2022.

The South Coast AQMD continually seeks to support the deployment of lower-emitting technologies. The Clean Fuels Program is shaped by two basic factors:

1. Zero, near-zero and low emission technologies needed to achieve clean air standards in the Basin; and
2. Available funding to support technology development within the constraints imposed by that funding.

The South Coast AQMD strives to maintain a flexible program to address dynamically evolving technologies and the latest progress in the state of the technology while balancing the needs in the various technology sectors with technology readiness, emissions reduction potential and cofunding



opportunities. Although the South Coast AQMD program is significant, national and international activities affect the direction of technology trends. As a result, the South Coast AQMD program must be flexible to leverage and accommodate these changes in state, national and international priorities. Nonetheless, while the state and federal governments have continued to turn a great deal of their attention to climate change, South Coast AQMD has remained committed to developing, demonstrating and commercializing zero and near-zero emission technologies. Fortunately, many, if not the majority, of technology sectors that address our need for NO<sub>x</sub> reductions also garner greenhouse gas (GHG) reductions. Due to these “co-benefits,” the South Coast AQMD has been successful in partnering with the state and federal government. Even with the leveraged funds, the challenge for the South Coast AQMD remains the need to identify project or technology opportunities in which its available funding can make a difference in achieving progressively cleaner air in the Basin.

To achieve this, the South Coast AQMD employs various outreach and networking activities as well as evaluates new ways to expand these activities. These activities range from close involvement with state and federal collaboratives, partnerships and industrial coalitions, to the issuance of PONs to solicit project ideas and concepts as well as the issuance of RFIs to determine the state of various technologies and the development and commercialization challenges faced by those technologies. Additionally, in the absence of PONs, unsolicited proposals from OEMs and other clean fuel technology developers are accepted and reviewed.

Historically, mobile source projects have targeted low-emission developments in automobiles, transit buses, medium- and heavy-duty trucks and non-road applications. These vehicle-related efforts have focused on advancements in engine design, electric powertrains and energy storage/conversion devices (e.g., fuel cells and batteries); and implementation of clean fuels (e.g., natural gas, propane and hydrogen) including their infrastructure development. Stationary source projects have included a wide array of advanced low NO<sub>x</sub> technologies and clean energy alternatives such as fuel cells, solar power and other renewable and waste energy systems. The focus in recent years has been on zero and near-zero emission technologies with increased attention to heavy- and medium-duty trucks to reduce emissions from mobile sources, which contribute to more than 80 percent of the current NO<sub>x</sub> emissions in this region. However, while mobile sources include both on- and off-road vehicles as well as aircraft and ships, only the federal government has the authority to regulate emissions from aircraft and ships. The South Coast AQMD is exploring opportunities to expand its authority in ways that would allow the agency to do more to foster technology development for ship and train activities as well as locomotives as they relate to goods movement. In the absence of regulatory authority, the South Coast AQMD is expanding its portfolio of RD<sup>3</sup> projects to include marine and ocean-going vessels. Utilizing mitigation funds, funding from San Pedro Bay ports and industry partners, RD<sup>3</sup> projects to demonstrate emissions reduction technology in the marine sector where NO<sub>x</sub> emissions are increasing are being pursued.

The 2016 AQMP included five Facility-Based Mobile Source Measures, also known as indirect source measures. Since then, staff has been developing both voluntary and regulatory measures in a process that has included extensive public input. Indirect source measures are distinct from traditional air pollution control regulations in that they focus on reducing emissions from the vehicles associated with a facility rather than emissions from a facility itself.

For example, indirect source measures for warehouses could focus on reducing emissions from trucks servicing the facility. Measures for ports will concentrate on emissions from ships, trucks, locomotives and cargo handling equipment at the ports. Measures covering new development and redevelopment projects could aim to reduce emissions from construction equipment, particularly heavy-duty diesel earth-moving vehicles.

Specific projects are selected for cofunding from competitive solicitations, cooperative agency agreements and unsolicited proposals. Criteria considered in project selection include emissions

reduction potential, technological innovation, potential to reduce costs and improve cost effectiveness, contractor experience and capabilities, overall environmental impacts or benefits, commercialization and business development potential, cost-sharing and cost-sharing partners, and consistency with program goals and funding constraints. The core technologies for the South Coast AQMD programs that meet both the funding constraints and 2016 AQMP needs for achieving clean air are briefly described below.

## Hydrogen/Mobile Fuel Cell Technologies and Infrastructure

Toyota and Hyundai commercialized light-duty fuel cell vehicles in 2015. Honda started delivering their Fuel Cell Clarity in 2016, and others have plans to commercialize their own soon. Automakers continue development efforts and collaborate to broaden application of fuel cells to increase manufacturing scale and reduce cost to commercialize fuel cell vehicles. However, although progress is being made, 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 107 stations funded by CEC and CARB by the end of 2021, partially funded by South Coast AQMD for those in our region, there is one legacy and 489 retail operational in California. Station development over the past year has been slower than previously projected, partly due to delays in station permitting, construction, and opening caused by the COVID-19 pandemic. CEC and CARB staffs expect that California will exceed the 100-station goal in Assembly Bill 8 in 2023, with more than 179 stations by 2027. 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: 2021 Annual Assessment of Time and Cost Needed to Attain 100 Hydrogen Refueling Stations in California*<sup>4</sup> released in December 2021 covering 2021 findings states that there were 9,647 fuel cell vehicles registered in California by October 2021. However, CARB's 2017 Annual Evaluation projects 37,400 fuel cell electric vehicles (FCEVs) in California by 2023 and 61,000 by the end of 2027, after accounting for estimated vehicle retirements. 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 for 200 heavy-duty stations to support 70,000 fuel cell trucks by 2035.

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 \$1,000,000 is 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 is also supported by the \$1,200,000 Clean Fuels funding committed to the CEC co-funded heavy-duty Shell station on Port of Long Beach (POLB) property leased to Toyota. 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 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.

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<sup>4</sup><https://www.energy.ca.gov/publications/2021/joint-agency-staff-report-assembly-bill-8-2021-annual-assessment-time-and-cost>

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 NO<sub>x</sub> based on 2016 AQMP data. More importantly, on-road heavy-duty diesel trucks account for 33 percent of the on-road mobile source PM<sub>2.5</sub>, a known toxic air contaminant (TAC). Furthermore, according to CARB, trucks and buses are responsible for 37 percent of California's GHGs and criteria emissions. While MATES IV found a dramatic decrease in ambient levels of diesel PM and other air toxics, diesel PM is still the major driver of air toxics health risks. Clearly, significant emission reductions will be required from mobile sources, especially from the heavy-duty sector, to attain the federal clean air standards. Even with the announced rollout of zero emission trucks beginning in 2021 by Volvo and Daimler, it is anticipated that it would take ten years for a large enough deployment of those trucks to have an impact on air quality.

The use of alternative fuels in heavy-duty vehicles can provide significant reductions in NO<sub>x</sub> and particulate emissions. The current NO<sub>x</sub> emissions standard for heavy-duty engines is 0.2 g/bhp-hr. The South Coast AQMD, along with various local, state and federal agencies, continues to support the development and demonstration of alternative-fueled low emission heavy-duty engine technologies, using natural gas, renewable natural gas or hydrogen, renewable diesel and potentially other renewable or waste stream fuels, for applications in heavy-duty trucks, transit and school buses, rail operations, and refuse collection and delivery vehicles to meet future federal emission standards. South Coast AQMD is supporting three contracts to convert the model year 2021 new Ford medium-duty gasoline engine to near-zero NO<sub>x</sub> level by using natural gas and propane.

In connection with the challenge to develop cleaner engine systems, on June 3, 2016, South Coast AQMD petitioned the U.S. EPA to initiate rulemaking for a lower NO<sub>x</sub> national standard for heavy-duty engines. The U.S. EPA has since acknowledged a need for additional NO<sub>x</sub> reductions through a harmonized and comprehensive national NO<sub>x</sub> reduction program for heavy-duty on-highway engines and vehicles. U.S. EPA announced the Cleaner Truck Initiative on November 13, 2018, and Advance Notice of Proposed Rule on January 6, 2020, to reduce NO<sub>x</sub> emissions from on-road heavy-duty trucks starting as early as model year 2026. CARB forged ahead, announcing its own Low NO<sub>x</sub> Omnibus rule, which may be before the CARB Board as early as Spring 2020, proposing a lower NO<sub>x</sub> standard starting model year 2024. Although both announcements are welcome news, the timing is too late to help the South Coast AQMD meet its 2023 federal attainment deadline. So, despite progress, commercialization and deployment of near-zero engines are still needed.

## **Electric/Hybrid Vehicle Technologies and Infrastructure**

There has been an increased level of activity and attention on electric and hybrid vehicles due to a confluence of factors, including the highly successful commercial introductions of hybrid light-duty passenger vehicles and more recently plug-in electric vehicles (PEVs) by almost all major automakers and increased public attention on global warming, as well as several Executive Orders issued by Former Governor Brown, such as his January 26, 2018 order, calling for 5 million ZEVs by 2030.

EV adoption continues to increase in 2017, selling more than 655,000 cumulative electric vehicles by September 2019 in California, according to Veloz (formerly the PEV Collaborative), with increasingly more announcements by international automakers (e.g., Mercedes-Benz, Volkswagen-Audi-Porsche, Hyundai/Kia, Ford, GM and several growing Chinese brands) on a variety of electrification plans, including some with extended zero emissions range. Joining the trend with longer-range battery electric light-duty passenger vehicles by Tesla, Chevy and several others, multiple manufacturers have announced light-duty electric truck development.

However, technology transfer to the medium- and heavy-duty applications is just beginning, especially in goods movement demonstrations in this region. As with hydrogen and fuel cell technologies, South Coast AQMD is actively pursuing research, development and demonstration projects for medium- and heavy-duty battery electric vehicles and their commercialization. South Coast AQMD is administering the DOE funded ZECT project to develop and demonstrate battery electric and plug-in hybrid drayage trucks: four battery electric trucks from TransPower, two battery electric trucks from US Hybrid, two series plug-in hybrid electric trucks from TransPower, and three parallel plug-in hybrid electric trucks from US Hybrid. Battery electric trucks have an all-electric range of up to 100 miles and plug-in hybrid electric trucks have a range of up to 250 miles. This first ZECT project (ZECT 1), which was completed in 2020, gave birth to many other EV and hybrid truck projects including the 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 Centerline Logistics Cooperation with cofunding from POLB and CARB. These pilot demonstration projects are key to additional emission reductions from the off-road construction and marine sectors.

## **Fueling Infrastructure and Deployment (Natural Gas/Renewable Fuels)**

A key element for increased use of alternative fueled vehicles and resulting widespread acceptance is the availability of the supporting refueling infrastructure. The refueling infrastructure for gasoline and diesel fuel is well established and accepted by the driving public. Alternative, clean fuels, such as alcohol-based fuels, propane, hydrogen, and even electricity, are much less available or accessible, whereas natural gas and renewable fuels have recently become more readily available and cost-effective. Nonetheless, to realize emissions reduction benefits, alternative fuel infrastructure, especially fuels from renewable feedstocks, must be developed in tandem with the growth in alternative fueled vehicles. While California appears to be on track to meet its Renewable Portfolio Standard targets of 33 percent by 2020 and 50 percent by 2030 as required by SB 350 (chaptered October 2015), the objectives of the South Coast AQMD are to expand the infrastructure to support zero and near-zero emission vehicles through the development, demonstration and installation of alternative fuel vehicle refueling technologies. However, this category is predominantly targeted at natural gas (NG) and renewable natural gas (RNG) infrastructure and deployment (electric and hydrogen fueling are included in their respective technology categories). The Clean Fuels Program will continue to examine opportunities where current incentive funding is either absent or insufficient.

## **Stationary Clean Fuel Technologies**

Given the limited funding available to support low emission stationary source technology development, this area has historically been limited in scope. To gain the maximum air quality benefits in this category, higher polluting fossil fuel-fired electric power generation needs to be replaced with clean, renewable energy resources or other advanced zero and near zero-emission technologies, such as solar, energy storage, wind, geo-thermal energy, bio-mass conversion and stationary fuel cells. Although combustion sources are lumped together as stationary, the design and operating principles vary

significantly and thus also the methods and technologies for control of their emissions. Included in the stationary category are boilers, heaters, gas turbines and reciprocating engines as well as microgrids and some renewables. The key technologies for this category focus on using advanced combustion processes, development of catalytic add-on controls, alternative fuels and technologies and stationary fuel cells in novel applications.

Although stationary source NO<sub>x</sub> emissions are small compared to mobile sources in the Basin, there are applications where cleaner fuel technologies or processes can be applied to reduce NO<sub>x</sub>, VOC and PM emissions. Recent demonstration projects funded in part by the South Coast AQMD include a local sanitation district retrofitting an existing biogas engine with a digester gas cleanup system and catalytic exhaust emission control. The retrofit system resulted in significant reductions in NO<sub>x</sub>, VOC and carbon monoxide (CO) emissions. This project demonstrated that cleaner, more robust renewable distributed generation technologies exist that not only improve air quality but enhance power quality and reduce electricity distribution congestion. Another ongoing demonstration project consists of retrofitting a low NO<sub>x</sub> ceramic burner on an oil heater without the use of reagents, such as ammonia or urea, which is anticipated to achieve selective catalytic reduction (SCR) NO<sub>x</sub> emissions or lower. SCR requires the injection of ammonia or urea that is reacted over a catalyst bed to reduce the NO<sub>x</sub> formed during the combustion process. Challenges arise if ammonia distribution within the flue gas or operating temperature is not optimal resulting in ammonia emissions leaving the SCR in a process referred to as “ammonia slip”. The ammonia slip may also lead to the formation of particulate matter in the form of ammonium sulfates. Based on the successful deployment of this project, further emission reductions may be achieved by other combustion sources (such as boilers) by the continued development of specialized low NO<sub>x</sub> burners without the use of reagents.

## **Health Impacts, Fuel and Emissions Studies**

The monitoring of pollutants in the Basin is extremely important, especially when focused on (1) a sector of the emissions inventory (to identify the responsible technology) or (2) exposure to pollution (to assess the potential health risks). Several studies indicate that areas with high levels of air pollution can produce irreversible damage to children’s lungs. This information highlights the need for further emissions and health studies to identify the emissions from high polluting sectors as well as the health effects resulting from these technologies. As we transition to new fuels and forms of transportation, it is important to understand the impacts that changing fuel composition will have on exhaust emissions and in turn on ambient air quality. This area focuses on exhaust emissions studies, with a focus on NO<sub>x</sub> and PM<sub>2.5</sub> emissions and a detailed review of other potential toxic tailpipe emissions, for alternative fuel and diesel engines. These types of in-use emissions studies have found significantly higher emissions than certification values for heavy-duty diesel engines, depending on the duty-cycle. South Coast AQMD is performing a three-year in-use emissions study of 200 next-generation technology heavy-duty vehicles in the Basin. This study, expected to be completed in 2021, is aimed at understanding the activity pattern of different vocations, understanding the real-world emissions emitted from different technologies. Other studies launched in 2020 will evaluate the emissions produced using alternative diesel blends in off-road heavy-duty engines, assess emissions impact of hydrogen-natural gas blend on near-zero emission heavy-duty natural gas engines as well as evaluating emissions produced using higher blend ethanol in light-duty gasoline vehicles.

## **Emissions Control Technologies**

This broad category refers to technologies that could be deployed on existing mobile sources, aircraft, locomotives, marine vessels, farm and construction equipment, cargo handling equipment, industrial equipment, and utility and lawn-and-garden equipment. The in-use fleet comprises most emissions, especially the older vehicles and non-road sources, which are typically uncontrolled and unregulated, or controlled to a much lesser extent than on-road vehicles. The authority to develop and implement regulations for retrofit on-road and off-road mobile sources lies primarily with the U.S. EPA and

CARB, both agencies are currently planning research efforts to aid the next round of rulemaking for off-road mobile sources.

Low emission and clean fuel technologies that appear promising for on-road mobile sources should be effective at reducing emissions for a number of off-road applications. For example, immediate benefits are possible from particulate traps and SCR technologies that have been developed for on-road diesel applications although retrofits are often hampered by physical size and visibility constraints. Clean fuels such as natural gas, propane, hydrogen and hydrogen-natural gas mixtures may also provide an effective option to reduce emissions from some off-road applications, even though alternative fuel engine offerings are limited in this space, but retrofits such as dual-fuel conversions are possible and need to be demonstrated. Reformulated gasoline, ethanol and alternative diesel fuels, such as biodiesel and gas-to-liquid (GTL), also show promise when used in conjunction with advanced emissions controls and new engine technologies. Emissions assessments are important in such projects as one technology to reduce one contaminant can increase another.

### **Technology Assessment and Transfer/Outreach**

Since the value of the Clean Fuels Program depends on the deployment and adoption of the demonstrated technologies, technology assessment and transfer efforts are an essential part of the Clean Fuels Program. This core area encompasses assessment of advanced technologies, including retaining outside technical assistance as needed, efforts to expedite the implementation of low emission and clean fuels technologies, and coordination of these activities with other organizations, including networking opportunities seeking outside funding. Assembly Bill (AB) 617<sup>5</sup>, which requires reduced exposure to communities most impacted by air pollution, required TAO to carry out additional outreach in CY 2019 to AB 617 communities regarding available zero and near-zero emission technologies as well as the incentives to accelerate those cleaner technologies into their communities. TAO staff also provide input as part of working groups, such as the Port of Long Beach EV Blueprint, Los Angeles County EV Blueprint, City of Los Angeles Zero Emissions 2028 Roadmap, Electric Power Research Institute (EPRI) study on air quality and GHG impacts of residential electrification, and Los Angeles Cleantech Incubator projects. Technology transfer efforts also include support for various clean fuel vehicle incentive programs (i.e., Carl Moyer Program, Proposition 1B-Goods Movement, etc.). Furthermore, general and, when appropriate, targeted outreach is an effective part of any program. Thus, the other spectrum of this core technology is information dissemination to educate and promote awareness of the public and end users. TAO staffed information booths to answer questions from the general public and provided speakers to participate on panels on zero and near-zero emission technologies at events, such as the ACT Conference and Expo and the Renewable Gas 360 Symposium and Webinar Series. 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 40 for a description of the technology assessment and transfer contracts executed in CY 2021 as well as a listing of the 7 conferences, workshops and events funded in CY 2021. Throughout the year, staff also participates in various programmatic outreach for the various incentive programs implemented by TAO, including the Carl Moyer Program, Proposition 1B-Goods Movement, Volkswagen Mitigation Program, Replace Your Ride, a U.S. EPA Airshed-funded Commercial Electric Lawn and Garden Incentive and Exchange Program, and residential lawn mower and EV charger rebate programs, to name a few.

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<sup>5</sup> <https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/about>



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# CLEAN FUELS PROGRAM

## Barriers, Scope and Impact

### Overcoming Barriers

Commercialization and implementation of advanced technologies come with a variety of challenges and barriers. A combination of real-world demonstrations, education, outreach and regulatory impetus and incentives is necessary to bring new, clean technologies to market. To reap the maximum emissions benefits from any technology, widespread deployment and user acceptance must occur. The product manufacturers must overcome technical and market barriers to ensure a competitive and sustainable business. Barriers include project-specific issues as well as general technology concerns.

#### Technology Implementation Barriers

- Viable commercialization path
- Technology price/performance parity with convention technology
- Consumer acceptance
- Fuel availability/convenience issues
- Certification, safety and regulatory barriers
- Quantifying emissions benefits
- Sustainability of market and technology

#### Project-Specific Issues

- Identifying a committed demonstration site
- Overall project cost and cost-share using public monies
- Securing the fuel
- Identifying and resolving real and perceived safety issues
- Quantifying the actual emissions benefits
- Viability of the technology provider

Other barriers include reduced or shrinking research budgets, infrastructure and energy uncertainties and risks, sensitivity to multi-media environmental impacts and the need to find balance between environmental needs and economic constraints. The South Coast AQMD seeks to address these barriers by establishing relationships through unique public-private partnerships with key stakeholders; e.g., industry, end-users and other government agencies with a stake in developing clean technologies. Partnerships that involve all the key stakeholders have become essential to address these challenges in bringing advanced technologies from development to commercialization.

Each of these stakeholders and partners contributes more than just funding. Industry, for example, can contribute technology production expertise as well as the experience required for compatibility with process operations. Academic and research institutes bring state-of-the- technology knowledge and testing proficiency. Governmental and regulatory agencies can provide guidance in identifying sources with the greatest potential for emissions reduction, assistance in permitting and compliance issues, coordinating of infrastructure needs and facilitation of standards setting and educational outreach. Often, there is considerable synergy in developing technologies that address multiple goals of public and private bodies regarding the environment, energy and transportation.

### Scope and Benefits of the Clean Fuels Program

Since the time needed to overcome barriers can be long and the costs high, both manufacturers and end-users tend to be discouraged from considering advanced technologies. The Clean Fuels Program addresses these needs by cofunding research, development, demonstration and deployment projects to share the risk of emerging technologies with their developers and eventual users.

Figure 4 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 4: Stages of Clean Fuels Program Projects**

Due to the nature of these advanced technology R D<sup>3</sup> projects, the benefits are difficult to quantify since their full emissions reduction potential may not be realized until sometime in the future, or perhaps not at all if displaced by superior technologies. Nevertheless, a good indication of the impact and benefits of the Clean Fuels Program overall is provided by this selective list of sponsored projects that have resulted in commercialized products or helped to advance the state-of-the-technology.

- Near-zero NOx Engine Development and Demonstrations for Heavy-Duty Vehicles
  - CWI: low-NOx natural gas ISN- G 8.9L and 12L engines (0.2 & 0.02 g/bhp-hr);
  - Southwest Research Institute (SwRI) project to develop a near-zero NOx Heavy-duty diesel engine;
  - Kenworth CNG Hybrid Electric Drayage Truck project;
  - DOE ZECT II project – KW developed one fuel cell truck & one CNG hybrid truck;
  - CARB GGRF project – KW developed advanced CNG hybrid truck by improving ZECT II CNG hybrid; and
  - US Hybrid NZE Plug-In Hybrid demonstration with DOE/NREL/CEC.
- 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 Nexo, 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;
  - Fuel cell Class 8 trucks under ZECT II Program; and
  - Kenworth, TransPower, US Hybrid, Cummins developed and demonstrated total 6 fuel cell trucks
- Electric and Hybrid Electric Vehicle Development and Demonstrations
  - Daimler Class 6 and 8 battery electric trucks with Penske and NFI;
  - Volvo LIGHTS Class 8 battery electric trucks demonstration with TEC Fontana, DHE, and NFI;

- Volvo Switch-On Class 8 battery electric truck deployment with multiple fleets;
  - Daimler and Volvo Class 8 battery electric truck large scale deployment with NFI and Schneider;
  - Hybrid electric delivery trucks with NREL, FedEx and UPS;
  - Plug-in hybrid work truck with Odyne Systems;
  - DOE funded Develop and Demonstrate Medium- Heavy-Duty Plug-in Hybrid Electric Vehicles for Work Truck Applications;
  - 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;
  - CARB GGRF Class 8 battery electric truck demonstration;
  - Peterbilt develop and demonstrated 14 trucks; and
  - BYD develop and demonstrated 25 trucks.
- Aftertreatment Technologies for Heavy-Duty Vehicles
- Johnson Matthey and Engelhard trap demonstrations on buses and construction equipment;
  - Johnson Matthey SCRT and SCCRT NOx and PM reduction control devices on heavy-duty on-road trucks; and
  - SwRI development of aftertreatment for heavy-duty diesel engines

South Coast AQMD played a leading or major role in the development of these technologies, but their benefits could not have been achieved without all stakeholders (i.e., manufacturer, end-users and government) working collectively to overcome the technology, market and project-specific barriers encountered at every stage of the RD<sup>3</sup> process.

## **Strategy and Impact**

In addition to the feedback and input detailed in Program Review, 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 2021 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 2 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 2021 Project Summaries by Core Technologies contained within this report, as well as Table 5 which lists federal, state and local funding awarded to the South Coast AQMD in CY 2021 for RD<sup>3</sup> projects (which will likely result in executed project contracts in 2022).

**Table 2: South Coast AQMD Major Funding Partners in CY 2021**

| <b>Research Funding Organizations</b> | <b>Major Manufacturers/Technology Providers</b> |
|---------------------------------------|---|
| California Air Resources Board        | Daimler Trucks North America LLC                |
| California Energy Commission          | Volvo Technology of America LLC                 |
| Department of Energy                  | SunLine Transit Agency                          |
| National Renewable Energy Laboratory  | <b>Local Entities &amp; Utilities</b>           |
| U.S. Environmental Protection Agency  | Mobile Source Reduction Committee               |
|                                       | Southern California Gas Company                 |
|                                       | Ports of Los Angeles & Long Beach               |

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 2021. 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 2021 include: (a) Volvo Switch-On: Develop and Deploy Seventy Heavy-Duty Battery Electric Vehicles; (b) Deployment of Five New Flyer Zero-Emission Fuel Cell Buses at Sunline Transit Agency; and (c) Develop and Demonstrate Zero Emission Freight Shore 2 Store with Freightliner and Toyota Fuel Cell Trucks.

### **Volvo Switch-On: Develop and Deploy Seventy Heavy-Duty Battery Electric Vehicles**

The \$91 million CARB funded ZANZEFF Volvo Low Impact Green Heavy Transport Solutions (LIGHTS) project developed, demonstrated and deployed 25 pilot and production Class 8 battery electric trucks at two fleets in the Inland Empire, two TEC dealerships in Fontana and La Mirada, and leased trucks at seven additional fleets. The Switch-On project is a \$30 million follow-up project deploying 70 certified Volvo VNR Electric Class 8 trucks at seven fleets in disadvantaged communities. U.S. EPA awarded South Coast AQMD \$20 million in Targeted Airshed grant funding. South Coast AQMD provided \$2 million from the Clean Fuels Fund towards infrastructure. Two of these fleets include DHE and NFI in Ontario, demonstration partners in the Volvo LIGHTS project. Other participating fleets include Performance Team (Santa Fe Springs), CEVA, McLane and Amazon. Each fleet will be replacing Class 8 diesel trucks currently performing drayage service to the San Pedro Bay Ports. The Switch-On project will provide 153 tons of NOx, 1,317 tons of PM 2.5 and 53,160 tons of CO2 over the 10-year lifetime of the trucks.



**Figure 5: Volvo VNR Electric Class 8 Truck Deployed at Multiple Fleets in South Coast Air Basin**

The trucks are in three configurations including straight trucks and tractors, with Gross Vehicle Weight (GVW) configurations ranging from 32,000 to 60,000 pounds, and axle configurations of 4x2, 6x2, and 6x4. These configurations accommodate various freight sectors and end-user market needs, and target urban, regional distribution, and drayage applications.

The Switch-On project takes advantage of 150 kW direct current (DC) fast charging infrastructure installed at DHE and NFI for the Volvo LIGHTS project, and their prior experience with the Volvo VNR Electric trucks. In addition, DHE and NFI have undergone facility improvements and electrical infrastructure upgrades and installed battery storage and 1 MW and 633 kW of solar respectively. The other participating fleets will install 150 kW or 350 kW DC fast charging infrastructure at their fleets.

The Switch-On project utilizes Volvo's maintenance and customer support and dealer networks at the TEC Fontana and La Mirada dealerships, which were upgraded to handle maintenance of battery electric trucks and have 150 kW DC fast chargers for trucks coming in for service or opportunity charging.

Volvo's Gold Service contract handles all maintenance issues for 72 months and will enable fleets to have a 10 year deployment to assist commercialization of heavy-duty battery electric trucks. In addition, this will assist fleets in complying with CARB's Advanced Clean Fleets regulation, which requires fleets to retain a certain percentage of zero emission trucks starting in 2024. Volvo and the fleets are providing cost share towards each truck which enables the EPA funding to fund additional trucks. South Coast AQMD's Clean Fuels funding is critical to support the installation of 150 kW or higher power charging infrastructure. The cost of installing high power fast charging infrastructure is a significant barrier to enabling fleets to deploy battery electric trucks. The trucks utilize CCS1 for charging infrastructure, which is the North American standard for heavy-duty vehicles. The trucks will be capable of DC fast charging at up to 250 kW.

The VNR Electric trucks for DHE, NFI, and Amazon will have increased vehicle range due to the development of more efficient Gen 3 battery packs. The battery chemistry used in the VNR Electric platform minimizes total cost of ownership by balancing power requirement with charging cycles, with sufficient power density to prevent costly battery replacement from premature degradation and minimal impact on payload capacity. The battery design was optimized to maintain or improve the fleet's productivity and duty cycle applications based on the fleet's operations, routes, and locations of available charging infrastructure.

Having battery electric trucks operating within disadvantaged communities will provide significant health and air quality benefits to residents living in these communities, and support fleets in compliance with South Coast AQMD's Rule 2305 – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program, which includes compliance and reporting requirement for warehouse owners and operators. Community based organized Reach Out in Upland will create and implement a community engagement strategy to educate residents about battery electric truck technologies and fleet operations. Energetics will collect and analyze fleet data on 1) utilization, 2) energy consumption, and 3) vehicle tailpipe emissions between conventional baseline and battery electric vehicles. Vehicle and fleet-level usage and performance parameters will include mileage, vehicle load, vehicle route, engine hours, idling hours, and energy use. These efforts will ensure that lessons learned and benefits of the Switch-On project will be captured and disseminated to a broad variety of audiences.

### **Deployment of Five New Flyer Zero-Emission Fuel Cell Buses at Sunline Transit Agency**

Despite decades of aggressive efforts to improve air quality within the Basin, this region continues to have some of the nation's worst air quality. Currently, the SCAB and Coachella Valley portion of the Salton Sea Air Basin (SSAB) have areas in non-attainment for ozone and particulate matter (PM2.5). SunLine Transit Agency operates in Riverside County, which, according to the NAAQS, is an ozone "non-attainment" area. In 2020, South Coast AQMD was awarded a \$5.9M EPA Targeted Air Shed Grant to replace Sunline fleet of five 2008 model year CNG transit buses with zero emission buses to improve local air quality and assist in achieving NAAQS ozone "attainment" designation for this area. These zero-emission buses produce no criteria emissions of NO<sub>x</sub>, VOC, CO, and PM2.5 and have significantly reduced GHG emissions, especially with the use of renewable fuels. This project also assists Sunline in complying with CARB Innovative Clean Transit (ICT), requiring all public transit agencies to gradually transition to 100% zero-emission buses by 2030. SunLine has been an early adopter of advanced transit technologies and already operates both fuel cell electric buses (FCEBs) and battery electric buses (BEBs).



New Flyer will build and deliver 5 hydrogen FCEBs equipped with Ballard Power Systems' ("Ballard") HD85 fuel cell system. This latest state-of-the-art technology has been deployed in small volumes to date. The learnings from past deployments position New Flyer to supply robust and reliable zero-emission buses that can be rapidly deployed to generate emission reductions in regular service operations. The project involves procurement, delivery, and commissioning of the buses within a five-year period. Sunline will conduct a minimum of 1-year of data collection after the buses' deployment and will operate the buses on a variety of routes passing through disadvantaged communities to the end of the buses 12-year lifetime. This deployment project also creates a load on Sunline's recently upgraded 900 kg/day hydrogen fueling station. These new FCEBs will bring SunLine's fleet to 21 FCEBs overall, resulting in the station being utilized at more than 65% of its full capacity and creating a reference site for at-scale deployment of FCEBs for other transit agencies. The station can operate more cost-effectively at a broader scale, providing an important reference site to demonstrate the at-scale cost of onsite hydrogen electrolysis. Operation of the station on a larger scale will also uniquely enable SunLine to learn about operational hydrogen fueling considerations. SunLine also plans to provide public access to their hydrogen fueling infrastructure to support other local early adopters of hydrogen fuel cell technology. Integration of the transit fueling operations with public dispensers that share common infrastructure is an additional innovative aspect of SunLine's planned scale-up of their hydrogen fueling operations that this project will be associated with. As public fueling demand grows, SunLine plans to continue to scale its hydrogen supply by adding liquid hydrogen or added electrolyzer capacity, which will provide opportunities to explore multiple integrated fueling technologies.



**Figure 6: SunLine Transit Agency Fuel Cell Buses**

The total project cost includes a total award of \$5,906,601 from the EPA, \$806,204 in-kind voluntary cash match in the form of hydrogen fuel, and bus operation and maintenance costs from Sunline, and \$204,921 voluntary cost-share for the bus procurement from South Coast AQMD. The budget avoids the costly investment in hydrogen fueling infrastructure by leveraging SunLine's existing hydrogen fueling station. This allows the grant funds to be focused on zero-emission bus procurements, maximizing emission reductions of ozone precursor pollutants and GHGs and directly benefitting the Coachella Valley residents, a disadvantaged community.



**Figure 7: SunLine Transit Agency Onsite Hydrogen Fueling Infrastructure**

**Develop and Demonstrate Zero Emission Freight Shore 2 Store with and Toyota Fuel Cell Trucks**

The Port of Los Angeles (POLA) Zero Emissions Freight "Shore To Store" Project (S2S) was awarded \$41M CARB ZANZEFF funding to structure operations for future zero emission goods movement, reduce GHG, criteria pollutant, and toxic air contaminant emissions in and around freight facilities; and provide economic, environmental, and public health benefits to disadvantaged communities (DAC).

Funding for this \$82.5M project is provided by CARB, CEC (in-kind match), Toyota, Kenworth, Port of Hueneme, Shell, Southern Counties Express, Total Transportation Services (TTSI), UPS and South Coast AQMD.

Ten Kenworth zero-emission Class 8 hydrogen fuel cell electric on-road trucks utilizing the Kenworth



**Figure 8: Kenworth – Toyota Class 8 FCET fueling at Shell Ontario Heavy-Duty Hydrogen station July 2021**

T680 platform, integrated with Toyota's fuel cell drive technology will be based in disadvantaged communities and operated in revenue service: three by the United Parcel Services (UPS), two by Total Transportation Services Inc. (TTSI), one by Southern Counties Express (SCE), and four by Toyota Logistics Services (TLS) throughout the Los Angeles basin ports, inland locations such as Riverside County, and the Port of Hueneme (POH). Additionally, POH will demonstrate two electric yard tractors, and TLS will demonstrate two zero-emission forklifts at their facility. All 10 trucks were in service as of October 29, 2021 and will complete the minimum 90-day

operation by February 2022. TLS will operate one truck at least one year, through May 2022. The CARB Experimental Permit was renewed through October 2022.



Two new large-capacity, heavy-duty hydrogen fueling stations built by Equilon Enterprises LLC (d/b/a



**Figure 9: Kenworth – Toyota Class 8 FCET (white/blue ) escorting the US Capital Christmas tree (green truck) from the Rose Bowl to Redlands on November 6, 2021. (Credit: Toyota)**

Tree “Sugar Bear” from the cutting ceremony in Six Rivers National Forest, California to Washington, DC, one of the ten demonstration FCETs was invited to escort the Kenworth truck transporting the tree for the leg of the journey from Pasadena (Rose Bowl) to Redlands, CA.

As heavy-duty hydrogen stations are demonstrated, continued public research is needed to evaluate multiple aspects. Fueling protocols, dispenser design and station throughput and reliability are just some examples that will be evaluated with operating data reported through NREL. Data collected from the ten FCETs will also be collected and evaluated by NREL.

Shell Oil Products USA) in Ontario and Wilmington plus three additional stations at Toyota facilities around Los Angeles demonstrate an integrated, five-station, heavy-duty hydrogen fueling network. Stations at Toyota Logistics Services in Long Beach and Toyota Technical Center in Gardena serve as important research and development locations. The fifth heavy-duty station on POLB property is leased to Toyota at 785 Edison Ave., Long Beach, CA 90813 (as an in-kind match share by CEC & Shell).

Project partners will also support educational and outreach opportunities during the project that do not interfere with fleet logistics. Since Kenworth’s T680 was chosen to convey the US Capital Christmas



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## **CLEAN FUELS PROGRAM 2020 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 7), 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, 2021.

### **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, 2021, a total of 24 contracts/agreements, projects or studies that support clean fuels were executed or amended (adding dollars), as shown in Table 3. 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 10. 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 2021 reporting period are shown below with the total projected project costs:

- South Coast AQMD Clean Fuels Fund Contribution \$10,665,745
- Total Cost of Clean Fuels Projects \$252,950,852

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 2021-22 Budget on May 7, 2021, it included \$1 million from Clean Fuels recognized in TAO’s budget for technical assistance, workshops, conferences, co-sponsorships 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, 2021, are included within this report. Any portion of the Clean Fuels Funds not spent by the end of Fiscal Year 202-22 ending June 30, 2022, 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 2020 totaling approximately \$4.3 million is listed within Table 4.

For Clean Fuels executed and amended contracts, projects and studies in 2021, the average South Coast AQMD contribution was leveraged with nearly \$39 of outside investment. The typical historical leverage amount is \$4 for every \$1 of South Coast AQMD Clean Fuels funds, but from 2016 to 2021 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 2021, the distribution of funds for South Coast AQMD executed contracts, purchases and contract amendments with additional funding for the Clean Fuels Program totaling approximately \$10.6 million are shown in the figure below.

Additionally, the South Coast AQMD continued to seek funding opportunities and was awarded an additional \$48.7 million in CY 2021 for RD<sup>3</sup> projects as listed in Table 5.

As of January 1, 2022, there were 109 open Clean Fuels Fund contracts. Appendix B lists these contracts by core technology.

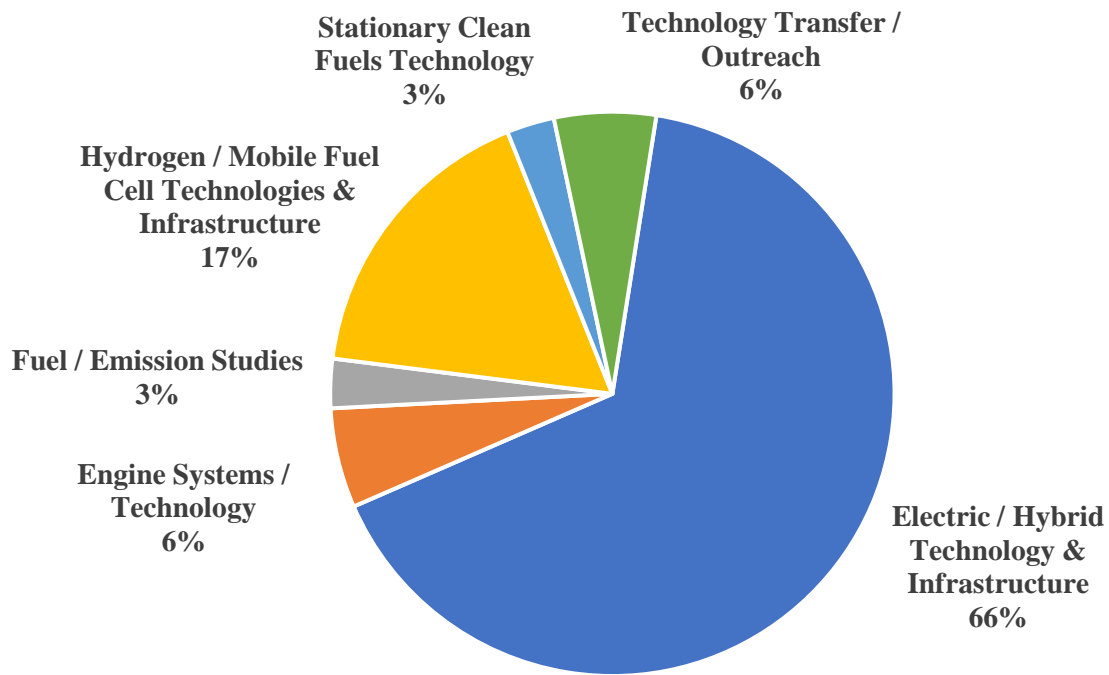


Figure 10: Distribution of Funds for Executed Clean Fuels Projects CY 2021 (\$10.6M)

## **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, 2021, 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 24 new and continuing contracts/agreements, projects and studies that received South Coast AQMD funding in CY 2021 are summarized in Table 3 (beginning on the next page), together with the funding authorized by the South Coast AQMD and by the collaborating project partners.

**Table 3: Contracts Executed or Amended (w/\$) between January 1 & December 31, 2021**

| Contract   | Contractor                             | Project Title  | Start Term | End Term | South Coast AQMD \$ | Project Total \$ |
|--|--|--|------------|----------|---------------------|------------------|
| <b>Electric / Hybrid Technologies and Infrastructure</b>           |  |  |            |          |                     |                  |
| 19278  | Volvo Group North America, LLC         | Low Impact Green Heavy Transport Solutions (LIGHTS)- Develop and Demonstrate Zero Emission Heavy-Duty Trucks, Freight Handling Equipment, EV Infrastructure and Renewable Energy | 04/17/19   | 06/30/22 | 0                   | 1,098,963        |
| 20296  | Daimler Trucks North America LLC       | Deploy Zero Emission Electric Delivery Trucks  | 05/27/21   | 12/31/24 | 4,010,000           | 12,310,000       |
| 21077  | Daimler Trucks North America LLC       | Develop and Demonstrate up to 8 Heavy-Duty Battery Electric Trucks and Transportable Fast-Charging   | 03/11/21   | 03/31/23 | 1,000,000           | 6,742,000        |
| 21153  | Volvo Group North America, LLC         | Switch-On: Develop and Deploy Seventy Heavy-Duty Battery Electric Vehicles   | 06/10/21   | 09/30/24 | 2,000,000           | 31,540,000       |
| <b>Engine Systems / Technologies</b>                               |  |  |            |          |                     |                  |
| 20199  | Agility Fuel Solutions LLC             | Develop a Near-Zero Natural Gas and Propane Conversion System for On-Road Medium-Duty Vehicles   | 07/01/21   | 06/30/22 | 607,825             | 1,834,000        |
| <b>Fuel / Emission Studies</b>                                     |  |  |            |          |                     |                  |
| 21103  | University of California Riverside     | Perform Investigation Study of E15 Gasoline Fuel Effects   | 03/09/21   | 06/08/22 | 200,000             | 1,300,000        |
| 21169  | West Virginia University Research Corp | Evaluation of Vehicle Maintenance Costs Between NG and Diesel Fueled On-Road Heavy-Duty Vehicles   | 09/29/21   | 03/28/24 | 100,000             | 250,000          |
| <b>Hydrogen / Mobile Fuel Cell Technologies and Infrastructure</b> |  |  |            |          |                     |                  |
| 20033  | Port of Long Beach                     | Sustainable Terminals Accelerating Regional Transportation (START) Phase I   | 06/04/21   | 04/30/22 | 500,000             | 102,964,064      |
| 20169  | Port of Los Angeles                    | Develop & Demonstrate Near-Zero and Zero Emissions Vehicles and Equipment at the Ports   | 06/28/21   | 11/30/22 | 1,000,000           | 83,548,872       |
| 21313  | SunLine Transit Agency                 | Deployment of 5 Zero-Emission Fuel Cell Transit Buses  | 08/27/21   | 09/30/25 | 204,921             | 6,761,125        |
| 21336  | Frontier Energy, Inc.                  | Participate in California Fuel Cell Partnership for Calendar Year 2021   | 01/01/21   | 12/31/21 | 70,000              | 1,300,000        |

**Table 3: Contracts Executed or Amended (w/\$) between January 1 & December 31, 2021 (cont'd)**

| Contract   | Contractor                                  | Project Title  | Start Term | End Term | South Coast AQMD \$ | Project Total \$     |
|--|---|--|------------|----------|---------------------|----------------------|
| 21386  | National Renewable Energy Laboratory        | CA Hydrogen Heavy-Duty Infrastructure Research Consortium H2@Scale Initiative  | 09/03/21   | 09/02/23 | 25,000              | 1,171,000            |
| <b>Stationary Clean Fuels Technologies</b>           |   |  |            |          |                     |                      |
| 21266  | University of California Irvine             | Develop Model for Connected Network of Microgrids  | 08/17/21   | 02/16/24 | 290,000             | 370,000              |
| <b>Technology Assessment and Transfer / Outreach</b> |   |  |            |          |                     |                      |
| 12376  | University of California, Riverside/CE-CERT | Technical Assistance with Alternative Fuels, Biofuels, Emissions Testing & Zero-Emission Transportation Technology   | 06/13/14   | 05/31/24 | 75,000              | 75,000               |
| 19078  | Green Paradigm Consulting, Inc.             | Technical Assistance with Alternative Fuels, EVs, Charging & Infrastructure and Renewable Energy                     | 09/07/18   | 09/30/24 | 50,000              | 50,000               |
| 19227  | Gladstein, Neandross & Associates LLC       | Technical Assistance with Alternative Fuels & Fueling Infrastructure, Emissions Analysis & On-Road Sources           | 02/01/19   | 01/31/22 | 100,000             | 100,000              |
| 20085  | CALSTART Inc                                | Technical Assistance for Development & Demonstration of Infrastructure and Mobile Source Applications                | 11/08/19   | 11/07/23 | 100,000             | 100,000              |
| 21260  | Fred Minassian                              | Technical Assistance with Incentive and Research and Development Programs  | 04/13/21   | 10/12/21 | 75,000              | 75,000               |
| 22096  | AEE Solutions LLC                           | Technical Assistance with Heavy-Duty Vehicle Emission Testing, Test Methods and Analysis of Real-World Activity Data | 11/08/21   | 11/07/23 | 100,000             | 100,000              |
| Various  | Various                                     | Cosponsor 7 Conferences, Workshops & Events plus 2 Memberships   | 01/01/21   | 12/31/21 | 132,091             | 1,234,920            |
| Direct Pay   | Prizm Imaging                               | Procure Outreach Materials   | 01/01/21   | 12/31/21 | 4,577               | 4,577                |
| Direct Pay   | Various                                     | Advanced Technology Program Expenses   | 01/01/21   | 12/31/21 | 21,331              | 21,331               |
|  |   |  |            |          |                     | <b>\$252,950,852</b> |



**Table 4: Supplemental Grants/Revenue Received into the Clean Fuels Fund (31) in CY 2021**

| Revenue Agreement #   | Revenue Source                  | Project Title  | Contractor                             | SCAQMD Contract # | Award Total \$     |
|---|---------------------------------|--|--|-------------------|--------------------|
| 20309   | US EPA Airshed Grant            | Delivery Truck Replacement Project   | Daimler Trucks North America LLC       | 20296             | 4,010,000          |
| 20132   | Southern California Gas Company | Develop a Near-Zero Natural Gas and Propane Conversion System for On-Road Medium-Duty Vehicles | Agility Fuel Solutions LLC             | 20199             | 154,325            |
| 21069   | Southern California Gas Company | Evaluate Vehicle Maintenance Costs between NG and Diesel Fueled On-Road Heavy Duty Vehicles    | West Virginia University Research Corp | 21169             | 150,000            |
| Table 4 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 (2021). |                                 |  |  |                   | <b>\$4,314,325</b> |

**Table 5: Summary of Federal, State and Local Funding Awarded or Recognized in CY 2021**

| Awarding Entity or Program     | Award (*) or Board Date | Purpose  | Contractors            | Award Total/ Fund    |
|--------------------------------|-------------------------|--|------------------------|----------------------|
| California Air Resources Board | 01/08/21                | Develop and Demonstrate Capture and Control System for Oil Tankers                         | STAX Engineering, Inc. | \$10,000,000 Fund 83 |
| San Pedro Bay Ports            | 01/08/21                | Develop and Demonstrate Capture and Control System for Oil Tankers                         | STAX Engineering, Inc. | \$666,667 Fund 83    |
| US EPA CATI Grant              | 06/04/21                | Develop and Demonstrate Two Class 8 Hydrogen Fuel Cell Trucks                              | Hyundai Motor Company  | \$500,000 Fund 31    |
| California Air Resources Board | 06/04/21                | Zero-Emission Drayage Truck and Infrastructure Pilot Project                               | Various                | \$16,019,316 Fund 67 |
| California Energy Commission   | 06/04/21                | Zero-Emission Drayage Truck and Infrastructure Pilot Project                               | Various                | \$10,964,955 Fund 67 |
| Port of Long Beach             | 06/04/21                | Zero-Emission Drayage Truck and Infrastructure Pilot Project                               | Various                | \$1,500,000 Fund 67  |
| Port of Los Angeles            | 06/04/21                | Zero-Emission Drayage Truck and Infrastructure Pilot Project                               | Various                | \$1,500,000 Fund 67  |
| California Air Resources Board | 09/03/21                | Establish Wildfire Smoke Clean Air Centers Incentive Pilot Program                         | Various                | \$250,000 Fund 75    |
| US EPA Airshed Grant           | 12/03/21                | Zero-Emission Freight Line-Haul Locomotive Repower with Supporting Charging Infrastructure | BNSF                   | \$4,967,000 Fund 17  |

**Table 5: Summary of Federal, State and Local Funding Awarded or Recognized in CY 2021  
(cont'd)**

| <b>Awarding Entity<br/>or Program</b>  | <b>Award (*)<br/>or Board<br/>Date</b> | <b>Purpose</b>                                      | <b>Contractors</b>       | <b>Award<br/>Total/<br/>Fund</b> |
|--|--|---|--------------------------|----------------------------------|
| US EPA<br>Airshed Grant  | 12/03/21                               | Long-Range Class 8 Fuel Cell Truck<br>Demonstration | Hyundai Motor<br>Company | \$3,500,000<br>Fund 17           |
| <p><i>Table 5 provides a comprehensive summary of revenue awarded to South Coast AQMD during the reporting CY (2021) for TAO's RDD&amp;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.</i></p> |  |   |                          | <b>\$48,682,950</b>              |

## Project Summaries by Core Technologies

The following summaries describe the contracts, projects and studies executed, or amended with additional dollars, in CY 2021. They are listed in the order found in Table 3 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.

### *Electric / Hybrid Technologies and Infrastructure*

#### **19278: Low Impact Green Heavy Transport Solutions (LIGHTS) - Develop and Demonstrate Zero Emissions Heavy-Duty Trucks, Freight Handling Equipment, EV Infrastructure and Renewable Energy**

|                                       |  |              |
|---------------------------------------|--|--------------|
| Contractor: Volvo Group North America | South Coast AQMD Cost-Share                                      | \$ 0         |
|                                       | Cosponsors:  |              |
|                                       | CARB<br><i>(received as pass-through funds into Fund 67)</i>     | 596,963      |
|                                       | U.S. EPA<br><i>(received as pass-through funds into Fund 67)</i> | 600,000      |
| Term: 4/17/19 – 6/30/22               | Total Cost:  | \$ 1,096,963 |

Volvo Group North America and South Coast AQMD secured a CARB ZANZEFF grant for the Volvo LIGHTS project to demonstrate 23 Class 8 battery electric trucks at two freight handling facilities, Dependable Highway Express (DHE) in Ontario and NFI Industries in Chino. The Volvo LIGHTS project also includes the demonstration of 29 battery electric forklifts, yard tractors and support EVs; 56 Level 2 and DC fast chargers; and production of 1.8 million MWh annually of solar. This contract amendment is for installation of 832 kW of solar at NFI and for the deployment of two additional battery electric trucks, utilizing CARB and U.S. EPA funds respectively.

#### **20296: Deploy Zero Emission Electric Delivery Trucks**

|  |  |               |
|--|--|---------------|
| Contractor: Daimler Trucks North America | South Coast AQMD Cost-Share                                    | \$ 0          |
|  | Cosponsors:  |               |
|  | US EPA<br><i>(received as pass-through funds into Fund 31)</i> | 4,010,000     |
|  | DTNA   | 3,260,000     |
|  | HVIP/SCE Charge Ready  | 5,040,000     |
| Term: 5/27/21 – 12/31/24                 | Total Cost:  | \$ 12,310,000 |

Daimler Trucks North America (DTNA) to develop and deploy its first commercial-ready Class 8 (eCascadia) and Class 6 (eM2) battery electric vehicles with major fleet operators in the Basin beginning in 2022. Twenty eCascadia and 15 eM2 heavy-duty trucks will be distributed amongst U.S. Foods, JB Hunt, Ryder Truck, and Schneider. Fleet operators will secure DC Fast Charge infrastructure with technical support from DTNA and financial support from Southern California Edison’s Charge Ready program.

**21077: Develop and Demonstrate up to 8 Heavy-Duty Battery Electric Trucks and Transportable Fast-Charging**

|  |                             |              |
|--|-----------------------------|--------------|
| Contractor: Daimler Trucks North America | South Coast AQMD Cost-Share | \$ 1,000,000 |
|  | Cosponsors:                 |              |
|  | DTNA                        | 4,919,500    |
|  | BAAQMD                      | 322,500      |
|  | SCE and PG&E                | 500,000      |
| Term: 3/11/21 – 3/31/23                  | Total Cost:                 | \$ 6,742,000 |

Daimler Trucks North America (DTNA) to develop a Commercial Experience (CX) project to demonstrate up to eight pre-commercial-ready battery electric Class 8 (eCascadia) and Class 6 (eM2) trucks with 12-18 major fleets in the South Coast Air Basin and in the Bay Area AQMD. This project will provide DTNA customers with 2 to 9 months of vehicle use and to experience EV recharging using a transportable DC Fast Charge system from Charge Point that will minimize costs and installation challenges associated with in-ground charging infrastructure. The project is expected to stimulate customer interest in and accelerate customer orders for commercial product.

**21153: Switch-On: Develop and Deploy Seventy Heavy-Duty Battery Electric Vehicles**

|  |                             |               |
|--|-----------------------------|---------------|
| Contractor: Volvo Group North America, LLC | South Coast AQMD Cost-Share | \$ 2,000,000  |
|  | Cosponsors:                 |               |
|  | U.S. EPA                    | 19,460,000    |
|  | Volvo/Fleets                | 10,000,000    |
| Term: 6/10/21 – 9/30/24                    | Total Cost:                 | \$ 31,460,000 |

The Switch-On project builds on the progress achieved from the Volvo LIGHTS project by deploying 70 commercial Class 8 battery electric trucks at six fleets for drayage and freight applications. Trucks will be deployed in 2022 and 2023 and EV charging infrastructure will be installed at each fleet to support fleet operations. Data collection and analysis will be conducted by Volvo and their subcontractor Energetics through March 2024. Volvo will provide a final report to U.S. EPA detailing the experiences of fleets with commercial battery electric trucks and lessons learned.

## ***Engine Systems / Technologies***

### **20199: Develop a Near-Zero Natural Gas and Propane Conversion System for On-Road Medium-Duty Vehicles**

|  |   |              |
|--|---|--------------|
| Contractor: Agility Fuel Solutions LLC | South Coast AQMD Cost-Share                               | \$ 453,500   |
|  | Cosponsors:   |              |
|  | SoCalGas<br>(received as pass-through funds into Fund 31) | 154,325      |
| Term: 07/01/21 – 12/31/22              | Total Cost:   | \$ 1,834,000 |

In October 2019, South Coast AQMD's Governing Board (Board) approved three projects to develop the new Ford 7.3-liter near zero NOx engine natural gas and propane conversion systems, including an award to Agility Fuel Solutions (Agility). Due to the lack of Ford Qualified Vehicle Modifiers (QVM) program approvals, staff was unable to finalize the contract with Agility. The Ford QVM program assures that vehicles converted through the program are converted to Ford standards and the given QVM can carry the added alternative fuel components and emissions warranty. Agility has demonstrated their commercialization strategy as well as aftermarket service and warranty capability for their current large fleet of low-NOx natural gas and propane vehicles that include the Ford 6.8-liter natural gas trucks converted under the QVM program. Agility Fuel Solutions will develop all hardware and software necessary to operate and certify the next generation Ford 7.3L engine on both CNG and propane (liquid petroleum gas or LPG). Agility will secure MY 2021 CARB Executive Orders for the 7.3L running on CNG and LPG at the lowest OLNS (Optional Low NOx Standard) of 0.02 g/bhp-hr NOx, with a demonstration target of 0.01 g/bhp-hr over a certification test cycle.

## ***Fuel / Emissions Studies***

### **21103: Perform Investigation Study of E15 Gasoline Fuel Effects**

|   |                             |              |
|---|-----------------------------|--------------|
| Contractor: University of California, Riverside | South Coast AQMD Cost-Share | \$ 200,000   |
|   | Cosponsors:                 |              |
|   | CARB                        | 500,000      |
|   | RFA/Growth Energy           | 600,000      |
| Term: 03/09/21 – 06/08/22                       | Total Cost:                 | \$ 1,300,000 |

CARB's, Renewable Fuels Association (RFA), Growth Energy and UCR have partnered together and are proposing to evaluate criteria and toxic pollutant emissions from twenty gasoline vehicles of different model years, emission standards, manufacturers and engine technology on both E10 and E15 fuels for the purpose of approving the use of E15 in California. Triplicate testing will be conducted using U.S. EPA's Federal Test Procedure-75 typically used for passenger cars. Emission measurements will include regulated pollutants, fuel economy, carbonyl compounds and VOCs. UCR proposes to expand the scope and add in-depth characterization of the secondary organic aerosols (SOA) forming potential from a subset of ten vehicles that best represent vehicle populations in the Basin. Both primary and secondary aerosols will be characterized in each experiment. UCR will perform a SOA formation potential study on a subset of ten vehicles that best represent the fleet of the Basin. The data gathered

will add additional information of impact of E15 on air quality in our region. There are three novel aspects for this program: (1) characterizing SOA forming potential from current generation gasoline vehicles, including port fuel injection (PFI), gasoline direct injection (GDI), and possible hybrid technologies, (2) compare the SOA forming potential between the typical CA E10 fuel and the candidate E15 blend to potentially be introduced to the CA gasoline pool, and (3) show environmental, air quality, and health benefits from the introduction of a gasoline fuel containing higher content of biofuel.

### **21169 Evaluation of Vehicle Maintenance Costs Between NG and Diesel Fueled On-Road Heavy-Duty Vehicles**

|   |  |            |
|---|--|------------|
| Contractor: West Virginia University<br>Research Corp | South Coast AQMD Cost-Share                                  | \$ 100,000 |
|   | Cosponsors:  |            |
|   | SoCalGas<br>(received as pass-through funds<br>into Fund 31) | 150,000    |
| Term: 09/29/21 – 03/08/24                             | Total Cost:  | \$ 250,000 |

South Coast AQMD has been supporting the rapid deployment of near-zero emission 0.02 g/bhp-hr NO<sub>x</sub> vehicles through its incentive programs since the first near-zero heavy-duty natural gas engines became commercially available in 2015. In evaluating natural gas vehicle (NGV) total cost of ownership (TCO), maintenance costs are often cited as a potential advantage that reduces NGV TCO relative to comparable diesel-powered vehicles due to lack of exhaust aftertreatment systems. There is no recent data that clearly compares the relative maintenance costs of NGVs and diesel trucks, especially for advanced natural gas and diesel technologies introduced in the last decade. The Basin includes one of the largest NGV fleets, including near-zero emission NGVs. Combined with the unique urban duty cycle Basin, a more detailed and regionally focused maintenance study is necessary to help understand the TCO and drive greater adoption of the NGVs. West Virginia University-Center for Alternative Fuels Engines (WVU) and Emissions is to perform a comparative evaluation of vehicle maintenance costs between natural gas and diesel fueled vehicles. The WVU project will enable correlation of vehicle maintenance costs to already available fleet information, real-world vehicle activity and in-use emissions data.

### ***Hydrogen / Mobile Fuel Cell Technologies and Infrastructure***

#### **20033: Sustainable Terminals Accelerating Regional Transportation (START) Phase I**

|                                |                             |                |
|--------------------------------|-----------------------------|----------------|
| Contractor: Port of Long Beach | South Coast AQMD Cost-Share | \$ 500,000     |
|                                | Cosponsors:                 |                |
|                                | CARB                        | 50,000,000     |
|                                | Ports/Project Partners      | 52,464,064     |
| Term: 6/4/21 – 4/30/22         | Total Cost:                 | \$ 102,964,064 |

CARB provided funding to POLB for their START project to demonstrate 102 zero and near-zero emission vehicles, vessels, and cargo handling equipment across an intermodal freight network at the Ports of Long Beach, Oakland and Stockton and partnership with South Coast, Bay Area, and San

Joaquin Valley air quality agencies. This project will assist in the transition to zero emission operations, reduce GHG and criteria pollutants, and provide economic, environmental and public health benefits to residents in disadvantaged communities. This demonstration includes battery electric yard tractors, top handlers, forklifts, Class 8 trucks, RTG cranes, electric drive tugboat, rail car mover, and low NOx ocean going vessels. This project was originally planned to be completed in April 2022 and is now being extended by CARB.

**20169: Develop & Demonstrate Near-Zero and Zero Emissions Vehicles and Equipment at the Ports**

|                                 |  |               |
|---------------------------------|--|---------------|
| Contractor: Port of Los Angeles | South Coast AQMD Cost-Share  | \$ 1,000,000  |
|                                 | Cosponsors:  |               |
|                                 | CARB   | 41,122,260    |
|                                 | CEC  | 25,999,331    |
|                                 | Toyota   | 9,740,000     |
|                                 | Others:<br>--Kenworth Truck Company<br>--Port of Hueneme<br>--Shell Oil Products USA<br>--Southern Counties Express<br>--Total Transportation Services<br>--UPS, | 4,685,433     |
| Term: 07/21/21 – 11/30/22       | Total Cost:  | \$ 82,547,024 |

The POLA's Shore to Store (S2S) Project is to develop and demonstrate ten Kenworth zero emissions Class 8 hydrogen fuel cell electric trucks, integrated with Toyota's fuel cell drive technology, along with the two hydrogen fueling stations that will be built in Ontario and Wilmington. All deployments will be based in disadvantaged communities. The hydrogen fuel cell electric trucks will be operated by UPS, Total Transportation Services, Inc., Southern Counties Express and Toyota Logistics Services (TLS) throughout the Los Angeles basin ports, inland locations such as Riverside County and the Port of Hueneme (POH). Additionally, POH will demonstrate two electric yard tractors, and TLS will demonstrate two zero emissions forklifts at their facility.

**21313: Deployment of 5 Zero-Emission Fuel Cell Transit Buses**

|                                    |  |              |
|------------------------------------|--|--------------|
| Contractor: SunLine Transit Agency | South Coast AQMD Cost-Share                                    | \$ 204,921   |
|                                    | Cosponsors:  |              |
|                                    | US EPA<br><i>(received as pass-through funds into Fund 17)</i> | 5,750,0000   |
|                                    | SunLine Transit Agency   | 806,204      |
| Term: 08/27/21 – 09/30/25          | Total Cost:  | \$ 6,761,125 |

SunLine Transit Agency provides transit services to the Coachella Valley, an ozone non-attainment area, including Eastern Coachella Valley, which is a Year 2 Community under South Coast AQMD's AB 617 Program. SunLine has recently commissioned their onsite renewable hydrogen fueling station

at a 900 kg per day capacity, which is the largest onsite hydrogen generation station at any U.S. transit agency, and their existing fleet SunLine's goal is to accelerate the transition to a fully zero emission bus fleet by 2035 to comply with CARB's Innovative Clean Transit (ICT) regulation. South Coast AQMD is partnering with SunLine Transit Agency to purchase and deliver up to five fuel cell transit buses. The newly upgraded hydrogen fueling station has a capacity for 30 buses, with a total of 21 buses now utilizing the station. Buses will operate on several routes in disadvantaged communities and replace older model year CNG transit buses. SunLine expects to operate up to five fuel cell transit buses for their 12-year equipment lifetime.

### **21336: Participate in California Fuel Cell Partnership for Calendar Year 2021**

|                                 |   |              |
|---------------------------------|---|--------------|
| Contractor: Frontier Energy Inc | South Coast AQMD Cost-Share   | \$ 70,000    |
|                                 | Cosponsors:   |              |
|                                 | 7 automakers, 3 public agencies,<br>7 industry stakeholders,<br>35 Full & Associate Members | 1,288,000    |
| Term: 01/01/21 – 12/31/21       | Total Cost:   | \$ 1,358,000 |

In April 1999, the California Fuel Cell Partnership (CaFCP) was formed with eight members; South Coast AQMD joined and has participated since 2000. The CaFCP and its members are demonstrating and deploying fuel cell passenger cars and transit buses with associated hydrogen fueling infrastructure in California. Since the CaFCP is a voluntary collaboration, each participant contracts with Frontier Energy Inc. for their portion of the CaFCP's administration. In 2021, South Coast AQMD contributed \$70,000 for Executive membership.

### **21386: California Hydrogen Heavy-Duty Infrastructure Research Consortium H2@Scale Initiative**

|  |  |              |
|--|--|--------------|
| Contractor: National Renewable Energy Laboratory | South Coast AQMD Cost-Share                | \$ 25,000    |
|  | Cosponsors:                                |              |
|  | Fuel Cell Technologies Office,<br>U.S. DOE | 999,000      |
|  | CEC  | 25,000       |
|  | GO-Biz, CARB (In-kind)                     | 65,000       |
| Term: 06/30/20 – 04/01/22                        | Total Cost:                                | \$ 1,114,000 |

A team of California public agencies (CARB, CEC, Governor's Office of Business and Economic Development (GO-Biz), South Coast AQMD) and national laboratories formed a research partnership in 2017 focused on near-term hydrogen infrastructure development, deployment, and operation needs in California and was awarded DOE H2@Scale CRADA funds that year. The research partnership framework was intended to continue beyond that project for a long-lasting strategic partnership with the DOE, agencies, and national laboratories. As California has begun in earnest to expand its light-duty focus to include the medium- and heavy-duty fuel cell electric vehicle market, the research partnership submitted a project proposal to DOE's H2@Scale CRADA Call AOI 1: Fueling Components for Heavy-Duty Vehicles. This project will continue to conduct hydrogen infrastructure research efforts, focused on California heavy-duty hydrogen infrastructure priorities. Tasks include



heavy-duty reference station design, fueling performance test device design, and modeling of heavy-duty station capacity.

### ***Stationary Clean Fuels Technologies***

#### **21266: Develop Model for Connected Network of Microgrids**

|  |                                  |            |
|--|----------------------------------|------------|
| Contractor: University of California, Irvine | South Coast AQMD Cost-Share      | \$ 290,000 |
|  | Cosponsors:                      |            |
|  | University of California, Irvine | 80,000     |
| Term: 08/17/21 – 02/16/24                    | Total Cost:                      | \$ 370,000 |

The proposed project will develop a model to assess air quality impacts of connected microgrids serving the SCAB by evaluating the use of various power generation technologies in microgrids and alternative transportation (battery electric and fuel cell) vehicles operating under microgrid control. In the project, university campuses, ports, shopping centers and critical facilities will be modeled to assess air quality impacts resulting from widespread deployment of microgrids. The study will include evaluating air quality impacts during both grids connected and islanded modes, including public safety power shutoff events, and estimating overall NOx benefits by emission reduction factors of microgrids such as system efficiency, energy storage, electricity delivery losses and combined heat and power system. Potential aggregated NOx emission reductions using connected and islanded operations may be up to 6 tons per day, comparable to the NOx emission reductions from the recently adopted Omnibus Regulation for heavy-duty engines. For mobile sources, electrolysis facilities could allow a more sustainable and economic hydrogen supply for fuel cell electric vehicles.

### ***Technology Assessment and Transfer / Outreach***

#### **12376: Technical Assistance with Alternative Fuels, Biofuels, Emissions Testing & Zero-Emission Transportation Technology**

|   |                             |           |
|---|-----------------------------|-----------|
| Contractor: University of California, Riverside/CE-CERT | South Coast AQMD Cost-Share | \$ 75,000 |
| Term: 06/13/14 – 05/31/24                               | Total Cost:                 | \$ 75,000 |

South Coast AQMD seeks to implement aggressive programs to develop and demonstrate pre-commercial technologies for low- and 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 College of Engineering/Center for Environmental Research and Technology (CE-CERT) is a research center at University of California Riverside 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.

**19078: Technical Assistance with Alternative Fuels, EVs, Charging and Infrastructure, and Renewable Energy**

|   |                             |            |
|---|-----------------------------|------------|
| Contractor: Green Paradigm Consulting, Inc. | South Coast AQMD Cost-Share | \$ 50,000  |
| Term: 09/07/18 – 09/30/24                   | Total Cost:                 | \$ 857,236 |

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. Green Paradigm Consulting, Inc., (GPCI) 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 amendment is for technical and administrative support to enable the range of activities involved in implementing the Clean Fuels Program. The contract also includes assistance in implementing complementary programs including CARB's GGRF Zero Emission Drayage Truck project and ZANZEFF Volvo LIGHTS project, and U.S. EPA's Targeted Airshed Volvo Switch-On project.

**19227: Technical Assistance with Alternative Fuels and Fueling Infrastructure, Emissions Analysis and On-Road Sources**

|   |                             |            |
|---|-----------------------------|------------|
| Contractor: Gladstein, Neandross & Associates LLC | South Coast AQMD Cost-Share | \$ 100,000 |
| Term: 02/01/19 – 01/31/22                         | Total Cost:                 | \$ 300,000 |

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. This contract amendment is for assistance in preparation of proposals for zero emission trucks and charging infrastructure.

**20085: Technical Assistance for Development and Demonstration of Infrastructure and Mobile Source Applications**

|                           |                             |            |
|---------------------------|-----------------------------|------------|
| Contractor: CALSTART Inc. | South Coast AQMD Cost-Share | \$ 100,000 |
| Term: 11/08/19 – 11/07/23 | Total Cost:                 | \$ 250,000 |

This contract is to leverage staff resources with specialized outside expertise. CALSTART Inc. is a nonprofit that specializes in clean transportation technologies, fuels, and systems. CALSTART Inc. manages a wide range of national clean transportation and grant programs in close partnership with federal, state and regional agencies that address national and international issues related to creating the next generation of jobs and reducing emissions from transportation. CALSTART has been working as an effective catalyst for the global advanced transportation technology industry for over a decade and works closely with key public and private sector stakeholders in the industry. This contract amendment is for assistance on deployment and demonstration of infrastructure and mobile source applications.

**21260: Technical Assistance with Incentive and Research and Development Programs**

|                            |                             |           |
|----------------------------|-----------------------------|-----------|
| Contractor: Fred Minassian | South Coast AQMD Cost-Share | \$ 75,000 |
| Term: 04/13/21 – 10/12/22  | Total Cost:                 | \$ 75,000 |

This contract leverages staff resources with specialized outside expertise. Over the course of his 35+ year career, Mr. Minassian has been involved with many aspects of air quality management and policy-making, including implementing and managing incentive programs, overseeing research projects and serving in a variety of advisory roles. He managed numerous research and development (R&D) projects including on-road emissions, development of low-NOx heavy-duty engines, and development of electric and hybrid electric vehicles. He then served as Technology Implementation Manager where he was responsible for the successful implementation of incentive programs such as the Carl Moyer, Lower-Emission School Bus, Prop 1B, Replace Your Ride and the NOx and PM credit generation programs. After his retirement from South Coast AQMD employment as Assistant Deputy Executive Officer for Science and Technology Advancement, he served as Board Assistant for Board Member Judith Mitchell at South Coast AQMD and CARB boards for a period of fourteen months. Fred has B.S. and M.S. degrees in Chemical Engineering from the Engineering Academy of Denmark, and the California State University, Northridge, respectively. Under this contract, Mr. Minassian will provide technical expertise across a broad spectrum of incentive and R&D programs to be implemented under Technology Advancement Office (TAO) activities on an-as-needed basis. Mr. Minassian has expert, in-depth understanding of both the incentive and R&D programs.

**22096: Technical Assistance with Heavy-Duty Vehicle Emissions Testing, Test Methods and Analysis of Real-World Activity Data**

|                                |                   |            |
|--------------------------------|-------------------|------------|
| Contractor: AEE Solutions, LLC | SCAQMD Cost-Share | \$ 100,000 |
| Term: 11/08/21 – 11/07/23      | Total Cost:       | \$ 100,000 |

This contract leverages staff resources with specialized outside expertise. Under this contract, AEE Solutions, LLC, will provide technical assistance for the in-use emissions study under this existing Board-approved technical assistance contract. Specifically, AEE Solutions will assist 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.

**Various: Cosponsor 7 Conferences, Workshops and Events plus 2 Memberships**

|                           |                             |              |
|---------------------------|-----------------------------|--------------|
| Contractor: Various       | South Coast AQMD Cost-Share | \$ 132,091   |
|                           | Cosponsors:                 |              |
|                           | Various                     | 1,102,829    |
| Term: 01/01/21 – 12/31/21 | Total Cost:                 | \$ 1,234,920 |

The South Coast AQMD regularly participates in and hosts or cosponsors conferences, workshops and miscellaneous events. In CY 2021, South Coast AQMD provided funding for 7 conferences, workshops and events and 2 memberships in key stakeholder organizations, as follows: Clean Fuels Advisory Group Retreat in January and September 2021; the PEMS Conference in March 2021; Special Awards

at the California State Science Fair in April; the ACT Conference and Expo in August 2021; the International Colloquium on Environmentally Preferred Advanced Generation (ICEPAG) 2021 Hydrogen: Fueling the Sustainable Future in September 2021; the Asilomar 2021 Conference on Transportation & Energy in October 2021; and the 2021 Southern California Chinese-American Environmental Protection Association 30-Year Anniversary and Annual Convention in November 2021. Additionally, for 2021, two memberships were renewed for participation in California Stationary Fuel Cell Collaborative, consists of a Core Group comprised of representatives of California agencies associated with fuel cell technology and an Industrial Advisory Panel (IAP) to explore, support, and facilitate the deployment of fuel cell technologies as a means of reducing or eliminating air pollutants and greenhouse gas emissions; increasing energy efficiency; enhancing resiliency, public health and energy independence; and assisting the state of California in realizing a sustainable energy future; 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.

#### **Direct Pay: Procure Outreach Materials**

|                           |                             |          |
|---------------------------|-----------------------------|----------|
| Contractor: Prizm Imaging | South Coast AQMD Cost-Share | \$ 4,577 |
| Term: 01/01/21 – 12/31/21 | Total Cost:                 | \$ 4,577 |

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. In 2021, high performance vinyl decals were procured to show South Coast AQMD's support and participation of the numerous truck projects being demonstrated and deployed.

#### **Direct Pay: Advanced Technology Program Expenses**

|                           |                             |           |
|---------------------------|-----------------------------|-----------|
| Contractor: Various       | South Coast AQMD Cost-Share | \$ 21,331 |
| Term: 01/01/21 – 12/31/21 | Total Cost:                 | \$ 21,331 |

The South Coast AQMD advanced technology program showcases new clean-fuel technologies 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 technologies. This direct pay covers cost of annual EV charging fees and use tax on purchase of hydrogen fueling equipment.

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# **CLEAN FUELS PROGRAM**

## **Progress and Results in 2021**

### **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 8 provides a list of 30 projects and contracts completed in 2021. Summaries of the completed technical projects are included in Appendix C. Selected projects completed in 2021 which represent a range of key technologies from near-term to long-term are highlighted below: (a) Zero Emission Cargo Transport (ZECT) Program; (b) Demonstrate Zero Emission Cargo Handling Vehicles at POLB; and (c) Develop and Demonstrate Zero-Emission Fuel Cell Electric Buses.

#### **Zero Emission Cargo Transport (ZECT) Program**

Heavy-duty diesel-powered trucks are a prime contributor to NO<sub>x</sub> and ozone emissions in the Basin and carbon dioxide from fossil-fueled internal combustion engines (ICEs) contribute to global GHG emissions. Accelerating the widespread deployment of zero and near-zero tailpipe emission vehicles, powered by low carbon intensity energy will significantly reduce NO<sub>x</sub>, ground level ozone and GHGs.

The ZECT program, developed through the US Department of Energy (USDOE), provided the South Coast AQMD with \$4.17 million in 2012 to advance battery electric Class 8 tractors used in cargo transportation. The program intended to develop 13 trucks with four manufactures using battery-electric and hydrogen fuel cell technologies; two of the companies dropped out of the project in the early stages. South Coast AQMD secured two contracts each with two California-based integrators: TransPower (Escondido, CA now with Meritor) and US Hybrid (Torrance, CA now with Ideanomics) to build all battery-electric tractors (BET), and plug-in hybrid-electric tractors (PHET) with all-electric-range (AER) and clean alternative fuel. Vehicles were demonstrated in “real-world” operations with local drayage fleets operating in the San Pedro Bay Ports complex. Total project costs were \$9.375 million. Project closure was March 31, 2020.



**Figure 11: San Pedro Bay Ports Complex (J. Gritchen, LB Press telegram)**

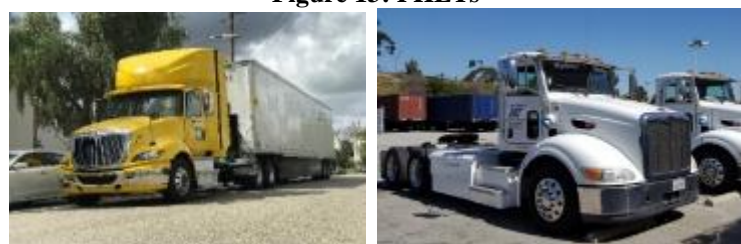
ZECT-1 was the first of two “ZECT” programs. ZECT-1 focused on advancing the BET technology. With less emphasis placed on electric vehicle supply equipment (EVSE) charging infrastructure, all vehicles were designed to charge with a low cost 60 kW marine-grade charging system selected and installed by TransPower. NREL provided third-party data analysis, and independent chassis dynamometer work was performed by the University of California at Riverside (UCR).

ZECT-1 has successfully demonstrated and advanced BET and PHET technologies. BET system efficiencies nearly doubled to 2.2 kWh/mi from a comparable 2011 study and freight customers began considering zero-emission goods movement. Further impact of the ZECT-1 is that it attracted major OEMs to initiate commercial-ready Class 6 and 8 battery-electric product development and demonstration efforts, with expected commercial releases in 2022 and 2023. Each platform met or exceeded the power and torque of 9-liter diesel tractors, demonstrated good gradeability and load hauling capability with range (under 100 miles) and systems troubleshooting being limiting factors. Both integrators started with Lithium Iron Phosphate (LFP) and ended with Nickel Manganese Cobalt (NMC) batteries. Poor battery quality, poor battery supplier reliability, greater range without payload loss were driving forces to change from LFP to NMC systems. Below are the BET and PHET platforms developed under ZECT-1.

**Figure 12: BETs**



**Figure 13: PHETs**





**Table 6: 2012 ZECT-I Demonstration Portfolio**

|                        | Battery Electric Trucks |                       | Plug-In Hybrid Electric Trucks |                 |
|------------------------|-------------------------|-----------------------|--------------------------------|-----------------|
| Developer              | TransPower              | US Hybrid             | TransPower                     | US Hybrid       |
| No. of Trucks          | 4                       | 2                     | 2                              | 3               |
| Hybrid Architecture    | N/A                     | N/A                   | Series                         | Parallel        |
| Chassis Make and Model | International Prostar   | International Prostar | International Prostar          | Peterbilt 384   |
| Traction Motor/kW      | D-PMag*/300             | D-PMag/320            | D-PMag/300                     | D-PMag/240      |
| Transmission           | Auto-Manual             | Direct Drive          | Auto-Manual                    | Automatic       |
| Auxiliary Power Unit   | N/A                     | N/A                   | 3.7 liter CNG                  | 8.9 liter LNG   |
| Batt. (kWh)/Fuel (DGE) | 215-311                 | 180-240               | 138/60 (CNG)                   | 80/72 (LNG)     |
| Charger/Power (kW)     | On-Board ICU/70         | On-Board/60           | On-Board ICU/70                | On-Board/20     |
| Charge/Fuel Time       | 2.5–4 hrs               | 3-4 hrs               | 2 hrs /15 min                  | 3-4 hrs /15 min |
| Vehicle Range / AER    | 75-150                  | 70-100                | 200 /30-40                     | 250+ /30        |

\*D-PMag is Dual Permanent Magnet Motor

BETs: TransPower developed its ElecTruck™ or Electric Drayage Demonstration (EDD) trucks. These trucks employed two tandem-mounted 150 kW Permanent Magnet (PM) electric traction drive motors designed and supplied by Quantum Technologies (used in the Fisker-Karma hybrid-electric vehicle). An Eaton 10-speed manual transmission with computer-controlled actuation produced the “automated manual transmission” feature. Drive batteries started with 215 kWh LFP and later to 311 kWh NMC. EDDs used a combined Inverter/Charger Unit (ICU), company-designed battery modules and Battery Management System (BMS) and a proprietary vehicle control system to optimize vehicle efficiency, maximize battery life, and protect key components from excessive temperatures, voltage spikes, or current surges.



**Figure 14: First Four EDD Trucks – March 2015**

Figure 14 shows the four EDD trucks; three additional EDDs were developed with CEC funds under separate contract. EDD trucks accumulated more than 43,000 in-use miles with various fleet operators, including TTSI, California Cartage Company, National Retail Trucking, 3 Rivers Trucking, SA Recycling, Knight Transportation Services, Pasha Stevedoring and Terminals, BAE Systems, and Terminalift. Data collected from this project showed runs averaging about 50-60 miles and an average energy efficiency of 2.3 kWh/mi with loads.

Another advancement that resulted from the early work on ZECT-1 was that TransPower integrated improved electric drive systems adding 308 kWh of Nissan NMC batteries into 12 Peterbilt 579 Class 8. Also, the EDD trucks served as the base system for a hydrogen fuel cell range extender project under separate funding from CARB.



Figure 15: eTruck-1 with 180 kWh LFP 11-Pack



Figure 16: eTruck-2 with 280 kWh NMC 6-Pack

US Hybrid built two BETs or eTrucks™ under ZECT-1 (Figures 15 & 16). Initially, a single, less costly 320 kW Induction drive motor was selected, but in 2014 following their study of how to meet necessary and continuous power and torque requirements, changed to a DPM. US Hybrid used a direct drive transmission to reduce drivetrain losses. US Hybrid’s first eTruck, deployed into drayage demonstration in 2015, used 180 kWh of LFP batteries configured into 11 battery packs mounted along the rail. Preliminary testing showed an average energy efficiency of 3.3 kWh/mi and 50 mile range under full load. eTruck-2 used 280 kWh of NMC batteries, configured into 6 battery packs, to produce 100 mile range and an overall average efficiency of 2.2 kWh/mile.



Figure 17 TransPower’s PHET-2 Rear Mounted ICE

PHETs: TransPower built two series-hybrid PHET’s based on its BET platform. The series-hybrid used a Ford 3.7-liter spark-ignited, CNG-fueled, automotive ICE with a three-way catalyst as a “gen-set”, to supplemental the drive batteries. The small ICE was mounted “behind-the-cab” as seen in Figure 17. US Hybrid developed a parallel-hybrid PHET using a conventional 300 h.p. Cummins ISL-G, 8.9-liter, spark-ignited LNG-powered ICE paired with a 240 kW electric motor, an automatic Allison transmission and 30-miles of AER (see Figures 18 & 19). The electronically controlled pneumatic driven clutch allowed the electric motor to be decoupled from the engine and permit electric only operation seamlessly and fully transparent to the driver. The parallel-hybrid performed like a 13-liter diesel tractor. Each PHET had a different outcome. The series-hybrid was battery dominant, the parallel-hybrid was engine dominant. The series-hybrid met “proof-of-concept” in UCR chassis dynamometer studies, extending battery life and battery electric range, but was less effective in-use, and generated higher than expected emissions because engine codes could not be obtained to fully utilize variable-valve-timing, relegating the ICE to a stationary not automotive application. The parallel-hybrid fulfilled operator’s needs with more than

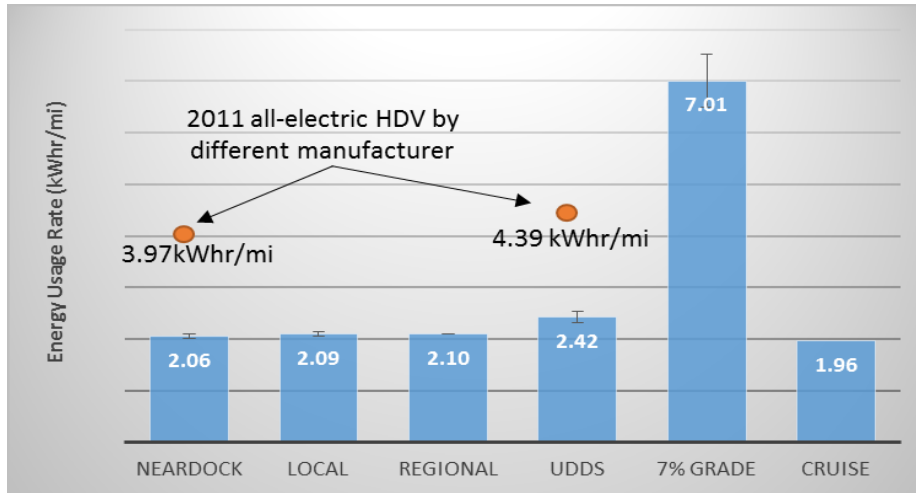


Figure 18: Two US Hybrid PHETs at TTSI



Figure 19: Parallel Hybrid Powertrain: 8.9L ISLG, Dual Electric Motors, Allison Transmission

sufficient power and torque, and in UCR chassis dynamometer studies indicated improved efficiency and emission reductions with AER drive batteries. However, operators rarely recharged the drive batteries, relying on the ICE to maintain state-of-charge, hence minimizing the potential efficiencies and emission reductions.



**Figure 20: Energy Efficiencies ZECT-1 BETs vs 2011 BET Demonstration**

### Demonstrate Zero Emission Cargo Handling Vehicle at POLB

POLB completed its C-PORT (Commercialization of POLB Off-Road Technology Demonstration) project in 2021. POLB received \$5.3M in a CARB ZANZEFF grant for its first demonstration of zero emission cargo handling equipment. This included the demonstration of three battery electric top handlers, one battery electric yard tractor and one fuel cell yard tractor.



**Figure 21: POLB Demonstrated Battery Electric Top Handlers and Yard Tractor, and a Fuel Cell Yard Tractor**



C-PORT required the collaboration of a significant number of project partners. Three Taylor battery electric top handlers developed by BYD; one Kalmar battery electric yard tractor developed by TransPower/Meritor, and one China National Heavy Duty Truck Group Co. fuel cell yard tractor developed by Loop Energy. SSA Marine demonstrated two Taylor and BYD battery electric top handlers at Pier J, and Long Beach Container Terminal (LBCT) demonstrated one Taylor and BYD battery electric top handler and one Kalmar and TransPower/Meritor battery electric yard tractor at Pier E. The project originally included the design, development and demonstration of one fuel cell yard tractor at LBCT. Prior to the demonstration phase, the fuel cell yard tractor developed by CNHTC and Loop Energy was not demonstrated due to a lack of engineering documentation to fully address POLB's safety and design concerns. The scope change in the C-PORT project reduced the CARB grant funding to \$5.25M with a 50% match share requirement.

Other project partners included: disadvantaged community/equity partners California State University, Long Beach Center for International Trade and Transport, Green Education, Long Beach City College, Long Beach Unified School District Cabrillo High School Academy of Global Logistics; labor partner International Longshore & Warehouse Union; project management partner Momentum; and data collection partners Tetra Tech and University California Riverside College of Engineering Center for Environmental Research and Technology.



Figure 22: C-PORT Project Sponsors

C-PORT overall goals during its demonstration included: 1) advance economic viability of two types of pre-commercial zero emission cargo handling equipment towards commercialization, 2) demonstration zero emission cargo handling equipment under tough duty cycles in the Port setting, 3) achieve significant GHG and emission reductions, and 4) communicate benefits of zero emission cargo handling equipment at POLB to residents in disadvantaged communities (DAC).

These goals were achieved through the design, manufacture, and demonstration of three battery electric top handlers in operations at two Port terminals, 2) design, manufacture, and demonstration of one battery electric yard tractor and one hydrogen fuel cell yard tractor in a single Port terminal (the fuel cell yard tractor was ultimately removed from the demonstration due to safety concerns), 3) install EVSE to support operation of battery electric cargo handling equipment, and 4) demonstration equipment in revenue service for at least six months and collect real-world data on equipment performance.



**Figure 23: LBCT (Left) and SSA (Right) Demonstrated Taylor and BYD Battery Electric Top Handlers**

One battery electric top handler (Taylor and BYD) and one battery electric yard tractor (Kalmar and TransPower/Meritor) were demonstrated at LBCT, which is a mostly autonomous zero emission terminal that used the battery electric cargo handling equipment against rail-limited ad hoc operations. SSA Marine demonstrated two battery electric top handlers (Taylor and BYD) in a more typical seaport container terminal, requiring cargo handling equipment to operate two full shifts entirely.



**Figure 24: Kalmar and TransPower/Meritor Battery Electric Yard Tractor (Left) and CNHTC/Sinotruck and Loop Energy Fuel Cell Tractor (Right) Demonstrated at LBCT**

To support the battery electric cargo handling equipment, C-PORT required installation of four EVSE. Three 200 kW BYD DC fast chargers were installed for three top handlers and one 200 kW TransPower DC fast charger was installed for the yard tractor. One BYD and one TransPower 200 kW DC fast charger were installed at LBCT, and two 200 kW BYD DC fast chargers were installed at SSA Marine. Battery electric cargo handling equipment and EVSE deployed are shown in Table 7.

**Table 7: Battery Electric Cargo Handling Equipment and EVSE by Terminal**

| User       | OEM    | Vendor                 | Equipment                       | Quantity | Infrastructure |
|------------|--------|------------------------|---------------------------------|----------|----------------|
| LBCT       | Taylor | BYD                    | Battery-Electric Top Handler    | 1        | 200 kW         |
|            | Kalmar | TransPower/<br>Meritor | Battery-Electric Yard Tractor   | 1        | 200 kW         |
|            | CNHTC  | Loop Energy            | Fuel-Cell Electric Yard Tractor | 1        | Mobile fueler  |
| SSA Marine | Taylor | BYD                    | Battery-Electric Top Handler    | 2        | 2 x 200 kW     |

Port staff assisted in EVSE installation and these were the first EVSE that POLB has deployed. Due to time constraints for the CARB grant, the typical Port design, bid, and build process was not followed and a more dynamic process utilizing OEM and technology providers and performing the work in-house enabled the EVSE installation to be completed more quickly.

C-PORT included educational and workforce development. Green Education led the effort to proactively engage and educate residents of DACs by developing educational materials, conducting 10 citywide community workshops and organizing the 2018 Green Prize Festival to promote interest in zero emission Port technologies. POLB collaborated with Long Beach City College and Academy of Global Logistics (AGL) to develop and execute a capstone project to promote critical thinking around zero emission transformation at POLB. AGL introduced high school students to career opportunities in global trade and logistics through a wide range of training and educational certification programs offered by Long Beach City College and California State University Long Beach. The capstone project focused on how POLB can achieve its 2030 zero emission goal without disrupting economics and job creation at POLB.

The battery electric top handlers were not able to meet the performance requirements of two shifts at SSA Marine terminal, but the battery electric top handler was suitable for work at LBCT. SSA Marine is a busy container terminal where the top handlers have a challenging duty cycle and are required to operate two entire shifts. Operators found that the battery electric top handlers did not maintain enough battery life to be comfortably used for two full shifts. The greatest battery discharge during the demonstration was 91% for 7.61 hours and the longest day was 12.43 hours, with 29% of the days showing operations longer than 7.61 hours for diesel top handlers.

Based on POLA and POLB 2019 Emission Inventories, deploying the battery electric top handlers and yard tractor results in 237,186 MT CO<sub>2</sub>e in GHG reductions, 445.1 tons of NO<sub>x</sub>, 85.8 tons of total hydrocarbons (THC), and 7.2 tons of PM<sub>10</sub>.

Taylor reported that the next generation of their battery electric top handler will be a commercial unit featuring technology directly evolved from the C-PORT project. Kalmar reported that information from C-PORT will be used to improve the next generation of their battery electric yard tractors which will go into production in 2022.

### Develop and Demonstrate Zero-Emission Fuel Cell Electric Buses

As part of a larger deployment with AC Transit in the Bay Area AQMD jurisdiction, Center for Transportation and Environment (CTE) received a \$22.3 million CARB GGRF grant and \$1 million from South Coast AQMD’s Clean Fuels Fund. South Coast AQMD funding went towards the fuel cell buses. Orange County Transportation Authority (OCTA) deployed 10 New Flyer fuel cell transit buses for \$12.9 million, as well as \$989,000 for facility upgrades and \$5.4 million for the hydrogen station, capable of fueling up to 50 fuel cell buses. These prototype buses were placed into daily operations and provided OCTA an opportunity to learn how fuel cell buses could be successfully integrated into their operations. AC Transit also deployed 10 New Flyer fuel cell buses and had previous experience with fuel cell buses and an existing hydrogen station, which they upgraded for this project. The deployment of 20 buses allowed for some savings on the buses as well as to validate vehicle performance, reduce costs, rapid refueling, extended range, and reduced curb and axle weight to increase passenger carrying capacity. The OCTA New Flyer fuel cell bus is shown in Figure 25 below.

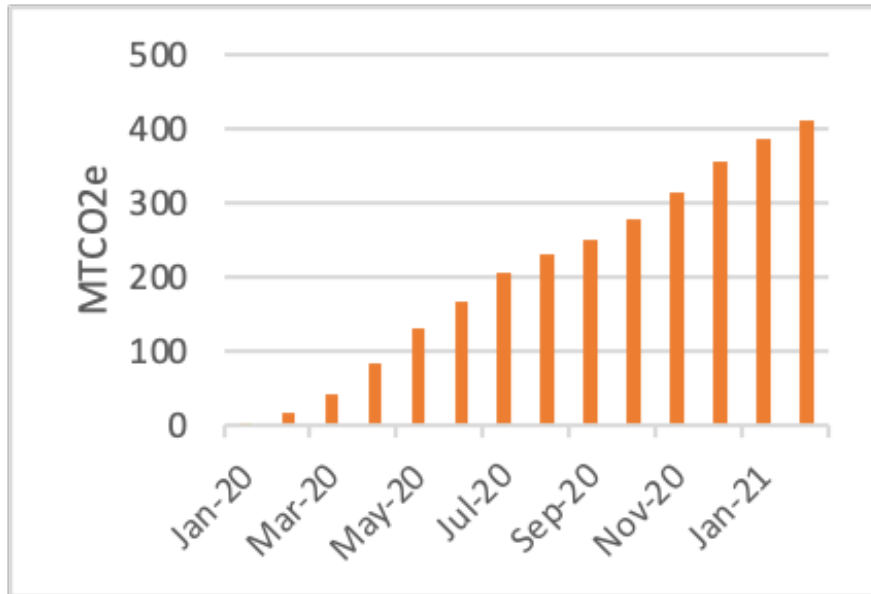


Figure 25: New Flyer XHE60 Xcelsior Fuel Cell Bus Deployed at OCTA

Construction of the hydrogen station and delivery of the buses allowed buses to enter into revenue service at AC Transit in January 2020 and at OCTA in February 2020. During one year of revenue service at both transit agencies, the buses accumulated 570,057 miles, 628 metric tons of GHG reductions, and 1.15 tons of weighted emission reductions. In the first year of deployment, the two fleets had an average fuel economy of 8.46 miles per kg, or roughly 9.56 miles per diesel gallon equivalent. This is about twice the average fuel economy of diesel (4.15 miles per diesel gallon) or CNG buses. Figure 26 below illustrates that the buses were able to offset a combined total of 413 metric tons of GHG reductions compared to their respective diesel fleets. The energy efficiency of the fuel cell buses was more than twice of comparable CNG buses.



**Figure 26: Cumulative GHG Reductions in First Year of Deployment**



The most significant metric used to rate the performance of transit buses is average vehicle availability. The average availability of the fuel cell buses was around 70%, with maximum availability of 80% for any month. Typical transit fleet operators target 85% vehicle availability to provide reliable service. As the technology matures and maintenance becomes routine, fuel cell buses are expected to meet an 85% vehicle availability target.

Another key challenge is minimizing overall environmental impacts by sourcing renewable hydrogen, which is not widely available. Emission reductions were calculated based on the realized carbon intensity of hydrogen fuel supply. Although the fuel cell buses are capable of traveling the same number of miles as diesel buses, their lower vehicle availability meant that the buses did not meet the expected target mileage. This project will provide 11.32 tons of NOx, 2.35 tons of ROG, 0.53 tons of PM 10, and 13,550 metric tons of GHG reductions during the 12-year lifetime for the 10 fuel cell buses deployed at OCTA.



**Figure 27: OCTA Hydrogen Station**

**OCTA Hydrogen Station Statistics**

- Developed by Trillium and Air Products
- Liquid hydrogen delivery
- 1600 kg/day @ 350 bar
- Capacity for up to 50 fuel cell buses
- Fueling time: 6 – 10 minutes per bus
- 280 kg peak back to back fills



The project succeeded in validating vehicle performance with increased reliability, durability, and utilization.

- Consistent in-service deployment of 47,787 service hours for the 20 buses.
- 50% reduction in cost compared to AC Transit's current generation of buses. The cost of the 20 fuel cell buses average \$1,288,626 when pricing was negotiated in 2017 upon receipt of CARB grant funding. Previous generation fuel cell buses prior to 2014 were about \$2.5 million per bus. The 2019 California state contract value of buses is now set at \$1,014,979 per bus.
- Fill rates for fuel cell buses were about 2.98 kg per minute for OCTA and 3.16 kg per minute for AC Transit, allowing transit agencies to fill a 36 kg tank in 12 minutes. This falls within the acceptable dwell time of 10-15 minutes for conventional diesel and CNG fleets.
- Increased range, reduced curb weight allowing for higher payloads, shorter fueling times compared to battery electric buses
- Range of up to 300 miles on a single fill of hydrogen were observed in this project
- Reductions of vehicle curb and axle weights (AC Transit bus weighs 32,360 lbs. and OCTA bus weights 33,120 lbs.) enabled these buses to carry more passengers

Newer fuel cells with higher power density, more compact energy storage systems with higher capacity, and use of composite materials in future bus designs will further decrease overall vehicle weight and enable fuel cell buses to meet California's 20,000 lb axle weight limit regulation. Current axle weights are about 21,000 lbs.

In addition, several transit agencies in the Basin have expressed interest in integrating fuel cell buses into their fleets including Santa Monica Big Blue Bus, Foothill Transit, Long Beach Transit, OmniTrans, and SunLine Transit. There are two American bus OEMs, New Flyer, and ENC, that are Buy America compliant so that buses can be purchased as part of other federal funding programs. New Flyer's XHE40 and XHE60 Xcelsior fuel cell buses completed Altoona testing in 2019, making them eligible for purchase through California and federal funding programs. Costs for fuel cell buses have dropped steadily since 2004 when fuel cell bus costs exceeded \$3 million. OEM estimates are now around \$1 million per bus and will continue to decrease as more fuel cell buses are deployed.

**Table 8: Projects Completed between January 1 & December 31, 2021**

| <b>Contract</b>  | <b>Contractor</b>                             | <b>Project Title</b>   | <b>Date</b> |
|--|---|--|-------------|
| <b>Electric / Hybrid Electric Technologies and Infrastructure</b>  |   |  |             |
| 17065  | Clean Fuel Connection, Inc.                   | Installation Services for Installation of EV Chargers at SCAQMD Headquarters                         | Dec 2021    |
| 17316  | Center for Transportation and the Environment | Develop and Demonstrate 10 Zero-Emission Fuel Cell Electric Buses                                    | Sept 2021   |
| 18075†   | Selman Chevrolet Company                      | Lease Two 2017 Chevrolet Bolt All-Electric Vehicles for Three Years                                  | Feb 2021    |
| 18151  | Rail Propulsion System                        | Develop & Demonstrate Battery Electric Switcher Locomotive   | Dec 2021    |
| 18280†   | Honda of Pasadena                             | Three-Year Lease of One Honda 2018 Clarity Plug-In Vehicle   | Jun 2021    |
| 18397  | Port of Long Beach                            | Demonstrate Zero Emission Cargo Handling Vehicle at POLB   | May 2021    |
| 20248  | Los Angeles County Economic Development Corp  | Economic and Workforce Impact Analysis of Electric Revolution in Southern California                 | Jan 2021    |
| <b>Engine Systems / Technologies</b>                               |   |  |             |
| 20122  | Landi Renzo USA Corp                          | Develop and Commercialize a Near-Zero Natural Gas Conversion System for On-Road Medium-Duty Vehicles | Jul 2021    |
| <b>Fuel / Emission Studies</b>                                     |   |  |             |
| 17245†   | West Virginia University Research Corp        | In-Use Emissions Testing and Fuel Usage Profile of On-Road Heavy-Duty Vehicles                       | Sept 2021   |
| 17352  | California State University Maritime Academy  | Develop and Demonstrate Vessel Performance Management Software and Equipment                         | Jun 2021    |
| 18090†   | University of California Riverside            | Study Secondary Organic Aerosol Formation from Heavy-Duty Diesel & Natural Gas Vehicles              | Oct 2021    |
| 19208  | University of California Riverside            | Conduct Emission Study on Use of Alternative Diesel Blends in Off-Road Heavy-Duty Engines            | Jul 2021    |
| 20058  | University of California Riverside            | Evaluate Meteorological Factors and Trends Contributing to Recent Poor Air Quality in Basin          | Sept 2021   |
| <b>Hydrogen / Mobile Fuel Cell Technologies and Infrastructure</b> |   |  |             |
| 15618  | FirstElement, Inc.                            | Installation of Eight Hydrogen Stations in Various Cities (two renewable, 6 delivered)               | Feb 2021    |
| 15635  | Center for Transportation and the Environment | ZECT II - Development & Demonstration of 1 Class 8 Fuel Cell Range Extended Electric Drayage Truck   | Sept 2021   |
| 16251  | H2 Frontier Inc.                              | Develop & Demonstrate Commercial Mobile Hydrogen Fueler  | May 2021    |
| 17317†   | American Honda Motor Co., Inc.                | Three Year Lease of One Honda 2017 Clarity Fuel Cell Vehicle   | Mar 2021    |
| 17343†   | American Honda Motor Co., Inc.                | Three Year Lease of One Honda 2017 Clarity Fuel Cell Vehicle   | Feb 2021    |

**Table 8: Projects Completed between January 1 & December 31, 2021 (cont'd)**

| <b>Contract</b>   | <b>Contractor</b>                     | <b>Project Title</b>  | <b>Date</b> |
|---|---------------------------------------|---|-------------|
| <b>Hydrogen / Mobile Fuel Cell Technologies and Infrastructure (cont'd)</b> |                                       |   |             |
| 17385†  | American Honda Motor Co., Inc.        | Three Year Lease of One Honda 2017 Clarity Fuel Cell Vehicle                                  | May 2021    |
| 18158   | National Renewable Energy Laboratory  | California Hydrogen Infrastructure Research Consortium H2 @ Scale Initiative                  | Mar 2021    |
| 19172†  | Longo Toyota                          | Three Year Lease of Two 2018 Toyota Mirai Fuel Cell Vehicles                                  | Oct 2021    |
| 20108   | University of California Irvine       | Develop Optimal Operation Model for Renewable Electrolytic Fuel Production                    | Jun 2021    |
| 21336   | Frontier Energy, Inc.                 | Participate in California Fuel Cell Partnership (CaFCP) for Calendar Year 2021                | Dec 2021    |
| <b>Fueling Infrastructure and Deployment (NG / RNG)</b>                     |                                       |   |             |
| 17092†  | Kore Infrastructure LLC               | RNG Production & Vehicle Demonstration  | Oct 2021    |
| <b>Technology Assessment and Transfer / Outreach</b>                        |                                       |   |             |
| 17358†  | AEE Solutions LLC                     | Technical Assistance with Heavy-Duty Vehicle Emissions Testing, Analyses & Engine Development | May 2021    |
| 20348†  | Gladstein, Neandross & Associates LLC | Cosponsor the 2021 Renewable Gas 360 Symposium and Webinar Series                             | March 2021  |
| 21078†  | Charging Interface Initiative e.V.    | Cosponsor High Power Charging for Commercial Vehicles Event                                   | Jan 2021    |
| 21203†  | University of California Riverside    | Cosponsor the 2021 Portable Emissions Measurement Systems Conference                          | Aug 2021    |
| 21357†  | University of California Davis        | Cosponsor the Asilomar 2021 Conference on Transportation & Energy                             | Oct 2021    |
| 22044†  | Gladstein, Neandross & Associates LLC | Cosponsor the 2021 Advanced Clean Transportation (ACT) Expo                                   | Sept 2021   |
| 22073†  | University of California Irvine       | Cosponsor ICEPAG 2021   | Dec 2021    |

†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**

## **2022 Plan Update**

In 1988, SB 2297 (Rosenthal) was signed into law (Chapter 1546) establishing South Coast AQMD's Clean Fuels Program and reaffirming the existence of the 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 technologies 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 as capitalize on the latest progress in technologies, research areas and data.

Every year, South Coast AQMD re-evaluates the Clean Fuels Program to develop a Plan Update based on reassessment of clean fuel technologies and direction of the South Coast AQMD Board. This Plan Update for CY 2022 targets several projects to achieve near-term emission reductions needed for the South Coast to meet health-based NAAQS.

### **Overall Strategy**

The overall strategy of TAO's Clean Fuels Program is based on emission reduction technology needs identified through the AQMP process and South Coast AQMD Board directives to protect the health of the approximately 18 million residents (nearly half the population of California) in the Basin. The AQMP, which will be updated in 2022, 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 clean fuel mobile and stationary advanced technologies in the Basin to achieve air quality standards. The 2016 AQMP identifies a 45 percent reduction in NO<sub>x</sub> required by 2023 and an additional 55 percent reduction by 2031 to achieve 8-hour ozone standards of 80 ppb and 75 ppb, respectively. The majority of NO<sub>x</sub> reductions must come from mobile sources, including both on- and off-road vehicle and equipment. Notably, South Coast AQMD is currently only one of two regions in the nation designated as an extreme nonattainment area (the other region is California's San Joaquin Valley). Furthermore, in April 2019, South Coast AQMD requested a voluntary re-classification from U.S. EPA of the 1997 8-hour federal ozone standard for the Coachella Valley region of the South Coast AQMD to "extreme" status. Hotter temperatures and other meteorological changes impacted by climate change in this 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 stationary equipment are expected to reduce NO<sub>x</sub> emissions significantly, they will be insufficient to meet South Coast AQMD needs, particularly in terms of timing. The 2016 AQMP identified a means to achieving the NAAQS through regulations and incentives for near-zero and zero emission technologies that are commercial or nearing commercialization. This strategy 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. To support the fleet turnover the Clean Fuels Program's emphasis continues on commercialization of larger heavy-duty (HD) low NO<sub>x</sub> engines and large

deployment projects of zero emission HD trucks like the Joint Electric Truck Scaling Initiative (JETSI) Pilot Project.<sup>6</sup>

While zero emission technologies, battery and fuel cell electric vehicles are making strides towards commercialization the number of battery electric HD trucks that will be deployed in time to meet the 2023 and 2031 ozone standards will fall short of what is required. The impacts and challenges of large deployments of battery electric vehicles are not yet fully understood or have been addressed. Vehicle and infrastructure costs, fleet adoption, impacts to the electrical grid, OEM supply chain and re-tooling of assembly plants and support networks for vehicle maintenance and service, development and standardization of ultra fast megawatt charging and fleet integration of limited range battery electric vehicles into their logistics and business model are some of the challenges that must be dealt with before widespread deployments of battery electric HD trucks become a reality. Efforts to address these challenges are being undertaken by projects like the JETSI 100 truck deployment and EPRI's RHETTA project for ultra fast megawatt charging development are the first trials to address the complex challenges of integrating large fleets of zero emission vehicles. In addition to these efforts once completed the findings and results will need to be studied, resolutions developed, funded and implemented.

In light of the projected limited deployment of zero emission battery electric vehicles and infrastructure in the near term and the development and commercialization of fuel cell electric vehicles and infrastructure in the mid term our strategy is to continue development of near-zero low NOx engines to meet the NAAQS. On June 3, 2016, South Coast AQMD petitioned the U.S. EPA to initiate rulemaking for a lower national NOx standard for on-road heavy-duty engines to achieve additional mobile source emission reductions. A national NOx standard (as opposed to a California standard) for on-road heavy-duty vehicles is estimated to result in 70 to 90 percent NOx emission reductions from this source category in 14 to 25 years, respectively. CARB estimates that 60 percent of total on-road heavy-duty vehicle miles traveled in the Basin are from vehicles purchased outside of California, which points to the need for a more stringent federal as well as state standard for on-road heavy-duty vehicles.

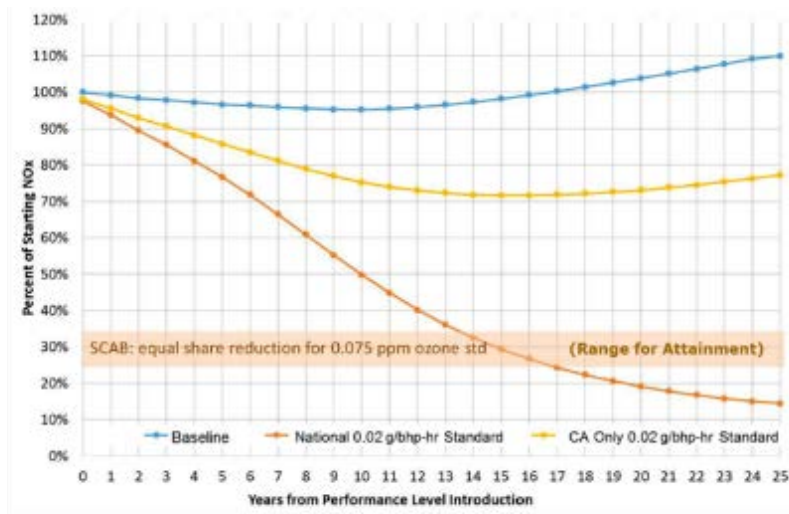
U.S. EPA has since acknowledged the need for additional NOx reductions through a harmonized and comprehensive national NOx reduction program for heavy-duty on-highway engines and vehicles. On November 13, 2018, U.S. EPA announced the Cleaner Truck Initiative, and on January 6, 2020, they issued an Advance Notice of Proposed Rule to reduce NOx emissions from on-road heavy-duty trucks. The progress was stalled in 2020 but EPA recently confirmed the deadline given by the president's Executive Order to finalize low NOx rulemaking by the end of 2022 for lower NOx standard with model year 2027. In the summer of 2020 CARB adopted its own Low NOx Omnibus rule. The new regulation imposes lower NOx standards starting in model year 2024, that will harmonize with U.S. EPA's Cleaner Truck Initiative's national NOx standard of 0.02 g/bhp-hr in 2027, 90% below today's NOx standard. Although both regulations are welcome news, their implementation and effectiveness are too late to help the South Coast AQMD meet its 2023 federal ozone attainment deadline. So, despite the milestone progress, commercialization and deployment of cost-effective near-zero engines are still needed to meet near-term goals.

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.

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<sup>6</sup> The project, known as Joint Electric Truck Scaling Initiative, or JETSI, is the largest commercial deployment of battery-electric trucks in North America to date, helping to significantly increase the number of zero-emission heavy-duty trucks available for goods movement while achieving necessary emission reductions. This is the first battery-electric truck project jointly financed by CARB and the CEC, and the largest investment of its kind.

Figure 28 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.



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 28: NOx Reduction Comparison: No New Regulations vs Low NOx Standard in California only vs National Standard**

In 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. Findings from the MATES V report, finalized in June 2021, showed that air toxics cancer risk based on modeling data has decreased by over 50% since MATES IV, with an average multi-pathway air toxics cancer risk at 454-in-a-million. The highest risk locations are at LAX and the Ports along goods movement and transportation corridors. Diesel PM continues to be the major contributor accounting for over 60% of the overall air toxics cancer risk. For the first time, chronic non-cancer risk was estimated with a chronic hazard index of 5.9 across the 10 stations in the MATES V study. 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 equipment such as yard tractors, top handlers, and rubber tire gantry cranes, is being replaced by category-specific methods and inventory models developed for specific regulatory support projects.

A key strategy of the Clean Fuels Program, which allows significant leveraging of 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 \$231.6 million toward projects exceeding \$1.14 billion. In 1998, 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 technologies developed and demonstrated by the Clean Fuels Program. This synergy enables South Coast AQMD to act as a leader in technology development and commercialization efforts targeting reduction of criteria pollutants. Since the Carl Moyer Program began in 1998, South Coast AQMD has implemented other incentive programs (i.e., Volkswagen Mitigation, Proposition 1B-Goods Movement, and Community Air Protection Program), with cumulative funding of



\$250 million annually. Starting in 2022, there will also be AB 617 incentive funding reserved for zero emission trucks in AB 617 communities which was identified as a funding priority in their CERPs. The 2016 AQMP also included control measures to develop indirect source regulations and strengthen the fleet rules to take advantage of incentives to further accelerate emission reductions.

Despite several current California incentive programs to deploy cleaner technologies and offset the higher procurement costs of cleaner technologies, significant additional resources are still needed for the scale necessary to achieve the NAAQS for this region. Meanwhile, South Coast AQMD is seeking to commercialize alternative low-NOx technologies that do not rely on incentives by providing customer fuel savings with low payback periods. There are several emerging key technologies that are discussed in detail later that will provide the NOx and GHG co-benefit which might no longer require vehicle purchase incentives.

As technologies move towards commercialization, such as heavy-duty battery electric trucks, the Clean Fuels Program has been able to partner with large OEMs, such as Daimler and Volvo to deploy these vehicles in large numbers. These OEM partnerships allow the Program to leverage their research, design, engineering, manufacturing, sales and service, and financial resources that are needed to move advanced technologies from the laboratories to the field and into customers’ hands. The OEMs have the resources to develop advanced technology vehicles such as battery electric and hydrogen fuel cells, manufacture in large quantities and distribution network to support sales across the state. To obtain the emission reductions needed to meet NAAQS, large numbers of advanced technology clean-fueled vehicles must be deployed across our region and state.

Figure 29 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 near-term and long-term emission reduction benefits.



Figure 29: Technology Readiness Levels

Many of the technologies that address the Basin’s needed NOx reductions align with the state’s GHG reduction efforts. U.S. EPA (2021)<sup>7</sup> noted that the transportation sector contributed 29 percent of overall GHG emissions. Due to these co-benefits, South Coast AQMD has been successful in partnering with the state and public/private partnerships to leverage its Clean Fuels funding extensively.

<sup>7</sup> U.S. Greenhouse Gas Emissions and Sinks 1990-2019. 2021. <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>

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## Program and Funding Scope

This 2022 Plan Update includes projects to research, develop, demonstrate and advance deployment 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 nearing 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 2022 Plan Update needs to remain sufficiently flexible to address new technologies and control measures identified in the 2016 AQMP, dynamically evolving technologies, and new research and data. The latter includes findings from MATES V and revised emission inventories from the recently released EMFAC 2021.

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 Clean Fuels Program projects are described below, from near term to long term.

- *Deployment* or *technology commercialization* efforts focus on increasing 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 behavior, even if these technologies or fuels offer significant benefits. In addition to government's role to reduce risk by funding technology development and testing, it is also necessary to offset incremental costs through incentives to accelerate the use of cleaner technologies. The increased use of these clean fuel technologies also depend on efforts to increase stakeholder confidence that these technologies are viable and cost-effective in the long term.
- Technologies ready to begin field *demonstration* in 2022 are expected to result in commercially available products in the 2023-2025 timeframe, and technologies being demonstrated generally are in the process of being verified or 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 2022 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. Development projects identified in this plan may result in technologies ready for commercial introduction as soon as 2022-2026. Projects may involve the development of emerging technologies that are considered long-term and higher risk, but with significant emission reductions potential. Commercial introduction of such long-term technologies would not be expected until 2027 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 2022 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 partners to expedite the demonstration and deployment of clean technologies in the Basin. A concerted effort is continually made to form public private partnerships to maximize leveraging of 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 and provide incentive funding for priorities designated in CERPs by six AB 617 communities within the South Coast region, and additional flexibility will be needed to develop new strategies and technologies for those disadvantaged communities.

The following nine core technology areas are listed by current South Coast AQMD priorities based on the goals for 2022.

### ***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; the agency is dedicated to assisting federal and state government programs to deploy light-, medium-, and heavy-duty fuel cell electric vehicles (FCEV) 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 commercial lease of its 2017 Honda Clarity FCV. The 2019 Hyundai Nexo was the second FCV offered for sale and lease in California. 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 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 is enabling 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 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, although improving, is insufficient to meet fleet operational requirements. The California Fuel Cell Partnership's (CaFCP's) *2030 Vision*<sup>8</sup> released in July 2018 provides a broader framework for the earlier *Medium- and Heavy-Duty Fuel Cell Electric Truck Action Plan* completed in October 2016, which focused on Class 4 parcel delivery trucks and Class 8 drayage trucks with infrastructure development and established metrics for measuring progress. The CaFCP's *Heavy-Duty Vision* released in July 2021 describes 70,000 fuel cell electric trucks supported by 200 heavy-duty hydrogen stations operating in California and beyond.

In 2019, the Clean Fuels Program awarded \$1.2 million to Equilon (Shell) as part of the H2Freight project for a new 1,000 kg/day heavy-duty hydrogen fueling station using hydrogen produced by a new tri-generation fuel cell on POLB property leased by Toyota. As part of the \$83 million Shore-to-Store project led by the POLA, for which the Clean Fuels Program committed \$1 million, Toyota and Kenworth deployed 10 Class 8 fuel cell trucks and Equilon (Shell) built two large capacity hydrogen fueling stations in Wilmington and Ontario. Kenworth leveraged the development on the fuel cell truck demonstrated in South Coast AQMD's ZECT 2 project and integrated Toyota's fuel cells into the Kenworth trucks. These fuel cell trucks are deployed at fleets including 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.

Another player in the heavy-duty fuel cell truck space is Cummins who recently purchased Hydrogenics and EDI to develop fuel cell power trains. Cummins is currently working on the ZECT 2 and a CEC/South Coast AQMD supported project that will develop and demonstrate fuel cell drayage trucks with next generation fuel cell module - easy to package system design and other innovative integration strategies. Also, Volvo and Daimler this year announced a joint venture to develop fuel cell powered trucks. South Coast AQMD has created many alliances with large OEMs and will continue to fund projects with these OEMs over the next year to develop heavy-duty fuel cell trucks. In June 2021, South Coast AQMD recognized \$500k from U.S. EPA to demonstrate two Hyundai Class 8 fuel cell trucks with a range of up to 500 miles for regional and long-haul operations.

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, CTE, in partnership with New Flyer, Trillium, and OCTA, deployed 10 40-foot New Flyer XHE40 fuel cell transit buses and installed 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). SunLine Transit Agency was the recipient

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<sup>8</sup> CaFCP's *The California Fuel Cell Revolution, A Vision For Advancing Economic, Social, and Environmental Priorities* (Vision 2030), September 4, 2018.

of a U.S. EPA Targeted Airshed grant in June 2020 to deploy five fuel cell transit buses, in addition to their existing fleet of 21 fuel cell (in process to accept 5 fuel cell buses) and four battery electric transit buses as well as a recently upgraded 900 kg/day hydrogen station capable of supporting up to 30 fuel cell transit buses. In August 2021, the Clean Fuels Program committed \$531,166 to a \$2 million project to develop and demonstrate two medium-duty fuel cell buses at Sunline.

The 2022 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 from multiple providers, 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. scalable and cost-effective fuel cell powertrain components);
- 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 FCVs 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 FCV OEMs to develop an understanding of their progress in overcoming barriers to economically competitive FCVs 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, ICEs used in the heavy-duty sector will require emissions that are 90 percent lower than the 2010 standards as outlined in CARB's recently adopted Heavy-Duty On-Road "Omnibus" Low NOx regulation and EPA's Cleaner Trucks Initiative. In 2016, Cummins Westport, Inc. (CWI) achieved a new ultra-low NOx threshold by commercializing the first on-road heavy-duty engine to be certified to CARB's optional low NOx standard of 0.02g NOx/bhp-hr. The 8.9 liter (8.9L) ISL-G natural gas engine demonstrated that an ICE could achieve NOx exhaust emission levels 90 percent cleaner than the existing federal standard; and powering these vehicles with low Carbon Intensity renewable fuels or biomethane, to help address GHG objectives, became a game changer for the heavy-duty transportation sector. The 8.9L engine works well in refuse and other vocational trucks as well as transit and school buses. In 2017, CWI, 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 expanded the scope of this near-zero technology. CARB and U.S. EPA certified both engines at 0.02 g/bhp-hr for NOx. New for 2020, Cummins certified its 6.7L natural gas engine to 0.02 g/bhp-hr NOx for the first time, further ensuring the viability of near-zero engine options for all market segments. For trucks that cannot utilize the Cummins near-zero emission engines, the 2022 Plan Update includes potential projects to develop, demonstrate and certify natural gas and propane engines in the 6-8L range, several options has been made available for medium-duty truck and bus platforms. Although no near-zero emission diesel technology is commercially available today, South Coast AQMD has been working closely

with CARB, U.S. EPA and others on defining technology pathways via several projects, including the Ultra-Low Emissions Diesel Engine Program at SwRI, opposed piston engine development with Achates Power Inc., and Thermal Management using Cylinder Deactivation (CDA) with West Virginia University. The 2022 Plan Update includes on-road truck demonstrations for the SwRI as well as the Achates projects, these demonstration efforts are considered key milestones in driving up the TRL level toward full commercialization. CDA has proven to be a key engine enabling technology for controlling exhaust temperature and increasing efficiency. These demonstration projects, although not yet complete, show that near-zero emission diesel technologies using renewable fuel sources are feasible via advanced engine and aftertreatment or optimized engine design and calibration. At the same time, applications that require high power/torque levels are also the applications where zero emission technologies and supporting infrastructures will take longer to become commercially available, and development of near-zero emission technologies would be critical to support those applications. The Plan Update continues to incorporate pursuit of cleaner engines and hybrid powertrains for the heavy-duty sector. Future projects will support the development, demonstration and certification of engines and powertrains that can achieve these massive near-term emission reductions using an optimized powertrain systems approach. At the same time, the aggressive GHG emissions reduction targets set forth by both CARB and EPA have invigorated interest in revisiting low- and zero carbon alternative fuels for those high power/torque applications as well as off-road applications. While the GHG benefit is easy to assess, it is important to understand the criteria emissions impact where optimized engine systems are required from earlier learnings to ensure reduction of both criteria and GHG can be met. 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.

The 2022 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 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 on- and off-road applications;
- evaluation of alternative engine systems such as plug-in hybrid vehicles;
- development and demonstration of engine systems that employ advanced engine design features, CDA, improved exhaust or recirculation systems, and aftertreatment devices.
- further development of robust aftertreatment systems which can maintain certified emissions levels throughout useful life.

U.S. EPA's recent initiation to create a new national low NO<sub>x</sub> standard for on-highway heavy-duty engines starting in 2027 will further motivate manufacturers to develop lower-NO<sub>x</sub> emitting technologies expected to result in greater NO<sub>x</sub> emission reductions than a "California only" low NO<sub>x</sub> standard for on-road heavy-duty engines.

### ***Electric/Hybrid Technologies and Infrastructure***

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. South Coast AQMD supports projects to address concerns regarding cost, battery life, all-electric range, charging infrastructure and OEM commitment. Integrated transportation systems can encourage further emission reductions by matching EVs to typical consumer and fleet duty cycles and demands including drayage, short regional haul, and last mile delivery. Additionally, the challenges of installing infrastructure both in terms of costs and construction impacts needs to be better understood.

There are separate challenges associated with light-duty EVs vs. medium- and heavy-duty EVs, which are on opposite ends of the commercialization spectrum. Light-duty EVs and charging infrastructure have long been commercially available and availability of public charging and costs to deploy infrastructure are the main challenges. Medium- and heavy-duty EVs are becoming more commercially available, with Daimler and Volvo obtaining CARB certification of their Class 6 and/or 8 battery electric trucks in 2020. Standards for charging infrastructure to support medium- and heavy-duty EVs has generally been with the Combined Charging System Combo 1 (CCS1) connector in North America. Although Volvo and ABB obtained UL certification of the Combined Charging System Combo 2 (CCS2) connector in 2020, which is a connector standard predominantly used in Europe and other parts of the world, the CCS1 connector continues to be the standard connector for charging up to 350 kW DC. A Megawatt Charging System connector is under development by the Charging Interface Initiative (CharIN) for Class 6 -8 EVs for charging up to 4.5 MW DC, although there are no EVs which are currently capable of accepting charging above 350 kW DC. There is also an agreed upon SAE J3068 connector standard for single-phase and three-phase AC charging. The challenges and costs of installing medium- and heavy-duty charging infrastructure increase exponentially compared to light-duty infrastructure. Each year there are more commercially available options for medium- and heavy-duty on-road EVs and off-road equipment, charging infrastructure to support these EVs and equipment, and an ability to fund larger scale deployment projects for medium- and heavy-duty EVs, equipment, and infrastructure.

The development and deployment of zero emission goods movement and freight handling technologies remains one of the top priorities for the South Coast AQMD to support balanced and sustainable growth at the San Pedro Bay Ports as well as freight/logistics facilities throughout the Basin. The South Coast AQMD continues to work with our regional partners, including the San Pedro Bay Ports, Southern California Association of Governments (SCAG) and Los Angeles County Metropolitan Transportation Authority (Metro) to demonstrate and deploy technologies that are technically feasible, cost-effective with the assistance of incentives and/or grant funding, and beneficial to all stakeholders. Specific technologies include zero emission trucks/freight handling equipment/infrastructure (battery and/or fuel cell), or plug-in hybrid powertrains, locomotives with hydrogen fuel cells, hybrid and, battery electric technologies, 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 City of Los Angeles *Zero Emission 2028 Roadmap 2.0* in preparation for the 2028 Olympics corroborates this effort, calling for an additional 25% GHG and criteria pollutant reductions. The San Pedro Bay Ports *Clean Air Action Plan* (2017) calls for zero emissions cargo handling equipment by 2030 and zero emission drayage trucks by 2035, respectively.

New zero emission battery electric technology projects include: 1) Pilot Project with deployment of 100 Daimler and Volvo Class 8 battery electric trucks for drayage and regional haul at NFI and Schneider funded by \$16M from CARB and \$11M from CEC; 2) Switch-On Project with deployment of 70 Volvo Class 8 battery electric drayage/freight trucks at up to five fleets in the Inland Empire and San Fernando Valley in Los Angeles funded by a \$20 million U.S. EPA Targeted Airshed grant, 3) deployment of two additional Class 8 battery electric drayage trucks as part of the CARB funded Volvo LIGHTS project through a \$500,000 U.S. EPA Clean Air Technology Initiative grant, 4) deployment of two Volvo Class 8

battery electric trucks and 150 kW DC fast chargers at Producers Dairy in Fresno as part of the CARB funded GGRF Zero Emission Drayage Truck Project, 5) Daimler Commercial Experience project to demonstrate eight Class 6 and 8 battery electric trucks and fast charging infrastructure funded with \$1 million by the South Coast AQMD Clean Fuels Fund.

Continued technology advancements in light-duty infrastructure have facilitated the development of corresponding codes and standards for medium- and heavy-duty infrastructure including the UL certification of the CCS2 connector for the Volvo LIGHTS battery electric truck demonstration project. Additionally, SCE's Charge Ready Transport Program and Los Angeles Department of Water and Power (LADWP) include funding for medium- and heavy-duty vehicles and infrastructure.

Heavy-duty hybrid vehicles have historically been optimized for fuel economy, new generation hybrid powertrains that use a systems approach for co-optimizing both criteria emissions and fuel economy could provide another technology pathway to meet the air quality goals of the Basin. These hybrid systems in both plug-in and non-plug-in configurations, will focus on electrifying key engine subsystems and energy recovery to provide engine assistance during transient operations. Furthermore, the availability of additional electrical power such as 48-volt systems could allow for electric aftertreatment heaters for better transient control through thermo-management and therefore better NO<sub>x</sub> control. CARB adopted new test procedures for medium-duty and heavy-duty hybrid powertrains to certify to engine standards in CARB's proposed Heavy-Duty On-Road "Omnibus" Low NO<sub>x</sub> regulation. The new hybrid powertrain test procedures will properly credit for the fuel and emission benefits of hybrid vehicles via vehicle simulation on vehicle-based cycles and allow the entire powertrain system to certify to potentially lower emissions standards than traditional engine only tests. South Coast AQMD views these next generation hybrid powertrains as capable of being deployed without the need for incentives, by providing fuel economy benefits which could provide another potential cost-effective pathway for reducing NO<sub>x</sub> emissions in the near term. Furthermore, CARB's Advance Clean Trucks and Advance Clean Fleets regulations both allow sales of plug-in hybrid vehicle that's capable of zero-emission operation as a compliance pathway for meeting the zero emission mandate.

Opportunities to develop and demonstrate technologies that could enable expedited widespread use of pre-commercial and commercial 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;
- large scale deployments of commercial battery electric vehicles and infrastructure (i.e. 50 or more vehicles) to prove feasibility and develop tools for fleets to assist in successful operation for drayage and short regional haul operations;
- 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 battery and fuel cell electric off-road equipment; e.g. battery electric off-road construction equipment, yard tractors, or top-handler with wireless charger;
- 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 equipment;
- 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 capability to accept fast-charging and resultant life cycle and demonstration of 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, 3) put in place infrastructure that will ultimately be needed to accommodate transportation fuels with very low gaseous and GHG emissions, and 4) support local production of clean, low carbon intensity, renewable transportation fuels.

CNG and LNG refueling stations continue to be positioned to support both public and private fleet applications. Funding has been applied to provide refueling at key points for all classes of vehicles, with an emphasis on heavy-duty natural gas vehicle users travelling on major goods movement corridors, including local ports, and along I-15 and The Greater Interstate Clean Transportation Corridor (ICTC) Network. 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 a continuing and growing interest for partial or complete transition to renewable fuels, particularly natural gas delivered through existing natural gas pipelines. Funding has been provided to support local production and use of renewable natural gas to incentivize turnover to near-zero natural gas-powered heavy-duty vehicles. The growing interest in low carbon, renewable transportation fuels that also power ultra-low to zero emission vehicles will expand the scope of this category to provide support of local production and distribution of such fuels and help accelerate fleet turnover. 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 co-funded for infrastructure development are:

- development and demonstration of low carbon intensity renewable transportation fuels including renewable natural gas, renewable hydrogen, and renewable electricity from zero emission sources and from renewable feedstocks, such as biomass and biowaste;

- development and demonstration of advanced, cost-effective methods for manufacturing synthesis gas for conversion to renewable natural gas and renewable (biomass-based) hydrogen;
- enhancement of safety and emissions reductions from natural gas refueling equipment;
- expansion of fueling infrastructure, fueling stations, and equipment, with an emphasis on renewable energy sources; and
- expansion of infrastructure connected with existing fleets, public transit, and transportation corridors, including demonstration and deployment of closed loop systems for dispensing and storage.

### ***Stationary Clean Fuel Technologies***

Although stationary source NO<sub>x</sub> emissions are small compared to mobile sources in the Basin, there are applications where cleaner fuel technologies or processes can be applied to reduce NO<sub>x</sub>, VOC and PM emissions. For example, a recent demonstration project funded in part by the South Coast AQMD at a local sanitation district consisted of retrofitting an existing biogas engine with a digester gas cleanup system and catalytic exhaust emission control. The retrofit system resulted in significant reductions in NO<sub>x</sub>, VOC and CO emissions. This project demonstrated that cleaner, more robust renewable distributed generation technologies exist that not only improve air quality but enhance power quality and reduce electricity distribution congestion.

SCR has been used as aftertreatment for combustion equipment for NO<sub>x</sub> reduction. SCR requires the injection of ammonia or urea that is reacted over a catalyst bed to reduce the NO<sub>x</sub> formation during the combustion process. Challenges arise if ammonia distribution within the flue gas or operating temperature is not optimal resulting in ammonia emissions leaving the SCR in a process referred to as “ammonia slip.” The ammonia slip may also lead to the formation of particulate matter in the form of ammonium sulfates. An ongoing demonstration project funded in part by the South Coast AQMD consists of retrofitting a Low NO<sub>x</sub> ceramic burner on an oil heater without the use of reagents such as ammonia nor urea which is anticipated to achieve SCR NO<sub>x</sub> emissions or lower. Based on the successful deployment of this project, further emission reductions may be achieved by other combustion sources such as boilers by the continued development of specialized low NO<sub>x</sub> burners without the use of reagents. As discussed in engine systems, the use of low and zero carbon fuels could also be used in stationary applications; it is easier to develop optimized engine systems and stationary sources typically operate in steady-state modes.

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 to be 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 and fuels (e.g., new innovative low NO<sub>x</sub> burners and fuel cells);
- exploration of renewables, waste gas and produced gas sources for cleaner stationary technologies;
- evaluation, development and demonstration of advanced control technologies for stationary sources;
- vehicle-to-grid, vehicle-to-building, or other stationary energy demonstration projects to develop sustainable, low emission energy storage alternatives and reduce total cost of ownership (TCO); and
- development and demonstration of microgrids with photovoltaic/fuel cell/battery storage/EV chargers and energy management.

The development, demonstration, deployment and commercialization of advanced stationary clean fuel technologies will support control measures in the 2016 AQMP in that they reduce emissions of NO<sub>x</sub> and VOCs from traditional combustion sources by replacement or retrofits with zero and near-zero emission technologies.

### ***Health Impacts, Fuel and Emissions Studies***

The monitoring of pollutants in the Basin is extremely important, especially when linked to (1) a particular sector of the emissions inventory (to identify the responsible source or technology) and/or (2) exposure to pollution (to assess potential health risks). In fact, studies indicate that ultrafine particulate matter (PM) can produce irreversible damage to children's lungs. This information highlights the need for further emission and health studies to identify emissions from high polluting sectors as well as the health effects resulting from these technologies.

Over the past few years, the South Coast AQMD has funded emission studies to evaluate the impact of tailpipe emissions of biodiesel, renewable diesel, and ethanol fueled vehicles mainly focusing on criteria pollutants and GHG emissions. These studies showed that biofuels, especially biodiesel in some applications and duty cycles, can contribute to higher NO<sub>x</sub> emissions while reducing other criteria pollutant emissions. South Coast AQMD has participated in several renewable diesel and ethanol-blend gasoline studies led by CARB in an effort to approve these fuels in California, the results of these studies are expected in 2022. 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, natural gas and other alternative fuels. In 2015, South Coast AQMD funded chamber studies as part of the 200 Vehicle Study 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, the results are due to be published in 2022. 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. The results from these studies suggest the addition of a particulate filter for controlling particulate emissions from GDI 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; the NO<sub>x</sub> reduction from natural gas fueled vehicles, especially ones certified to near-zero emission levels, are significant compared to diesel baseline. The results of the study also contributed to the new EMFAC 2021 emissions model. In 2020, CARB adopted Omnibus regulation to the next lower level NO<sub>x</sub> standard, particularly highlighting the need to address the gap between certification values and in-use emissions. The new regulation included a new low-load cycle, new in-use emissions testing metric based on 3-Bin Moving Average Windows (3B-MAW), and new concept to assess NO<sub>x</sub> across the entire vehicle population via onboard emission sensors. The 3B-MAW will be a game changer for future combustion technologies, as it addresses the short-falls of previous in-use testing methods and should address the issue of gap between in-use emissions and certification standard, an issue commonly seen in the Basin where many heavy-duty vehicles operate in low-speed, low load modes. The current and future real-world emissions study could help stakeholders better understand the impacts of emissions in real time to a specific geographic area.

Senate Bill 210 was signed in the law in 2019 which directs CARB to develop and implement a new comprehensive heavy-duty inspection and maintenance (HD I/M) program to support higher emitter and issues with mal-maintenance to ensure trucks maintain their emissions for their intended useful life. The HD I/M program includes a measurement emission from a large population of trucks which is critical for

success of this program. Remote sensing technology, which can be setup near roadside and on freeway over passes has gained the spotlight for enabling a new suite of technology for assess emissions in-use. In August 2021, CARB staff shared findings from the pilot program. On-board diagnostics (OBD) and Roadside Emissions Monitoring Device (REMD) testing would likely be the best combination of technologies for a future statewide vehicle compliance and enforcement program as OBD testing technologies have proven to be capable of reliably collecting OBD parameters of interest and diagnosing emissions related vehicle issues. REMD testing has good inter-system correlation and repeatability for NO<sub>x</sub>, and repairs for identified emissions related issues were found to be feasible and effective at reducing emissions. Automated License Plate Recognition (ALPR) camera technologies were also able to capture 80% of license plates to assist in enforcement efforts. A statewide vehicle compliance program would likely be phased in with vehicle screening starting in January 2023, enforcement of compliance certificate requirements in July 2023, and periodic testing and certified devices for OBD submissions in 2024. CARB would take a HD I/M Proposed Regulation for a statewide vehicle compliance program to their Board for consideration in December 2021. The new HD I/M rule should address the concerns of high emitters in the legacy fleet which are expected to remain service well into 2030s, further reducing emissions in our region.

Previous studies of ambient levels of toxic air contaminants, such as the MATES studies, have found that diesel exhaust is the major contributor to health risk from air toxics. In 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. Findings from the MATES V report finalized in August 2021 showed that air toxics cancer risk based on modeling data has decreased over 50% since MATES IV, with average multi-pathway air toxics cancer risk at 454-in-a-million. Highest risk locations are at LAX and the Ports along goods movement and transportation corridors. Diesel PM continues to be the major contributor to air toxics cancer risk. For the first time, chronic non-cancer risk was estimated with a chronic hazard index of 5.9 across the 10 stations in the MATES V study.

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 various low and zero carbon initiatives have stirred up a new round of interest in alternative fuel combinations such as ethanol, hydrogen and other engineered bio/renewable fuels. In 2019, South Coast AQMD, along with SoCalGas, UCR/CE-CERT launched a study to assess emissions of hydrogen-natural gas blends on near-zero emission natural gas engines, the study was impacted by Covid-19 shut downs but recently has resumed testing with results available in early 2022. 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 CERP's 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 health risks associated with ultrafine and ambient particulate matter to characterize toxicity and determine specific combustion sources;
- in-use emission studies using biofuels, including renewable diesel and other alternative fuels, to evaluate in-use emission composition;
- in-use emission studies to determine impact of new technologies, in particular EVs on local air quality as well as 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 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 on-road and off-road equipment emissions. Existing diesel emissions can be greatly reduced with introduction of natural gas RNG, biofuels, synthetic and low carbon fuels into the engine or via aftertreatment controls such as PM traps, advanced SCR and DPF catalysts coupled with electrically heated diesel exhaust fluid (DEF) dosers and electrical heaters that increase the aftertreatment temperature utilizing the 48V battery system from diesel-hybrid powertrain, as well as using low sulfur fuel. 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, particulate matter (PM and PN) emissions from GDI fueled light-duty vehicles, natural gas fueled medium- and heavy-duty vehicle have gathered attention due to lack of a particulate filter. While relative PM level are low and below the applicable standard, concerns on ultra-fine emissions needs to be assessed. South Coast AQMD have been and will continue to fund studies to help mitigate particulate matter related concerns to gasoline and natural gas fueled engines.

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, electronically 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 to expedite the implementation of low emission and clean fuel technologies, coordinating activities with other organizations and educating end users of these technologies. Technology transfer efforts include supporting various incentive programs that encourage the purchase of cleaner technologies, cosponsoring technology-related conferences, workshops and other events, and disseminating information on advanced technologies to various audiences (i.e., residents in AB 617 or disadvantaged communities, local governments, funding

agencies, technical audiences). As part of AB 617<sup>9</sup>, which requires reduce exposure to communities most impacted by air pollution, TAO conducted additional outreach to AB 617 communities regarding available zero and near-zero emission technologies and incentives to accelerate the adoption of cleaner technologies. Incentivizing the deployment of zero emission heavy-duty trucks has been included in the CERPs and an RFP for zero emission heavy-duty truck incentive funding will be released in 2022 for these AB 617 communities.

## 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 \$21.8 million for all potential projects. The actual project expenditures for 2022 will be less than the total South Coast AQMD projected program costs since not all projects will materialize. 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 2022 will be based on this proposed allocation, quality of proposals received and evaluation of projects against standardized criteria and ultimately South Coast AQMD Board approval.

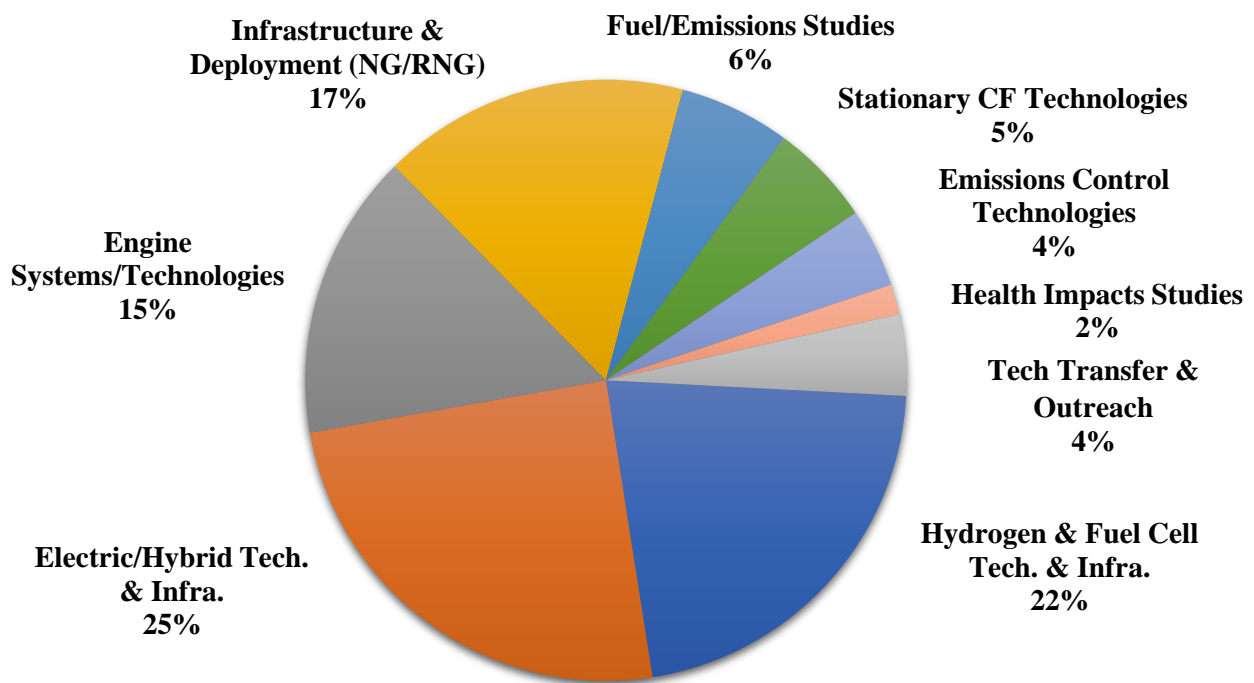


Figure 30: Projected Cost Distribution for Potential South Coast AQMD Projects in 2022 (\$21.8M)

<sup>9</sup> <https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/about>



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# **CLEAN FUELS PROGRAM**

## **Program Plan Update for 2022**

This section presents the Clean Fuels Program Plan Update for 2022. 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 also be funded by revenue sources other than the Clean Fuels Program, through state and federal grants for clean fuel technologies, incentive programs such as AB 617 Community Air Protection (CAP) funding, Volkswagen Mitigation and Carl Moyer, and VOC and NOx mitigation.

Table 9 summarizes potential projects for 2022 as well as the distribution of South Coast AQMD costs in some areas as compared to 2021. The funding allocation continues the focus on development and demonstration of zero and near-zero emission technologies including infrastructure to support these vehicles and off-road equipment. For the 2022 Draft Plan Update, 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 2022, including:

- Heavy-duty zero emission battery electric and fuel cell trucks and infrastructure;
- Onboard sensor development for emissions monitoring and improved efficiency;
- Microgrid demonstrations to support zero emission infrastructure;
- Battery and fuel cell electric transit and school bus fleet charging/fueling infrastructure;
- 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 NOx 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 2021-22 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 implement 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 or deployed, their applications, proposed scope of work, 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 9.

**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 9: Summary of Potential Projects for 2022**

| <b>Proposed Project</b> | <b>Expected SCAQMD Cost \$</b> | <b>Expected Total Cost \$</b> |
|-------------------------|--------------------------------|-------------------------------|
|-------------------------|--------------------------------|-------------------------------|

**Hydrogen/Mobile Fuel Cell Technologies and Infrastructure**

|   |             |              |
|---|-------------|--------------|
| Develop and Demonstrate Hydrogen Research to Support Innovative Technology Solutions for Fueling Fuel Cell Vehicles | 50,000      | 800,000      |
| Develop and Demonstrate Hydrogen Production and Fueling Stations  | 2,000,000   | 6,500,000    |
| Develop and Demonstrate Medium- and Heavy-Duty Fuel Cell Vehicles   | 2,644,500   | 12,000,000   |
| Demonstrate Light-Duty Fuel Cell Vehicles   | 30,000      | 75,000       |
| Subtotal  | \$4,724,500 | \$19,375,000 |

**Engine Systems/Technologies**

|  |             |              |
|--|-------------|--------------|
| Develop and Demonstrate Advanced Gaseous- and Liquid-Fueled Medium- and Heavy-Duty Engines & Vehicle Technologies to Achieve Ultra-Low Emissions | 3,000,000   | 21,000,000   |
| Develop and Demonstrate Alternative Fuel and Clean Conventional Fueled Light-Duty Vehicles   | 176,300     | 1,000,000    |
| Develop and Demonstrate Low Emissions Locomotive Technologies and After Treatment Systems  | 176,300     | 1,000,000    |
| Subtotal   | \$3,352,600 | \$23,000,000 |

**Electric/Hybrid Technologies and Infrastructure**

|  |             |              |
|--|-------------|--------------|
| Develop and Demonstrate Medium- and Heavy-Duty On-Road and Off-Road Battery Electric and Hybrid Vehicles and Equipment | 2,400,000   | 22,800,000   |
| Develop and Demonstrate Electric Charging Infrastructure   | 2,600,000   | 52,090,000   |
| Demonstrate Alternative Energy Storage   | 300,000     | 2,000,000    |
| Demonstrate Light-Duty Battery Electric Vehicles and Plug-In Hybrid Vehicles   | 75,000      | 200,000      |
| Subtotal   | \$5,375,000 | \$77,090,000 |

**Fueling Infrastructure and Deployment (Natural Gas/Renewable Fuels)**

|   |             |              |
|---|-------------|--------------|
| Demonstrate Near-Zero Emission Natural Gas Vehicles in Various Applications           | 1,400,000   | 19,000,000   |
| Develop, Maintain and Expand Renewable Fuel Infrastructure                            | 200,000     | 2,100,000    |
| Demonstrate Renewable Transportation Fuel Manufacturing and Distribution Technologies | 2,000,000   | 10,000,000   |
| Subtotal  | \$3,600,000 | \$31,100,000 |

**Stationary Clean Fuel Technologies**

|  |             |             |
|--|-------------|-------------|
| Develop and Demonstrate Microgrids with Photovoltaic/Fuel Cell/Battery Storage/EV Chargers and Energy Management | 1,000,000   | 4,500,000   |
| Develop and Demonstrate Zero or Near-Zero Emission Energy Generation Alternatives                                | 200,000     | 500,000     |
| Subtotal   | \$1,200,000 | \$5,000,000 |

**Table 9: Summary of Potential Projects for 2022 (cont'd)**

| <b>Proposed Project</b>  | <b>Expected SCAQMD Cost \$</b> | <b>Expected Total Cost \$</b> |
|--|--------------------------------|-------------------------------|
| <b>Fuel/Emissions Studies</b>  |                                |                               |
| Conduct In-Use Emissions Studies for Advanced Technology Vehicle Demonstrations                  | 500,000                        | 2,000,000                     |
| Conduct Emissions Studies on Biofuels, Alternative Fuels and Other Related Environmental Impacts | 400,000                        | 1,500,000                     |
| Identify and Demonstrate In-Use Fleet Emissions Reduction Technologies and Opportunities         | 400,000                        | 1,500,000                     |
| Subtotal   | \$1,300,000                    | \$5,000,000                   |
| <b>Emissions Control Technologies</b>  |                                |                               |
| Develop and Demonstrate Advanced Aftertreatment Technologies On Highways                         | 500,000                        | 2,000,000                     |
| Develop Methodology and Evaluate and Demonstrate Onboard Sensors for On-Road Heavy-Duty Vehicles | 250,000                        | 1,000,000                     |
| Demonstrate On-Road Technologies in Off-Road and Retrofit Applications                           | 176,300                        | 800,000                       |
| Subtotal   | \$926,300                      | \$3,800,000                   |
| <b>Health Impacts Studies</b>  |                                |                               |
| Evaluate Ultrafine Particle Health Effects   | 88,150                         | 1,000,000                     |
| Conduct Monitoring to Assess Environmental Impacts   | 132,225                        | 500,000                       |
| Assess Sources and Health Impacts of Particulate Matter  | 132,225                        | 300,000                       |
| Subtotal   | \$352,600                      | \$1,800,000                   |
| <b>Technology Assessment/Transfer and Outreach</b>   |                                |                               |
| Assess and Support Advanced Technologies and Disseminate Information                             | 600,000                        | 1,000,000                     |
| Support Implementation of Various Clean Fuels Vehicle Incentive Programs                         | 350,000                        | 400,000                       |
| Subtotal   | 950,000                        | \$1,400,000                   |
| <b>TOTALS FOR POTENTIAL PROJECTS</b>   | <b>\$21,781,000</b>            | <b>\$167,565,000</b>          |

## Technical Summaries of Potential Projects

### Hydrogen/Mobile Fuel Cell Technologies and Infrastructure

**Proposed Project:** Develop and Demonstrate Hydrogen Research to Support Innovative Technology Solutions for Fueling Fuel Cell Vehicles

**Expected South Coast AQMD Cost:** \$50,000

**Expected Total Cost:** \$800,000

**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 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. Tasks completed include data collection from operational stations, component failure fix verification (i.e., nozzle freeze lock), reporting about new fueling methods for medium- and heavy-duty applications and ensuring hydrogen quality is maintained. DOE awarded new H2@Scale funding in 2021 to focus on heavy-duty tasks to develop heavy-duty reference station design, model heavy-duty station capacity with high flowrates and provide near-real-time verification of fuel quality with on-site hydrogen contaminant detectors (HCDs) for use at both light-duty (LD) and HD stations. 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 CaFCP and its members over the last few years such as the *H2 Fuel Cell Electric Trucks, A Vision for Freight Movement in California – and Beyond* document released in July 2021 establishing a vision for 70,000 Class 8 FC trucks supported by 200 hydrogen refueling stations by 2035, including barriers that need to be overcome, CARB's Advanced Clean Truck Regulation adopted in June 2020, and anticipated adoption of the Advanced Clean Fleets Regulation in 2022.

This project area would enable cofunding support for additional or follow on mutually agreed technical tasks with the California Hydrogen Infrastructure Research Consortium members, 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<sub>x</sub> and VOC emissions 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:** \$2,000,000

**Expected Total Cost:** \$6,500,000

**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, dispensing pressures that support zero emission vehicle deployment and compatibility with existing CNG stations may be considered.

**Energy Stations:** Multiple-use energy stations that can produce hydrogen for FCVs or stationary power generation are considered an enabling technology and potentially cost-competitive with large-scale reforming. System efficiency, emissions, hydrogen throughput, hydrogen purity and system economics will be monitored to optimize strategies for hydrogen fueling infrastructure deployment and to produce power and hydrogen from renewable feedstocks (e.g., biomass, digester gas) and store hydrogen in larger scale.

**Innovative Refueling Appliances:** Home or small scale refueling/recharging is an attractive advancement for alternative clean fuels for potential applications. This project would evaluate an innovative hydrogen 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.

CARB projections for on-road FCVs counts are now 30,800 in 2024 and 61,000 in 2027 in California<sup>10</sup> and the majority of these do not include medium- and heavy-duty vehicles deployed in the Basin. To meet demand, number of hydrogen fueling infrastructures need to be significantly increased and become more reliable in terms of uptime and supply. 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 the Governor’s 2018 Executive Order to establish 200 light-duty stations by 2025, increase investment in heavy-duty hydrogen stations to support CARB’s Advanced Clean Truck Regulation, and anticipated adoption of the Advanced Clean Fleets Regulation in 2022.

**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 several fleet rules in effect 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

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<sup>10</sup> California Air Resources Board. *2021 Annual Evaluation of Fuel Cell Vehicle Deployment & Hydrogen Fuel Station Network Development* (AB 8 Report). September 2021.

reductions in NO<sub>x</sub>, VOC, CO, PM and toxic compound emissions from vehicles.



**Proposed Project:** Develop and Demonstrate Medium- and Heavy-Duty Fuel Cell Vehicles

**Expected South Coast AQMD Cost:** \$2,644,500

**Expected Total Cost:** \$12,000,000

**Description of Technology and Application:**

This proposed project would support evaluation, including demonstrating 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 to reduce costs and potentially enhance the 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’s Advanced Clean Truck and Fleet and Innovative Clean Transit Bus Regulations will also increase deployment of medium- and heavy-duty FCVs. Fleets are useful demonstration sites because economies of scale exist in central refueling, training skilled personnel to operate and maintain FCVs, monitoring and collecting data on vehicle performance, and OEM technical and customer support. In some cases, medium- and heavy-duty FCVs could leverage the growing network of hydrogen stations and provide an early base load of fuel consumption until the number of passenger FCVs 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. Both ZECT I and ZECT II enabled the largest strides in Technology Readiness Level (TRL) of hybrid, battery electric and fuel cell heavy-duty trucks on the overall vehicle design and architecture. Especially, the fuel cell drayage truck’s TRL prior to this project was at a strong Level 4 with several proof-of-concept vehicles constructed and it has advanced the TRL to a Level 7 with ZECT II. The Clean Fuels Program cost-shared the demonstration of transit buses at OCTA which was completed in September 2021. In 2020, US EPA Targeted Airshed Grant Program awarded South Coast AQMD five fuel cell transit buses to be deployed at SunLine Transit which was also cost-shared by the Clean Fuels Program.

This category may include projects in the following applications:

|  |  |
|--|--|
| <p><b>On-Road:</b></p> <ul style="list-style-type: none"> <li>• Transit Buses</li> <li>• Shuttle Buses</li> <li>• Medium- &amp; Heavy-Duty Trucks</li> </ul> | <p><b>Off-Road:</b></p> <ul style="list-style-type: none"> <li>• Vehicle Auxiliary Power Units</li> <li>• Construction Equipment</li> <li>• Lawn and Garden Equipment</li> <li>• Cargo Handling Equipment</li> </ul> |
|--|--|

**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. CARB is revising the Advanced Clean Fleets for adoption in 2022 to impose 100% zero emission vehicle fleet targets for last mile delivery, drayage and public fleets in 2035. 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 reductions. Currently, the range of the trucks in the ZECT II project have a targeted range of 150 miles. Future projects would include extending the range of the FCVs up to 400 miles

and demonstrate improvements in reliability and durability of powertrain systems and hydrogen storage systems. 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, higher density and lower cost batteries, and increased production volumes.

**Proposed Project:** Demonstrate Light-Duty Fuel Cell Vehicles

**Expected South Coast AQMD Cost:** \$30,000

**Expected Total Cost:** \$75,000

**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 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. Fleets are useful demonstration sites because economies of scale exist in central refueling, training skilled personnel to operate and maintain FCVs, monitoring and collecting data on vehicle performance, and 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 commercial FCVs in California, and Toyota redesigned the 2020 Mirai as a five-passenger sedan. The first commercial FCV leases are ending, and solo carpool lane access extends only for vehicles with MY 2019 and later, with all Clean Air Vehicle decals expiring between 2023 – 2025, unless legislation is adopted to continue. Innovative strategies and demonstration of dual fuel, ZEVs could expand the acceptance of BEVs and accelerate the introduction of fuel cells in vehicle propulsion. As hydrogen production dedicated to transportation increases from multiple providers in the next few years, and station throughput increases, dispensed hydrogen cost should start to decrease, which would encourage more model development and enable more demonstration and deployment.

**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. CARB is revising the Advanced Clean Fleets for adoption in 2022 to impose 100% zero emission vehicle fleet targets for last mile delivery, drayage and public fleets in 2035, with acquisition requirements proposed to start in 2024. 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:** \$3,000,000

**Expected Total Cost:** \$21,000,000

### 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 NOx 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. Recent development of low-NOx diesel or natural gas engine hybrid powertrain also shown potential for achieving lower NOx as a combined system. To achieve these targets, an effective emissions control strategy must employ advanced fuel system and engine design features such as CDA, aggressive engine calibration and improved thermal management, improved exhaust gas recirculation (EGR) 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 significantly reduce NOx emissions;
- field demonstrations of advanced technologies in various fleets operating with different classes of vehicles;
- development and demonstration of CNG, propane and diesel hybrid powertrain technology; and
- development and demonstration of optimized engine systems for use with low- and zero carbon alternative fuels.

Anticipated fuels for these projects include but are not limited to alternative fuels (fossil fuel-based and renewable natural gas, propane, hydrogen blends, ethanol, electric and hybrid), conventional and alternative diesel fuels, ultra-low sulfur diesel, renewable diesel, dimethyl ether and gas-to-liquid fuels. There has been significantly more interest as well as a mandate requiring the use of renewable fuels across all sectors due to CARB's Low Carbon Fuel Standard (LCFS). Projects listed under Fuel/Emissions Studies will assess the emissions impact of renewable fuels on past and future optimized combustion technologies. Several key diesel engine development projects that have demonstrated the ability to achieve 0.02 g/bhp-hr NOx under laboratory conditions are near the on-road truck demonstration stage. Truck integration and packaging are another critical step towards commercialization. Prototype trucks are typically placed in revenue service to collect real-world performance data as well as end user feedback for production engines. Furthermore, with the new in-use and low-load emissions requirements within the CARB Omnibus and the EPA CTI regulations, we expect these new generation of low-emission engines to comply with the low emissions standard for their full useful life.

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 for long-haul applications are beginning to be introduced. However, vehicle range, lack or limited accessible public infrastructure, lack of experience with alternative fuel engine technologies, limited selection of appropriate alternative fuel engine products, and high initial cost have made it difficult for more fleets to adopt and depoly larger quantity of alternative fuel vehicles. For example, in recent years, several large trucking fleets have expressed interest in using alternative fuels but requires higher horsepower engines that able to fulfill the full range of needs. However, at this time the choice of engines over 400 HP or more was not available. Continued development of cleaner dedicated alternative gaseous- or diesel-

fueled engines over 400 HP with lower NOx emissions, would increase availability to end-users and provide additional emission reductions for long-haul applications. The applications that require high power/torque levels such as long haul are also the applications where zero emission technologies and supporting infrastructures will take longer to become commercially available. South Coast has been supporting effort for developing high power natural gas engines that address that gap. Moreover, as incentive funding shifts away as clean combustion technologies reaches full commercial readiness, development of cost-effective technologies that do not rely on incentives are key to drive additional market penetration and emissions reduction. South Coast AQMD has investigated the emergence of cost-effective mild hybrid powertrain technologies to achieve targeted lower-NOx emission standard and improved fuel economy. Cost-effective hybrid technologies that offer reasonable payback period could potentially offer a faster commercialization pathway for reducing both NOx and GHG in the near term by strategically utilizing the existing internal combustion engines and electric components that assists engine operation and maintain aftertreatment temperature and efficiency. Simulation results shown that these newly integrated hybrid powertrains could achieve the CARB 2024-2026 NOx standard of 0.05 g/bhp-hr while maintain reasonable cost and a feasible pathway to 0.02 g/bhp-hr. Even though lower NOx engines are due to arrive in 2024 and 2027, due to the slow turn over, the legacy 2010+ diesel fleet will remain in service well into the 2030s. Thus, continued development of cost-effective low emission engine technologies are key to reduce the impact of legacy fleets in our region.

**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 NOx. A heavy-duty 8.9L and 11.9L engines using natural gas achieving NOx 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, renewable or blended alternative fuels can also reduce heavy-duty engine particulate emissions by over 90 percent compared to current diesel technology. The key to future engine system project success is cost-effectiveness and availability of future incentives. 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 as well as future CARB and EPA low NOx regulations.

**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, renewable diesel and hydrogen, and other novel technologies including electric hybrids. 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;
- assessment of other clean technologies; and
- 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 Emissions Locomotive Technologies and After Treatment Systems

**Expected South Coast AQMD Cost:** \$176,300

**Expected Total Cost:** \$1,000,000

**Description of Technology and Application:**

This project aims to support the development and demonstration of gaseous and liquid-fueled locomotive engines. With the upcoming revision of locomotive regulations and the plan to establish Tier 5 or cleaner locomotive emission standards, railroads are exploring the possibility of transitioning from diesel to cleaner fuels or installing aftertreatments to the existing locomotives. The railroad is also considering alternative fuels for its potential economic benefit as compared with diesel fuel. The requirements of locomotive engines as primary generators of electricity to power the locomotive poses serious challenges. From an operational standpoint, there is a significant difference between natural gas and diesel energy density, a fuel tender would be needed to provide a sufficient amount of fuel for an acceptable range. 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 are in early-stage of commercialization, especially in the marine sector. The development of engines and systems to fill this need is currently on-going in the locomotive sector. Engines emissions are expected to be below the current 0.2g/bhp-hr NO<sub>x</sub> 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 fewer maintenance costs and better reliability. Depending on the type of combustion strategy, aftertreatments are likely needed to achieve Tier 4 or cleaner emission standards. Urea-based selective catalytic reduction (SCR) or exhaust gas recirculation (EGR) can be used to reduce NO<sub>x</sub> emissions and methane slip. Similar low and zero carbon fueled engines could migrate as a retrofit option.

**Potential Air Quality Benefits:**

This project is expected to reduce emissions of around 97 tons per year of NO<sub>x</sub> for each locomotive. The reduction of PM and GHG emissions 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 and Equipment

**Expected South Coast AQMD Cost:** \$2,400,000

**Expected Total Cost:** \$22,800,000

### 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. U.S. EPA (2021)<sup>11</sup> estimated that transportation was responsible for 29 percent of the nation's carbon emissions, while the electricity sector emissions accounted for 25 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 commercial availability of light-duty EVs, priorities have shifted. 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 5<sup>12</sup> percent of vehicles in the U.S. and drive 9<sup>13</sup> percent of all vehicle miles traveled each year yet are responsible for more than 25<sup>14</sup> percent of all the fuel burned annually. Moreover, the 2016 AQMP identified medium- and heavy-duty vehicles as the largest source of NOx emissions in the Basin. Electric and hybrid technologies have gained momentum in the light-duty sector with commercial offerings by most of the automobile manufacturers. Unfortunately, there are significant emission reductions needed for medium- and heavy-duty vehicles and off-road equipment, exacerbated by low turnover of these vehicles by fleets and high incremental costs for battery electric vehicles and equipment compared to conventional-fueled vehicles and equipment.

The South Coast AQMD has investigated the use of electric and hybrid technologies to achieve similar performance as conventional-fueled counterparts while achieving emission reductions and improved fuel economy. Multiple natural gas and diesel hybrid vehicles have been developed and demonstrated under the DOE funded Zero Emissions Cargo Transport (ZECT), CARB Greenhouse Gas Reduction Fund (GGRF) and NREL's Natural Gas Vehicle Consortium. These hybrid trucks all share plug-in capability and ability to operate in zero emission mode, and some leveraging advanced concepts such as geofencing and EcoDrive to maximize emission reductions in disadvantaged communities. Vehicle based hybrid systems continue to progress for additional emission reductions and efficiency improvements. Engine powertrain based hybrid systems began to emerge since the introduction of optional hybrid powertrain test procedures. Hybrid powertrain based projects are further described under the Engine Systems section.

Vehicle categories to be considered for potential or future demonstration and deployment projects include drayage/freight/regional haul trucks, utility trucks, last mile delivery vans, shuttle buses, transit buses, waste haulers, construction equipment, cranes and other off-road equipment such as yard tractors, forklifts, top handlers, and RTG cranes. Innovations that may be considered for demonstration and deployment include advancements in the auxiliary power unit, either ICE or other heat engine; and battery-dominant hybrid systems utilizing off-peak charging, with advanced battery technologies including alternative chemistries, design, and management systems. Alternative fuels are preferred in these projects, e.g., natural gas,

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<sup>11</sup> U.S. Greenhouse Gas Emissions and Sinks 1990-2019. 2021. <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>

<sup>12</sup> <https://www.bts.gov/content/number-us-aircraft-vehicles-vessels-and-other-conveyances>

<sup>13</sup> <https://www.bts.gov/content/us-vehicle-miles>

<sup>14</sup> <https://www.bts.gov/content/fuel-consumption-mode-transportation-physical-units>



especially from renewable sources, LPG, hydrogen, gas-to-liquid (GTL) and hydrogen-natural gas blends, but conventional fuels such as gasoline, renewable diesel, or even modified biodiesel may be considered if 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.

Both on-road vehicles and off-road equipment are transitioning increasingly towards zero emission technologies. Off-road equipment include cargo handling and construction equipment. The Volvo LIGHTS project included the demonstration of a zero emission freight handling system including 29 battery electric yard tractors and forklifts at fleets DHE and NFI. Volvo Construction Equipment just recently finished demonstrating small battery electric compact excavator and wheel loader in California which are now ready for commercial release in 2021. Several other manufacturers have released battery electric and hybrid equipment, and more are becoming commercially available. CARB has introduced the Clean Off-Road Equipment Voucher Incentive Project (CORE) which have been seeing great success in deploying zero-emission cargo handling equipment and switch locomotives. The most recent funding plan suggested CORE will be including off-road construction equipment in the future. Since the applications are more diverse in this sector, continued development and incentives are needed to accelerate progress in this sector.

This project category will develop and demonstrate:

- various electric vehicles and equipment;
- anticipated costs for electric vehicles and equipment;
- customer interest and preferences for these alternatives;
- integration of technologies into prototype vehicles and fleets;
- battery electric and hybrid-electric medium- and heavy-duty vehicles (e.g., drayage/freight/regional haul trucks, utility trucks, delivery vans, shuttle buses, transit buses, waste haulers);
- development and demonstration of battery electric off-road equipment, (e.g., battery electric off-road cargo handling such as yard tractors, forklifts and top-handlers, and construction equipment such as excavators and wheel loaders);
- 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 conventional-fueled vehicles, a key factor expected to enhance broader consumer acceptance. Given the variety of EV systems under development, it is critical to determine actual emission reductions and performance metrics compared to conventional-fueled 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 2016 AQMP.

**Proposed Project:** Develop and Demonstrate Electric Charging Infrastructure

**Expected South Coast AQMD Cost:** \$2,600,000

**Expected Total Cost:** \$52,090,000

**Description of Technology and Application:**

There is a critical need to address gaps in EV charging infrastructure availability. Almost half (44 percent) of the 2,084,118<sup>15</sup> EVs sold in the U.S. since 2010 were in California, and of those sales in California, almost half (44 percent) of CVRP<sup>16</sup> rebates issued as of April 2021 were for vehicles in the 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.

There are separate challenges associated with infrastructure for light-duty EVs vs. medium- and heavy-duty EVs, which are on opposite ends of the commercialization spectrum. Light-duty EVs and charging infrastructure have long been commercially available with an SAE J1772 connector standard for Level 1 and Level 2 charging. Availability of public fast charging and workplace charging continues to increase and is needed particularly for residents in multi-unit dwellings without easy access to home charging. Availability and costs to deploy infrastructure are the main challenges for light-duty EVs.

Medium- and heavy-duty EVs are becoming more commercially available, with Daimler and Volvo obtaining CARB certification of their Class 6 and/or 8 battery electric trucks in 2020. Standards for charging infrastructure to support medium- and heavy-duty EVs has generally been with the CCS1 connector in North America. Although Volvo and ABB obtained UL certification of the CCS2 connector in 2020, which is a connector standard predominantly used in Europe and other parts of the world, the CCS1 connector continues to be the standard connector for charging up to 350 kW DC. A Megawatt Charging System connector is under development by the Charging Interface Initiative (CharIN) for Class 6 -8 EVs for charging up to 4.5 MW DC, although there are no EVs which are currently capable of accepting charging above 350 kW DC. There is also an agreed upon SAE J3068 connector standard for single-phase and three-phase AC charging. The challenges and costs of installing medium- and heavy-duty charging infrastructure are exponentially increased compared to light-duty infrastructure. Each year there are more commercially available options for medium- and heavy-duty on-road EVs and off-road equipment, charging infrastructure to support these EVs and equipment, and an ability to fund larger scale deployment projects for medium- and heavy-duty EVs, equipment, and infrastructure. As the deployment of medium- and heavy-duty EVs and off-road equipment has increased, there is an increasing reliance on the use of standardized charging connectors that are UL or Nationally Recognized Testing Laboratory (NRTL) certified charging infrastructure, as opposed to proprietary charging infrastructure and connectors which can only be used with EVs and equipment manufactured by that OEM or equipment manufacturer.

The South Coast AQMD is actively pursuing development of intelligent transportation systems, such as Volvo's EcoDrive 2.0 software platform being utilized for the GGRF Zero Emission Drayage Truck (ZEDT) and Volvo LIGHTS projects, to improve traffic efficiency of battery electric and fuel cell electric drayage/freight 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 also uses geofencing capabilities to operate in zero emissions mode while traveling through disadvantaged communities. A truck eco-routing system can provide the eco-friendliest travel route based on truck engine/emission control characteristics, loaded weight, road grade and real-time traffic conditions. Integrated programs can interconnect fleets of electric drive vehicles with mass transit via web-based reservation systems that allow multiple users. These integrated programs can match the features of

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<sup>15</sup> California Energy Commission *Zero Emission Vehicle and Charger Statistics. Q2 2021 Data Update* (posted August 5, 2021). <http://www.energy.ca.gov/zevstats>

<sup>16</sup> <https://cleanvehiclerebate.org/eng/rebate-statistics>

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. As part of the demonstration of the Volvo diesel plug-in hybrid electric truck for the ZEDT project, this truck will be demonstrated in California for six months starting in November 2020 and data will be collected on the performance of EcoDrive 2.0 through the connector vehicle corridor in Carson that was set up as part of the CEC funded Eco FRATIS<sup>17</sup> freight transportation connected truck project.

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;
- deploy DC fast charging infrastructure (up to 350 kW) in conjunction with energy storage and/or solar to support large scale deployments of 50 or more battery electric trucks at a single fleet location;
- charging infrastructure and innovative systems to support medium- and heavy-duty vehicle and off-road equipment demonstration and deployment projects;
- support investigation of fast charging impacts 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 conventional-fueled vehicles to battery and fuel cell EVs. In addition, this project will assist in achieving improved fuel economy and lower tailpipe emissions, further helping the region to achieve NAAQS 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 Basin, which is a high priority of the 2016 AQMP.

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<sup>17</sup> <https://www.aapa-ports.org/files/PDFs/ITS%20POLA%204.24.2019.pdf>

**Proposed Project:** Demonstrate Alternative Energy Storage

**Expected South Coast AQMD Cost:** \$300,000

**Expected Total Cost:** \$2,000,000

**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, maintenance and durability), gauge market preparedness, evaluate costs relative to current lithium-ion batteries and provide a pathway to commercialization. The use of alternative energy storage and generation (i.e. solar) could also be in combination with a large scale deployment of 50 or more battery electric trucks and charging infrastructure at a single fleet location for energy storage optimization for grid reliability and offset electricity demand charges.

The long-term objective of this project is to decrease fuel consumption and resulting emissions without any changes in performance compared to conventional-fueled vehicles. This effort will support several projects for development and demonstration of battery electric and hybrid electric 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 second life uses 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 battery electric and hybrid electric 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, off-road equipment, and other applications. Benefits will include proof of concept for 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:** \$75,000

**Expected Total Cost:** \$200,000

**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 electric range, improved efficiency and recharge 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. Thirty networked Level 2 chargers were added through the Southern California Edison Charge Ready Fleet program in 2020, which will help South Coast AQMD acquire 8500 GVW and over ZEVs like light-duty trucks and vans to comply with the proposed CARB Advanced Clean Fleet regulation.

Light-duty BEVs and PHEVs are available from most established OEMs and several new OEMs. Current legislation extends solo carpool lane access only for MY 2019 and later vehicles, with all Clean Air Vehicle decals expiring between 2023 - 2025, unless legislation is adopted to continue.

**Potential Air Quality Benefits:**

The 2016 AQMP identifies the need to implement light-duty EVs. 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 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 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 2016 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:** \$1,400,000

**Expected Total Cost:** \$19,000,000

### **Description of Technology and Application:**

Natural gas vehicles (NGVs) have been very successful in reducing emissions in the Basin due to the deployment by fleet owners and operators of heavy-duty vehicles utilizing this clean fuel. Currently, increasing number of on-road heavy-duty natural gas engines are being certified to CARB's optional low-NOx standards which are significantly lower in NOx emissions 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. Under Engine Systems, South Coast AQMD is support efforts for development high-powered natural gas vehicles to support long-haul applications. Increasing natural gas engine availability for the full range of applications would increase NGV deployment in long-haul applications where diesel engine has been the only option.

### **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 Renewable Fuel Infrastructure

**Expected South Coast AQMD Cost:** \$200,000

**Expected Total Cost:** \$2,100,000

**Description of Technology and Application:**

This project supports the development, maintenance and expansion of natural gas fueling stations in strategic locations throughout the Basin, including the Ports, and advancing technologies and station design to improve fueling and refueling efficiencies of heavy-duty NGVs. This category supports the broader deployment of near-zero emission heavy-duty vehicles and the implementation of South Coast AQMD's fleet rules. In addition, as natural gas fueling equipment begins to age or has been placed in demanding usage, components will deteriorate. This project offers facilities to replace worn-out equipment or to upgrade existing fueling and/or garage and maintenance equipment to offer increased fueling capacity to public agencies, private fleets and school districts.

**Potential Air Quality Benefits:**

The AQMP identifies the use of alternative clean fuels in mobile sources as a key attainment strategy. Heavy-duty NGVs have significantly lower emissions than their diesel counterparts and represent the cleanest internal combustion engine-powered vehicles available today. The project has the potential to significantly reduce the installation and operating costs of NGV refueling stations, and improving vehicle refueling times through improved refueling systems designs and high-flow nozzles. While new or improved NGV stations have an indirect emissions reduction benefit, they help facilitate the introduction of near-zero emission NGVs in private and public fleets in the area, which have a direct emissions reduction benefit. It is expected that natural gas' lower fuel cost relative to diesel and the added financial incentives of renewable natural gas (RNG) under the state's Low Carbon Fuel Standard program and the federal Renewable Fuel Standard program will significantly reduce operating costs of high fuel volume heavy-duty NGVs and attract consumers to this technology. The increased exposure and fleet and consumer acceptance of NGVs would lead to significant and direct reductions in NO<sub>x</sub>, VOC, CO, PM and toxic compound emissions from mobile sources. Such increased penetration of NGVs will provide direct emissions reductions of NO<sub>x</sub>, VOC, CO, PM and air toxic compounds throughout the Basin.

**Proposed Project:** Demonstrate Renewable Transportation Fuel Manufacturing and Distribution Technologies

**Expected South Coast AQMD Cost:** \$2,000,000

**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 further efforts associated with landfill and waste diversion, greenhouse gas reduction, energy diversity and petroleum dependency. Locally produced renewable fuels further reduce 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, including the reduced fuel price and operational costs, the incentives to purchase and deploy alternative or renewable energy 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). These renewable fuels can be converted from various waste biomass feed stocks, including municipal solid wastes, green waste, and biosolids produced at waste water treatment facilities generated from 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 supply 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 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:** \$1,000,000

**Expected Total Cost:** \$4,500,000

### Description of Technology and Application:

CARB has proposed the Advanced Clean Truck Regulation which is part of a holistic approach to accelerate a large-scale transition of zero emission medium-and heavy-duty vehicles from Class 2B to Class 8. Manufacturers who certify Class 2B-8 chassis or complete vehicles with combustion engines would be required to sell zero emission trucks as an increasing percentage of their annual California sales from 2024 to 2030. By 2030, zero emission truck/chassis sales would need to be 50% of Class 4–8 straight trucks sales and 15% of all other truck sales.

The commercialization of zero emission heavy-duty trucks is currently under way with two of the largest manufacturers announcing plans for commercial products in Southern California. Both Daimler and Volvo obtained CARB certification of their Class 6 and/or 8 battery electric trucks in 2020, with these trucks eligible for HVIP and other incentives and commercially available for sale. South Coast AQMD also received \$16M in CARB and \$11M in CEC funding, as well as \$34M in co-funding from project partners for the deployment of 100 Daimler and Volvo Class 8 battery electric trucks for drayage and regional haul applications. 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 (BETs) each carrying 300+ kW hours of battery-stored energy or fuel cell trucks (FCTs) 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 is sold to the fleet through a power purchase agreement, the financial challenge of large capital investment can be avoided by the fleet operator.

A microgrid is a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid. A microgrid can connect and disconnect from the grid to enable it to operate in both grid-connected and island-mode. Microgrids can work synergistically with the utility grid to provide power for zero emission vehicle refueling by managing when energy from the grid is used—during off-peak hours when it is the least expensive. Then during peak demand periods, the microgrid would use energy from battery storage or onsite generation. Most all the technologies that make up microgrids already exist including photovoltaic, fuel cells, battery storage, along with hardware and software for the energy management system (EMS). When grid service is interrupted, the microgrid can disconnect from it and continue to operate as an energy island independent from the grid. Having assurance of an uninterrupted fueling source is an important consideration for a fleet operator. Also, if the microgrid is connected to the fleet operator’s logistics system, additional benefits in terms of infrastructure cost and battery life for BETs can be realized. If the EMS is fed information on the route a truck is going to travel, it can charge the vehicle with enough energy for the trip so the truck will operate within 20-80% state of charge (SOC) of the battery having the least amount of impact to battery life. Additionally, if the EMS is connected to the logistics system, it can plan the charging schedules with 150 kW or less powerful chargers which again will have less impact on battery life than the planned higher powered 300+ kW chargers and lower the costs for the charging infrastructure.

The energy demand of electric and fuel cell heavy-duty trucks is substantial; for a 100-vehicle fleet of BETs with 300 kWh the batteries would require 30 MW hours/day of energy. For a 100-vehicle fleet of FCTs the hydrogen requirement is 2,000 kg/day. Microgrids can provide energy for hydrogen and EV infrastructure and can serve to enable large zero emission vehicle deployments and make refueling economical and reliable. Staff has demonstrated several microgrid projects with the University of California Irvine and has toured the microgrid at University of California San Diego. Currently, several pilot projects are being discussed with microgrid developers and fleet operators that involve various configurations of microgrid technologies and different business models. Proposed projects would include development and demonstration of microgrids utilizing various types of renewable and zero emitting onsite generation (fuel cell tri-generation, power to gas, photovoltaic, wind), energy storage, connectivity to logistics systems, vehicle-to-grid and vehicle-to-building technologies. Also, projects that demonstrate different business models will be considered, such as projects involving a separate entity owning some or all the microgrid equipment and engaging in a power purchase agreement to provide energy to fleets that are transitioning to zero emission trucks. Proposed projects would partner with truck OEMs and their major customers, such as large- and medium-sized fleets looking at microgrid solutions for their operations here in the Basin.

**Potential Air Quality Benefits:**

Microgrids can provide grid resilience and potentially support large deployments of zero emission medium- and heavy-duty trucks that are necessary to meet the AQMP target of a 45 percent reduction in NO<sub>x</sub> required by 2023 and an additional 55 percent reduction by 2031. Both renewable and zero emitting power generation technologies that make up a microgrid can provide a well-to-wheel zero emission pathway for transporting goods. Projects could potentially reduce a significant class of NO<sub>x</sub> and CO emissions that are in excess of the assumptions in the AQMP and further enhance South Coast AQMD's ability to enforce full-time compliance.

**Proposed Project:** Develop and Demonstrate Zero or Near-Zero Emission Energy Generation Alternatives

**Expected South Coast AQMD Cost:** \$200,000

**Expected Total Cost:** \$500,000

**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 pumps. Besides renewable technologies, electrolyzer technology could be used to generate hydrogen, a clean fuel. Hydrogen, when used in internal combustion engines, can potentially reduce tail-pipe emissions of NO<sub>x</sub>, 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 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 could 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 to help provide grid resiliency, especially as the transportation sector becomes more reliant on the electrical grid.

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:** \$500,000

**Expected Total Cost:** \$2,000,000

### Description of Technology and Application:

Hybrid electric, hybrid hydraulic, plug-in electric hybrid and battery-electric and fuel cell electric vehicles 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 (and propane) technology penetrates the different segments, in-use assessment of real-world benefit is needed especially now CARB has introduced a new in-use testing metric.

The CARB EMFAC model that the 2016 AQMP is based on uses emissions data from in-use emissions studies for calculating emission factors for heavy-duty trucks rather than the certification data but it's limited and outdated. For the upcoming EMFAC 2021, more complete natural gas engine modules have been included for the first time with emissions data gathered from the current South Coast AQMD funded in-use emissions characterization effort. CARB and EPA low-NOx regulations focused on addressing the gap of in-use and certification values by introducing a new methodology that includes emissions from all operations. While staff expects the in-use emissions from new engines to perform closer to certification values, there are still significant population of the MY 2010+ legacy fleet is expected to remain in service well over 2030s. There is always a need to better assess real world truck emissions, fuel economy, and their activity from both engines, hybrid powertrain and zero emission technologies for continued technology improvements.

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 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. This duty-cycle requirement, often based on traditional vehicles are used for planning purposes for building medium- and heavy-duty public refueling stations. Furthermore, some of the standardized test cycle, like the chassis dyno based cycle, can be used to evaluate the efficiency of the zero-emissions vehicles and compare directly with the diesel and natural gas vehicle.

Another proposed project would be the characterization of intermediate volatility organic compound (IVOC) emissions which is critical in assessing ozone and secondary organic aerosol (SOA) precursor production rates. Diesel vehicle exhaust and unburned diesel fuel are major sources of and contribute to the formation of urban ozone and SOA, which is an important component of PM2.5. Natural-gas vehicles are also a concern due to lack of particulate filter, however, the actual impact based on current and projected population are to be further studied.

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 Related Environmental Impacts

**Expected South Coast AQMD Cost:** \$400,000

**Expected Total Cost:** \$1,500,000

**Description of Technology and Application:**

The use of renewable fuels such as biofuels can be an important strategy to reduce petroleum dependency, air pollution and greenhouse gas emissions and help with California's aggressive GHG reduction goal. Biofuels are 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. In 2019, the U.S. EPA approved 15% ethanol (E15) blends for year-round use and CARB, along with South Coast AQMD and other launched an emissions study of E15 to assess the emissions impact of the current fleet of California light duty vehicles, the data is due to be released soon to support the approval of E15. South Coast AQMD also has been monitoring efforts in using ethanol as a primary fuel for medium- and heavy-duty application in optimized engine systems that allows both criteria and GHG reduction which could be another pathway for reducing emissions due to abundance of ethanol from the light duty sector.

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 have 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 its emissions impact on the latest ICE technologies needs to be reassessed. Hydrogen fueled ICE was studied heavily in the early 2000's and results have 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 low NOx standards. Therefore, emissions impact assessment is needed on the latest ICE technologies.

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:** \$400,000

**Expected Total Cost:** \$1,500,000

**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 through various vehicle usage optimization strategies. 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. In the last a few years, real-time emissions and fuel economy data reporting along with telematics has been demonstrated with large fleets to as fleet management tools to identify high emitters and increase operational efficiency. Similar efforts have already been proposed by CARB as part of HD I/M regulation. Moreover, the same telematic systems are being installed on zero-emission trucks where fleet and charging management are more important than ever, cloud based fleet management concept are being proposed by researchers to maximize the range and air quality benefits of zero-emission trucks.

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
- fleet and charger management concepts 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 the Community Emission Reduction Plans (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 for On-High Way

**Expected South Coast AQMD Cost:** \$500,000

**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 enabled by the availability of 48 volt battery system can be used to keep desired catalyst temperatures such as heated dosing and heated catalysts are also part of the complete aftertreatment system design towards 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. The proposed Clean Truck Initiative by the EPA as well as the adopted CARB Omnibus Regulation will require aftertreatment systems to maintain certification to a much longer useful life via new in-use testing metrics. Technology durability and in-use performance will need to be studied.

Possible projects include advancing the technologies for on-road truck demonstrations beyond the lab based testing, retrofit applications, such as heavy-duty line-haul and other large displacement diesel engines, street sweepers, and waste haulers. 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 Methodology and Evaluate and Demonstrate Onboard Sensors for On-Road Heavy-Duty Vehicles

**Expected South Coast AQMD Cost:** \$250,000

**Expected Total Cost:** \$1,000,000

**Description of Technology and Application:**

New heavy-duty on-road vehicles represent one of the largest categories in the NO<sub>x</sub> emissions inventory in the Basin. To meet the 2023 and 2031 ozone standards, NO<sub>x</sub> emissions need to be reduced by 45% and an additional 55% from 2012 levels, respectively, mainly from mobile sources. Previous in-use emission studies, including studies funded by the South Coast AQMD, have shown significantly higher NO<sub>x</sub> emissions from on-road heavy-duty vehicles than the certification limit under certain in-use operations, such as low power duty cycles. In CARB's adopted Heavy-Duty On-Road "Omnibus" Low NO<sub>x</sub> regulation, in addition to the lower certification values, a low load test cycle and revisions to the not-to-exceed compliance tests. A NO<sub>x</sub> sensor data reporting is also introduced where the vehicle computer are required to store a past period of emissions data 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. CARB's newly proposed HD I/M rule will be looking at address in-use emissions from the older legacy fleets, one of the pathways is also using onboard sensors.

This project category is to investigate near term and long-term benefits from onboard sensors to understand in-use emissions better and reduce emissions from the advanced management concept. The first part of the project is to identify and conduct proof-of-concept demonstrations of feasible candidate technologies, such as:

- laboratory evaluation of existing sensors;
- development and evaluation of next generation sensors;
- development of algorithms to extract sensor information into mass-based metric;
- demonstrate feasibility to monitor emissions compliance using sensors;
- identify low cost option for cost and benefit analysis;
- demonstrate sensors on natural gas and other mobile sources such as light-duty, off-highway and commercial harbor craft; and
- development, deployment and demonstration of smart energy/emissions management systems.

**Potential Air Quality Benefits:**

The proposed research projects will assist the trucking industry to monitor emissions, using sensors as one of the design platform options. Reduction of NO<sub>x</sub> and PM emissions from mobile sources is imperative for the Basin to achieve NAAQS and protect public health.

**Proposed Project:** Demonstrate On-Road Technologies in Off-Road and Retrofit Applications

**Expected South Coast AQMD Cost:** \$176,300

**Expected Total Cost:** \$800,000

**Description of Technology and Application:**

On-road heavy-duty engines have demonstrated progress in meeting increasingly stringent federal and state requirements. New heavy-duty engines have progressed from 2 g/bhp-hr NO<sub>x</sub> in 2004 to 0.2 g/bhp-hr NO<sub>x</sub> in 2010, which is an order of magnitude decrease in just six years. Off-road engines, however, have considerably higher emissions limits depending on the engine size. For example, Tier 3 standards for heavy-duty engines require only 3 g/bhp-hr NO<sub>x</sub>. There are apparent opportunities to implement cleaner on-road technologies in off-road applications. There is also an opportunity to replace existing engines in both on-road and off-road applications with the cleanest available technology. Current regulations don't usually require repowering (engine replacement) or remanufacturing to meet the cleaner emission standards as the engine being retired. Unfortunately, this does not take advantage of recently developed clean technologies.

Exhaust gas cleanup strategies, such as EGR, SCR, DPF, 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 as well as other clean alternative fuels in off-road applications including yard hostlers, locomotives, commercial harbor craft, gantry cranes, waste haulers and construction equipment;
- implementing lower emission engines requirement in repower applications for both on-road and off-road applications; and
- applying stationary best available control technologies, such as EGR, SCR, scrubbers, DPF, 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 contaminants emitted from diesel exhaust. Additionally, health studies indicate that the ultrafine particulate matter (UPM) 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 UPM 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 new technologies and health effects of these emissions, an evaluation and comparison of UPM and the potential impacts on community exposure, particularly in disadvantaged communities, is needed.

In this project, measurements and chemical composition of UPM will be done, as well as studies conducted to characterize their toxicity. The composition of PM 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 UPM, 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 technologies, and new engine development 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. Similar studies should also be conducted on natural gas medium- and heavy-duty vehicles to understand potential emissions impact.

### **Potential Air Quality Benefits:**

The AQMP for the Basin relies on significant penetration of low emission vehicles to attain federal clean air standards. Reduction of PM 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 UPM generated by different types of fuels and advanced control technologies as well as provide information on potential health effects of UPM. 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, freight/logistics distribution centers and freeways is important to identify emissions exposure to surrounding communities and provide data to assess health impacts. This project category would identify areas of interest and conduct ambient air monitoring, emissions monitoring, analyze data and assess potential health impacts from mobile sources. These projects would need to be at least one year in duration in order to properly assess air quality impacts in surrounding communities.

**Potential Air Quality Benefits:**

The proposed project will assist in 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, particularly in disadvantaged communities; 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 Particulate Matter

**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 studies, have found that diesel exhaust is the major contributor to health risk from air toxics. Analyses of diesel particulate matter (DPM) 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 DPM as well as estimate levels of PM 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 and updated emissions inventory of toxic air contaminants. MATES IV also measured UPM concentrations and black carbon at monitoring sites as well as near sources such as airports, freeways, rail yards, busy intersections and freight/logistics warehouse operations.

MATES V was launched in 2017 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. Findings from the MATES V report finalized in June 2021 showed that air toxics cancer risk based on modeling data has decreased by about 50% since MATES IV, with average multi-pathway air toxics cancer risk at 454-in-a-million. Highest risk locations are at LAX and the Ports along goods movement and transportation corridors. Diesel PM continues to be the major contributor to air toxics cancer risk. For the first time, chronic non-cancer risk was estimated with a chronic hazard index of 5.9 across the 10 stations in the MATES V study.

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 health effects and potential community exposure, particularly in disadvantaged communities. 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 DPM as well as levels of PM from other significant combustion sources, including gasoline and diesel generated VOCs. This will allow a better estimation of potential exposure and health effects from toxic air contaminants from diesel exhaust in the Basin. This information in turn can be used to determine 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:** \$600,000

**Expected Total Cost:** \$1,000,000

### 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 by coordinating activities with other organizations to expedite the implementation of advanced engines and clean fuels technologies.

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;
- emission studies and assessments of near-zero and zero-emission alternatives;
- preparation of reports, presentations at conferences, improving public relations and public communications of successful clean technology demonstrations;
- participation in and coordination of workshops and various meetings;
- support for training programs related to fleet operation, maintenance and refueling of alternative fuel vehicles and equipment;
- publication of technical papers as well as reports and bulletins; and
- dissemination of information, including websites development and updates.

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/equipment 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. The benefits of highlighting success stories in the use of advanced alternatively fueled vehicles could expedite the acceptance and commercialization of advanced technologies. Especially, by the operators seeking to comply with the provisions of the South Coast AQMD fleet rules. The emission reduction 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:** \$350,000

**Expected Total Cost:** \$400,000

**Description of Project:**

This project supports the implementation of incentive programs, including the state and federal grant programs, the Carl Moyer, lower emission school bus, Replace Your Ride Programs and the South Coast AQMD residential EV charger rebate program. Implementation support includes application review, funds allocation, equipment owner reports collection, documentation to the CARB, verification of vehicle operation, and other support as needed. Information dissemination is critical to successfully implementing coordinated and comprehensive incentive programs. Outreach will be directed to vehicle dealers, individuals and fleets. To date, the South Coast AQMD residential EV charger rebate program has provided over 1,900 rebates, totaling \$553,596. The total available funds of \$1 million is consisted with \$500,000 from South Coast AQMD Clean Fuels Fund and \$500,000 from the Mobile Source Air Pollution Reduction Review Committee (MSRC).

**Potential Air Quality Benefits:**

As described earlier, the South Coast AQMD will provide matching funds to implement several key incentives programs to reduce emissions in the Basin. Furthermore, the South Coast AQMD adopted fleet regulations requiring public and private fleets within the Basin to acquire alternatively fueled vehicles when making new purchases. The benefits of highlighting zero emission vehicle incentives could potentially expedite the acceptance and commercialization of advanced technologies by operators seeking to comply with the South Coast AQMD fleet rules provisions. The result of future emission reduction benefits will contribute to the goals of the AQMP. The lower emission school bus, AB 617 Community Air Protection, Volkswagen Environmental Mitigation Trust and Carl Moyer incentives programs could reduce large amounts of NOx and PM emissions, and toxic air contaminants in the Basin.





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**Appendix A**

**South Coast AQMD Advisory Groups**

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## Technology Advancement Advisory Group<sup>1</sup>

Dr. Matt Miyasato, Chair ..... South Coast AQMD  
Don Anair ..... Union of Concerned Scientists  
Chris Cannon ..... Port of Los Angeles  
\*Dr. Bill Robertson..... 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  
Laura Renger..... Southern California Edison

\*Newly appointed member

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<sup>1</sup> Members as of February 18, 2022

## SB 98 Clean Fuels Advisory Group<sup>2</sup>

|                                |   |
|--------------------------------|---|
| Dr. Matt Miyasato, Chair ..... | South Coast AQMD  |
| Keith Brandis .....            | Volvo Group   |
| Dr. John Budroe .....          | California Environmental Protection Agency,<br>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, &<br>University of Nevada-Reno   |
| Dr. Wayne Miller .....         | University of California, Riverside,<br>College of Engineering, Center for Environmental<br>Research and Technology |
| Dr. Petros Ioannou .....       | University of Southern California<br>Director of the Center for Advanced Transportation<br>Technologies             |
| Dr. Scott Samuelson .....      | University of California, Irvine,<br>Combustion Laboratory/National Fuel Cell<br>Research Center                    |
| Dr. Robert Sawyer .....        | Sawyer Associates   |
| Dr. Andreas Truckenbrodt ..... | Independent Consultant in Fuel Cell Technologies  |
| *Ken Kelly .....               | National Renewable Energy Laboratory  |
| Dwight Robinson .....          | Mortimer & Wallace, Inc.  |

\*Newly appointed member

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<sup>2</sup> Members as of March 4, 2022

## **Appendix B**

### **Open Clean Fuels Contracts as of January 1, 2022**

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| Contract   | Contractor   | Project Title   | Start Term | End Term | South Coast AQMD \$ | Project Total \$ |
|--|--|---|------------|----------|---------------------|------------------|
| Electric / Hybrid Electric Technologies and Infrastructure |  |   |            |          |                     |                  |
| 14184  | Clean Fuel Connection, Inc.                              | DC Fast Charging Network Provider   | 04/04/14   | 06/30/23 | 390,000             | 1,210,000        |
| 16081  | Broadband Telecom Power Inc                              | Provide EV Hardware and Control System at SCAQMD Headquarters Including Installation Support, Warranty and Networking | 04/27/16   | 04/26/22 | 367,425             | 689,850          |
| 17105  | BYD Motors Inc   | Development and Demonstration of up to 25 Class 8 Battery Electric Drayage Trucks                                     | 04/14/17   | 10/13/23 | 2,294,436           | 8,942,400        |
| 17207  | Peterbilt Motors   | Development and Demonstration of up to 12 Class 8 Battery Electric Drayage Trucks                                     | 04/07/17   | 10/06/23 | 2,342,436           | 11,082,340       |
| 17225  | Volvo Technology of America LLC                          | Development and Demonstration of up to 2 Class 8 Battery Electric Drayage Trucks                                      | 06/09/17   | 03/31/22 | 1,741,184           | 11,065,938       |
| 17244  | Kenworth Truck Company                                   | Development & Demonstration of four Class 8 CNG Hybrid Electric Drayage Trucks  | 09/08/17   | 06/30/22 | 2,239,106           | 6,492,238        |
| 18129  | Electric Power Research Institute                        | Versatile Plug-In Auxiliary Power System Demonstration  | 06/28/18   | 04/30/23 | 125,000             | 273,000          |
| 18232  | Hyster-Yale Group Inc                                    | Electric Top-Pick Development, Integration & Demonstration  | 09/14/18   | 06/30/23 | 367,801             | 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 | 582,305             | 4,198,000        |
| 18287  | Evgo Services LLC  | Charging Station and Premises Agreement for Installation of One DCFC at SCAQMD Headquarters                           | 06/27/18   | 06/26/28 | 0                   | 0                |
| 19166  | Phoenix Cars LLC dba Phoenix Motorcars                   | Battery Electric Shuttle Bus Replacement Project  | 01/31/19   | 01/30/22 | 0                   | 7,311,456        |
| 19182  | Los Angeles County                                       | Disburse donated Mercedes-Benz USA, LLC. Electric Vehicle Chargers  | 01/03/19   | 01/03/22 | 0                   | 0                |
| 19183  | Southern California Public Power Authority (SCPPA)       | Disburse Donated Mercedes-Benz USA, LLC Electric Vehicle Chargers   | 01/10/19   | 01/10/22 | 0                   | 0                |
| 19190  | Daimler Trucks North America LLC                         | Zero Emission Trucks and EV Infrastructure Project  | 12/18/18   | 06/17/22 | 8,230,072           | 31,340,144       |
| 19202  | City of Compton  | Disburse donated Mercedes-Benz USA, LLC. Electric Vehicle Chargers  | 04/11/19   | 04/10/22 | 0                   | 0                |
| 19250  | Baldemar Caraveo   | Disburse donated Mercedes-Benz USA, LLC. Electric Vehicle Chargers  | 03/06/19   | 03/06/22 | 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                |

| Contract  | Contractor                     | Project Title  | Start Term | End Term | South Coast AQMD \$ | Project Total \$ |
|---|--------------------------------|--|------------|----------|---------------------|------------------|
| Electric / Hybrid Electric Technologies and Infrastructure (cont'd) |                                |  |            |          |                     |                  |
| 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                |
| 19278   | Volvo Group North America, LLC | Low Impact Green Heavy Transport Solutions (LIGHTS) - Develop and Demonstrate Zero Emissions Heavy-Duty Trucks, Freight Handling Equipment, EV Infrastructure and Renewable Energy | 04/17/19   | 06/30/22 | 4,000,000           | 92,345,863       |
| 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                |
| 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                |

| Contract   | Contractor                         | Project Title   | Start Term | End Term | South Coast AQMD \$ | Project Total \$ |
|--|------------------------------------|---|------------|----------|---------------------|------------------|
| <b>Electric / Hybrid Electric Technologies and Infrastructure (cont'd)</b> |                                    |   |            |          |                     |                  |
| 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           |
| 20097  | Zeco Systems, Inc. DBA Greenlots   | Operate, Maintain and Network the EV Chargers   | 02/14/20   | 02/13/23 | 155,664             | 155,664          |
| 20124  | Volvo Technology of America LLC    | Develop & Demonstrate Battery-Electric Excavator & Wheel Loader   | 09/01/19   | 09/30/22 | 0                   | 2,000,000        |
| 20125  | Roush Cleantech, LLC               | Develop and Demonstrate Battery Electric Medium-Duty Truck  | 03/19/20   | 03/18/22 | 937,500             | 3,200,000        |
| 20168  | OMNITRANS                          | Disburse donated Mercedes-Benz USA, LLC Electric Vehicle Chargers   | 02/28/20   | 02/27/23 | 0                   | 0                |
| 20296  | Daimler Trucks North America LLC   | Deploy Zero Emission Electric Delivery Trucks   | 05/27/21   | 12/31/24 | 0                   | 12,310,000       |
| 21077  | Daimler Trucks North America LLC   | Develop and Demonstrate up to 8 Heavy-Duty Battery Electric Trucks and Transportable Fast-Charging          | 03/11/21   | 03/31/23 | 1,000,000           | 6,742,000        |
| 21153  | Volvo Group North America, LLC     | Switch-On: Develop and Deploy Seventy Heavy-Duty Battery Electric Vehicles                                  | 06/10/21   | 09/30/24 | 2,000,000           | 31,540,000       |
| <b>Engine Systems and Technologies</b>                                     |                                    |   |            |          |                     |                  |
| 17353  | Odyne Systems, LLC                 | Develop and Demo Medium-Heavy Duty (Class 5-7) Plug-In Hybrid Electric Vehicles for Work Truck Applications | 06/09/17   | 02/28/22 | 900,000             | 6,955,281        |
| 18194  | CALSTART                           | Develop and Demonstrate Near-Zero Emission Opposed Piston Engine  | 05/30/18   | 06/30/22 | 1,000,000           | 15,550,000       |
| 19439  | Cummins, Inc.                      | Natural Gas Engine and Vehicles Research and Development - Natural Gas Specific Combustion Design           | 08/30/19   | 08/29/23 | 250,000             | 10,996,626       |
| 20092  | Southwest Research Institute       | Natural Gas Engine and Vehicles Research and Development - Pent-Roof Medium Duty Natural Gas Engine         | 10/14/20   | 04/13/24 | 475,000             | 6,000,000        |
| 20158  | University of California Riverside | OnBoard Nox and PM Measurement Method   | 05/19/20   | 05/18/22 | 201,087             | 688,587          |
| 20199  | Agility Fuel Solutions LLC         | Develop a Near-Zero Natural Gas and Propane Conversion System for On-Road Medium-Duty Vehicles              | 07/01/21   | 06/30/22 | 453,500             | 1,834,000        |

| Contract  | Contractor                                    | Project Title  | Start Term | End Term | South Coast AQMD \$ | Project Total \$ |
|---|---|--|------------|----------|---------------------|------------------|
| <b>Engine Systems and Technologies (cont'd)</b>         |   |  |            |          |                     |                  |
| 20316   | US Hybrid                                     | Natural Gas Engine & Vehicles Research & Development - Plug-In Hybrid CNG Drayage Truck (PHET)   | 06/02/20   | 12/01/23 | 500,000             | 2,853,006        |
| <b>Fuel / Emission Studies</b>                          |   |  |            |          |                     |                  |
| 17276   | University of California Riverside, Ce-Cert   | Development of ECO-ITS Strategies for Cargo Containers   | 08/03/17   | 01/31/22 | 543,000             | 2,190,233        |
| 17286   | University of California Riverside            | In-Use Emissions Testing and Fuel Usage Profile of On-Road Heavy-Duty Vehicles                   | 06/09/17   | 03/31/22 | 300,000             | 1,625,000        |
| 21103   | University of California Riverside            | Perform Investigation Study of E15 Gasoline Fuel Effects   | 03/09/21   | 06/08/22 | 200,000             | 1,300,000        |
| 21169   | West Virginia University Research Corp        | Evaluation of Vehicle Maintenance Costs Between NG and Diesel Fueled On-Road Heavy-Duty Vehicles | 09/29/21   | 03/28/24 | 100,000             | 250,000          |
| <b>Fueling Infrastructure and Deployment (NG / RNG)</b> |   |  |            |          |                     |                  |
| 18336   | ABC Unified School District                   | FY2017-18 Alternative Fuel School Bus Replacement Program (3 CNG Buses)                          | 10/05/18   | 11/30/34 | 117,900             | 676,500          |
| 18337   | Alta Loma School District                     | FY 2017-18 Alternative Fuel School Bus Replacement Program (2 CNG Buses)                         | 10/05/18   | 11/30/34 | 78,600              | 423,000          |
| 18344   | Bellflower Unified School District            | FY 2017-18 Alternative Fuel School Bus Replacement Program (1 CNG Bus)                           | 09/07/18   | 11/30/34 | 39,300              | 225,500          |
| 18346   | Chaffey Joint Union High School District      | FY 2017-18 Alternative Fuel School Bus Replacement Program (6 CNG Buses)                         | 10/05/18   | 11/30/34 | 235,800             | 1,269,000        |
| 18348   | Cypress School District                       | FY 2017-18 Alternative Fuel School Bus Replacement Program (1 CNG Bus)                           | 09/07/18   | 11/30/34 | 39,300              | 211,500          |
| 18349   | Downey Unified School District                | FY 2017-18 alternative Fuel School Bus Replacement Program (4 CNG Buses)                         | 09/14/18   | 11/30/36 | 157,200             | 902,000          |
| 18350   | Fountain Valley School District               | FY2017-18 Alternative Fuel School Bus Replacement Program (1 CNG Bus)                            | 09/07/18   | 11/30/34 | 39,300              | 211,500          |
| 18351   | Fullerton Joint Union High School District    | FY2017-18 Alternative Fuel School Bus Replacement Program (4 CNG Buses)                          | 10/05/18   | 11/30/34 | 157,200             | 846,000          |
| 18355   | Huntington Beach Union High School District   | FY2017-18 Alternative Fuel School Bus Replacement Program (15 CNG Buses)                         | 10/05/18   | 11/30/34 | 589,500             | 3,382,500        |
| 18363   | Orange Unified School District                | FY 2017-18 Alternative Fuel School Bus Replacement Program (1 CNG Bus)                           | 09/14/18   | 11/30/34 | 39,300              | 225,500          |
| 18364   | Placentia-Yorba Linda Unified School District | FY2017-18 Alternative Fuel School Bus Replacement Program (6 CNG Buses)                          | 10/05/18   | 11/30/34 | 235,800             | 1,353,000        |

| Contract   | Contractor                                    | Project Title   | Start Term | End Term | South Coast AQMD \$ | Project Total \$ |
|--|---|---|------------|----------|---------------------|------------------|
| <b>Fueling Infrastructure and Deployment (NG / RNG) (cont'd)</b>     |   |   |            |          |                     |                  |
| 18365  | Pupil Transportation Cooperative              | FY 2017-18 Alternative Fuel School Bus Replacement Program (5 CNG Buses)                      | 10/05/18   | 11/30/34 | 196,500             | 1,127,500        |
| 18367  | Rialto Unified School District                | FY 2017-18 Alternative Fuel School Bus Replacement Program (13 CNG Buses)                     | 10/05/18   | 11/30/34 | 510,900             | 2,931,500        |
| 18368  | Rim Of The World Unified School District      | FY2017-18 Alternative Fuel School Bus Replacement Program (3 CNG Buses)                       | 10/05/18   | 11/30/34 | 513,600             | 676,500          |
| 18369  | Rowland Unified School District               | FY 2017-18 Alternative Fuel School Bus Replacement Program (3 CNG Buses & 1 Propane Bus)      | 11/02/18   | 11/30/34 | 117,900             | 770,000          |
| 18374  | Upland Unified School District                | FY 2017-18 Alternative Fuel School Bus Replacement Program (4 CNG Buses)                      | 10/12/18   | 11/30/34 | 157,200             | 902,000          |
| 20178  | Whittier Union High School District           | FY 2017-18 Alternative Fuel School Bus Replacement Program                                    | 02/21/20   | 11/30/34 | 196,500             | 1,052,500        |
| 21099  | CR & R, Inc.                                  | Renewable Natural Gas Production and Vehicle Demonstration Project                            | 03/03/20   | 09/30/22 | 166,250             | 166,250          |
| 21140  | Inland Kenworth (US) Inc                      | SCAQMD Approved Participating Dealership in TRUCK TRADE DOWN PROGRAM                          | 01/07/21   | 12/31/23 | 0                   | 0                |
| 21141  | Velocity Truck Centers                        | SCAQMD Approved Participating Dealership in TRUCK TRADE DOWN PROGRAM                          | 03/04/21   | 12/31/23 | 0                   | 0                |
| 21142  | TEC of California, Inc.                       | SCAQMD Approved Participating Dealership in TRUCK TRADE DOWN PROGRAM                          | 04/15/21   | 12/31/23 | 0                   | 0                |
| <b>Hydrogen and Mobile Fuel Cell Technologies and Infrastructure</b> |   |   |            |          |                     |                  |
| 15150  | Air Products and Chemicals, Inc.              | Install/Upgrade Eight H2 Fueling Stations throughout SCAG (including SCAQMD's HQs H2 station) | 10/10/14   | 04/09/22 | 1,000,000           | 17,335,439       |
| 15366  | Engineering, Procurement & Construction, LLC. | Operate and Maitain Publicly Accessible Hydrogen Fueling Station at SCAQMD's Diamond Bar HQs  | 10/10/14   | 04/09/22 | 0                   | 0                |
| 15611  | Ontario CNG Station, Inc.                     | Installation of Ontario Renewable Hydrogen Fueling Station                                    | 07/10/15   | 07/09/22 | 200,000             | 2,510,000        |
| 16025  | Center for Transportation and the Environment | Develop & Demonstrate Fuel Cell Hybrid Electric Medium-Duty Trucks                            | 02/05/16   | 11/30/23 | 980,000             | 7,014,050        |
| 17059  | CALSTART Inc                                  | Develop and Demonstrate Fuel Cell Extended Range Powertrain for Parcel Delivery Trucks        | 10/27/16   | 02/28/22 | 589,750             | 1,574,250        |
| 17312  | Cummins EP NA Inc                             | ZECT II - Develop Fuel Cell Range-Extended Drayage Truck                                      | 11/20/17   | 05/30/24 | 125,995             | 2,093,146        |
| 18150  | California Department of Food and Agriculture | Conduct Hydrogen Station Site Evaluations for Hydrogen Station Equipment Performance          | 06/28/18   | 02/27/22 | 100,000             | 805,000          |

| Contract  | Contractor                                     | Project Title   | Start Term | End Term | South Coast AQMD \$ | Project Total \$ |
|---|--|---|------------|----------|---------------------|------------------|
| <b>Hydrogen and Mobile Fuel Cell Technologies and Infrastructure (cont'd)</b> |  |   |            |          |                     |                  |
| 19248   | Tustin Hyundai                                 | Three Year Lease of 2019 Fuel Cell Hyundai Nexco  | 03/07/19   | 03/06/22 | 25,193              | 25,193           |
| 19313   | Equilon Enterprises LLC DBA Shell Oil Products | Construct & Operate Renewable Hydrogen Refueling Station  | 06/30/20   | 04/01/22 | 1,200,000           | 12,000,000       |
| 20033   | Port of Long Beach                             | Sustainable Terminals Accelerating Regional Transportation (START) Phase I  | 06/04/21   | 04/30/22 | 500,000             | 102,964,064      |
| 20038   | University of California Irvine                | Expansion of the UCI Hydrogen Refueling Station   | 10/18/19   | 02/17/27 | 400,000             | 1,800,000        |
| 20169   | Port of Los Angeles                            | Develop & Demonstrate Near-Zero and Zero Emissions Vehicles and Equipment at the Ports  | 06/28/21   | 11/30/22 | 1,000,000           | 83,548,872       |
| 20244   | Cummins Electrified Power NA Inc               | Demonstrate Fuel Cell Range-Extended Drayage Trucks   | 12/16/19   | 06/30/22 | 582,305             | 4,985,665        |
| 21313   | Sunline Transit Agency                         | Deployment of 5 Zero-Emission Fuel Cell Transit Buses   | 08/27/21   | 09/30/25 | 204,921             | 6,761,125        |
| 21386   | National Renewable Energy Laboratory           | CA Hydrogen Heavy-Duty Infrastructure Research Consortium H2@Scale Initiative   | 09/03/21   | 09/02/23 | 25,000              | 1,171,000        |
| <b>Stationary Sources - Clean Fuels</b>                                       |  |   |            |          |                     |                  |
| 21266   | University of California Irvine                | Develop Model for Connected Network of Microgrids   | 08/17/21   | 02/16/24 | 290,000             | 370,000          |
| <b>Technology Assessments and Transfer / Outreach</b>                         |  |   |            |          |                     |                  |
| 08210   | Sawyer Associates                              | Technical Assistance on Mobile Source Control Measures and Future Consultation on TAO Activities                                    | 02/22/08   | 02/28/22 | 50,000              | 50,000           |
| 09252   | JWM Consulting Service                         | Technical Assistance with Review and Assessment of Advanced Technologies, Heavy-Duty Engines and Conventional and Alternative Fuels | 12/20/08   | 06/30/22 | 30,000              | 30,000           |
| 12376   | University of California Riverside             | Technical Assistance with Alternative Fuels, Biofuels, Emissions Testing, and Zero-Emission Transportation Technology               | 06/01/14   | 05/31/24 | 300,000             | 300,000          |
| 15380   | ICF Resources LLC                              | Technical Assistance with Goods Movement, Alternative Fuels and Zero-Emission Transportation Technologies                           | 12/12/14   | 12/11/22 | 30,000              | 30,000           |
| 16262   | University of California Davis                 | Support Sustainable Transportation Energy Pathways (STEPs) 2015-2018 Program  | 01/05/18   | 01/04/22 | 240,000             | 5,520,000        |
| 17097   | Gladstein, Neandross & Associates LLC          | Technical Assistance with Alt Fuels and Fueling Infrastructure, Emissions Analysis and On-Road Sources                              | 11/04/16   | 06/30/22 | 200,000             | 200,000          |

| Contract  | Contractor  | Project Title  | Start Term | End Term | South Coast AQMD \$ | Project Total \$ |
|---|---|--|------------|----------|---------------------|------------------|
| Technology Assessments and Transfer / Outreach (cont'd) |   |  |            |          |                     |                  |
| 19078   | Green Paradigm Consulting, Inc.   | Technical Assistance with Alternative Fuels, Evs, Charging & Infrastructure and Renewable Energy                                       | 09/07/18   | 09/30/24 | 200,000             | 857,236          |
| 19227   | Gladstein, Neandross & Associates LLC                                     | Technical Assistance with Alternative Fuels & Fueling Infrastructure, Emissions Analysis & On-Road Sources                             | 02/01/19   | 01/31/22 | 300,000             | 300,000          |
| 19302   | Jerald Cole   | Technical Assistance with Hydrogen Infrastructure and Related Projects   | 04/24/19   | 04/23/23 | 50,000              | 50,000           |
| 20085   | CALSTART Inc  | Technical Assistance for Development & Demonstration of Infrastructure and Mobile Source Applications                                  | 11/08/19   | 11/07/23 | 250,000             | 250,000          |
| 20163   | Gladstein, Neandross & Associates LLC                                     | Technical Assistance with Implementation & Outreach Support for California VW Mitigation Trust Fund                                    | 01/21/20   | 01/21/22 | 26,000              | 26,000           |
| 20265   | Eastern Research Group  | Technical Assistance with Heavy-Duty Vehicle Emissions Testing, Analyses & Engine Development & Applications                           | 06/17/20   | 06/16/22 | 50,000              | 50,000           |
| 21260   | Fred Minassian  | Technical Assistance with Incentive and Research and Development Programs  | 04/13/21   | 10/12/22 | 75,000              | 75,000           |
| 22032   | Southern California Chinese American Environmental Protection Association | Cosponsor the 2021 Southern California Chinese-American Environmental Protection Association 30-Year Anniversary and Annual Convention | 08/20/21   | 05/31/22 | 1,500               | 20,000           |
| 22096   | AEE Solutions LLC   | Technical Assistance with Heavy-Duty Vehicle Emission Testing, Test Methods and Analysis of Real-World Activity Data                   | 11/08/21   | 11/07/23 | 100,000             | 100,000          |

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## **Appendix C**

### **Final Reports for 2021**

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South Coast AQMD Contract #17065

December 2021

# Installation Services for Installation of EV Chargers at South Coast AQMD Headquarters

## Contractor

Clean Fuel Connection, Inc. (CFCI)

## Cosponsors

South Coast AQMD

## Project Officer

Patricia Kwon

## Background

Clean Fuel Connection, Inc. (CFCI) was chosen by a competitive RFP process for installation of ninety-two (92) Level 2 electric vehicle supply equipment (EVSE) at South Coast AQMD headquarters. Goss Engineering, Inc. was also hired through a competitive RFP process to provide required engineering services prior to the release of an RFP for installation of EV chargers, preparation of construction plans to obtain a permit from the City of Diamond Bar, and engineering services as required during the installation of EV chargers from October 2016 through December 2017.

## Project Objective

CFCI performed the installation services as outlined in the City of Diamond Bar's approved construction plans and line drawings. These installation services included six ADA accessible chargers for both the front lobby entrance and the side entrance closest to conference room GB which is commonly used for public meetings and workshops. These services included working with the hardware provider Broadband Telecom Power, Inc. (BTC), Goss Engineering, and the City of Diamond Bar for permitting approvals.

Additional services included obtaining electrical and trenching permits from the City of Diamond Bar, providing a phased construction plan for work to be performed in different areas of the parking lot to minimize disruption, and performing the final job walk with South Coast AQMD staff and CFCI based on completing items on the final punch list. This also included ensuring compliance with the State of California Governor's Office of Planning and Research and Division of the State Architect EVSE universal charging access guidelines, as well as the

American with Disabilities Act accessibility requirements, SB 854 requirements for Public Works projects, and all applicable building, electrical and safety codes.

## Technology Description

Due to the wide range of cutting-edge alternative fuel technologies that are demonstrated at the South Coast AQMD headquarters facility, even a moderately large scale construction project impacting six areas of the parking lot including upgrade and replacement of three transformers and seven electrical panels, presents technical challenges. In addition, there was an inability to shut down power at the facility for even a short thirty-minute interval due to the need to have continuous power at the facility for Air Quality Management Plan modeling runs and laboratory analyses for resolving toxics issues at metal processing plants in Paramount. Due to the need to comply with South Coast AQMD's Rule 1470 (prohibiting use of a backup natural gas generator to provide power during routine maintenance), replacement of the transformer in the main electrical room took place with the power still on through a "hot connect" procedure.

## Status

CFCI played a critical role in the installation of 92 Level 2 EV charging ports at South Coast AQMD headquarters. Electrical upgrades and hardware installation occurred between October 2016 and April 2017, with minor construction tasks completed in December 2017. CFCI remained under a warranty and maintenance agreement until December 2021.



Locations of EV charging stations installed at South Coast AQMD headquarters

## Results

Coordination between Goss Engineering who developed the approved plans, hardware provider BTC, and the City of Diamond Bar Plan Check department enabled the construction project to be carried out successfully and with a minimum of delays despite technical challenges, delays in receiving equipment, and unprecedented heavy rainfall.



*EV charging stations under the solar carport*

EV charging transactions in December 2017 showed there were over 1,329 charging sessions dispensing 15,309 kWh of electricity for EV chargers serving South Coast AQMD staff, visitors, and the general public. These EV chargers continue to be utilized but to a lesser extent since the COVID pandemic closed South Coast AQMD facilities to the public in March 2020 and have not yet re-opened to the public.

## Benefits

This project showcases the benefits of providing Level 2 EV charging for staff, visitors, and the general public at a large workplace location. On average, South Coast AQMD staff have a twenty-mile one-way commute to work, with some staff having as much as a 45-mile one-way commute. Without workplace charging, staff would be unable to drive their EVs to work and make it home. This results in increased zero emission vehicle miles traveled, particularly during critical morning and evening commuting hours when congestion impacts are at their greatest.

## Project Costs

Installation services for this project totaled \$805,219 and were within the budget for this project. Hardware and Greenlots EVSE networking software were provided under a separate BTC contract for \$367,425. Engineering services to obtain City permits were provided under a separate contract with Goss Engineering

for \$50,000. Total costs for the EVSE installation were \$1.2M.

## Commercialization and Applications

The utilization of engineering services to define the installation phase of the project and assist in providing calculations and revised plans to the City of Diamond Bar assisted greatly in allowing the installation to stay within budget and to be completed within the desired time frame. It is recommended that for the installation of workplace charging at large facilities such as South Coast AQMD headquarters that an engineering firm be available to provide the necessary technical assistance at key points during the project. In particular, the engineering services were critical to define the load of existing panels and ensure proper specifications and upsizing of transformers, panels, conduit, and wiring. This upsizing incorporated not only the planned installation of 92 EVSE but also anticipated future deployments of EV chargers that were likely to occur within the next 5-10 years to future proof the facility. This future proofing enabled staff to later serve as a site host for a new 50 kW DC fast charger with CHAdeMO and CCS1 connectors at the front lobby parking area to better serve EVs capable of fast charging. Another critical service was having an installation warranty with CFCI and a maintenance contract with hardware provider BTC and networking software provider Greenlots to address post installation EVSE issues.

South Coast AQMD Contract #17316

September 2021

## Develop and Demonstrate 10 Zero-Emission Fuel Cell Electric Buses

### Contractor

Center for Transportation and the Environment (CTE)  
Orange County Transportation Authority (OCTA)  
New Flyer  
Air Products  
Trillium

### Cosponsors

California Air Resources Board (CARB)  
South Coast AQMD

### Project Officer

Patricia Kwon

### Background

As part of the CARB-funded Fuel Cell Electric Bus Commercialization Consortium Project (FCEBCC), this project furthers the development of fuel cell technology for transit agencies nationwide. CTE partnered with Orange County Transportation Authority (OCTA) to incorporate ten (10) prototype fuel cell electric transit buses into daily operation, which reduces carbon emissions and air pollutants in the South Coast Air Quality Management District (South Coast AQMD).

### Project Objective

The purpose of the FCEBCC project was to help accelerate the commercialization of zero-emission buses. Besides working to reduce greenhouse gas emissions, strengthen the economy, and improve public health and the environment, this project was also intended to create a financial incentive for industries to invest in clean technologies and develop innovative ways to reduce pollution through the cap-and-trade program.

### Technology Description

While battery-electric vehicle adoption has steadily increased, hydrogen fuel cell electric buses (FCEB) are also a necessary technology for the mass

adoption of zero-emission technologies. FCEBs have an electric drive system that feature a traction motor powered by a battery. The energy supply for an FCEB is on board the bus, where hydrogen, stored in tanks, is converted to electricity using a fuel cell. The electricity from the fuel cell is used to recharge the batteries.

### Status

This project is complete and the final report is on file with the technical details of the project. The project did not encounter any fatal issues, although the project timeline was extended due to infrastructure deployment and bus delivery delays. The first bus was delivered to OCTA in September of 2018, the station was commissioned in January of 2020 and buses completed 40-hour testing in December of 2020.



*New Flyer Xcelsior XHE40 fuel cell bus at OCTA*

### Results

In the first year of deployment, the two fleets had an average fuel economy of 8.46 miles per kg, or roughly 9.56 miles per diesel gallon equivalent. This is about twice that of typical diesel and compressed natural gas (CNG) buses. **Figure 1** illustrates that the buses were able to offset a combined total of 413 Metric Tons CO<sub>2</sub>e compared to their respective baseline fleets (CNG for OCTA, diesel for AC Transit). The energy efficiency of the fuel cell buses was greater than 2x that of comparable CNG buses. However, perhaps the biggest obstacle to adoption of FCEBs seen as a result of this project is vehicle availability.

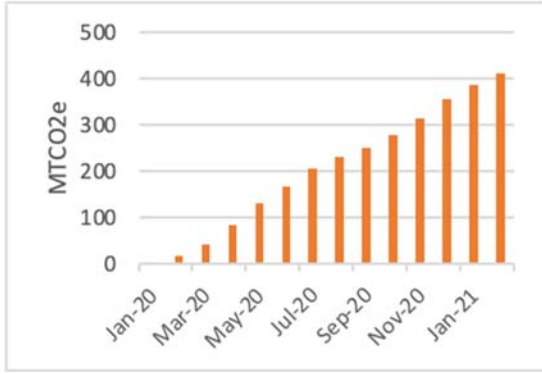


Figure 1. Cumulative GHG Emission Reductions of FCEBs over first year of deployment, from February 09, 2020 through February 28, 2021.

The average fleet availability through the first year of deployment was around 70%, with a maximum availability by month between the two fleets of 80%. Typical transit fleet operators target 85% vehicle availability in order to provide reliable service. As the technology matures and maintenance becomes more routine, FCEBs are expected to meet these targets.

**Benefits**

A key challenge with the overall environmental impacts of fuel cell vehicles is the difficulty of sourcing hydrogen produced renewably. Despite this issue, the FCEBs were still able to provide environmental benefits by eliminating the release of key criteria pollutants such as nitrogen oxides (NOx), reactive organic gases (ROG), and particulate matter (PM10) compared to the agencies’ baseline conventional diesel and CNG fleets. The expected annual emission reductions from the project application, and the actual realized reductions from the first year of deployment, are presented in the following table.

|          | GHG (MTCO2e) | NOx (tons) | ROG (tons) | PM10 (tons) |
|----------|--------------|------------|------------|-------------|
| Expected | 348          | 0.47       | 0.15       | 0.023       |
| Actual   | 413          | 0.29       | 0.09       | 0.014       |

The expected emission reduction calculations assumed a general carbon intensity of the hydrogen fuel supply for California, while the actual calculations are based on the realized carbon intensity of fuel supply, which was significantly

lower. The expected emission reduction calculations also assumed the FCEBs would travel the same number of miles as their baseline fleets. However, due to early maintenance issues, the buses did not meet the target mileage. The agencies expect the buses to meet their respective mileage targets as the maintenance becomes more routine.

Several other transit agencies in the South Coast Air Basin have also expressed interest in integrating fuel cell buses into their fleets including: Big Blue Bus, Foothill Transit, Long Beach Transit, OmniTrans, and SunLine Transit. Assuming these agencies are able to deploy 100 buses in total, replacing conventional diesel vehicles, this technology has the potential to reduce up to 73,450 MTCO2e in the South Coast Air Basin over the lifetime of the vehicles.

**Project Costs**

The following table summarizes the project budget and actual expenditure.

|        |                   | SCAQMD Share | Total        |
|--------|-------------------|--------------|--------------|
| Budget | Buses             | \$1,000,000  | \$13,338,000 |
|        | Facility Upgrades | -            | \$414,819    |
|        | Station           | -            | \$5,486,895  |
| Actual | Buses             | \$1,000,000  | \$12,978,382 |
|        | Facility Upgrades | -            | \$989,377    |
|        | Station           | -            | \$5,403,097  |

**Commercialization and Applications**

This project has already had an impact on the commercialization of FCEBs. There are two American original equipment manufacturers, New Flyer and ENC, that are Buy America compliant and these buses can therefore be purchased as part of other federal funding programs. New Flyer’s XHE40 and XHE60 Xcelsior FCEBs also completed Altoona testing in early 2019, in parallel to this project, which made these buses eligible for purchase through federal, as well as California funding programs, which will only further their adoption. FCEB costs have also dropped steadily since 2004, when FCEB demo bus costs exceeded \$3 million. OEM estimates for a 40-bus order are now around \$1 million.



South Coast AQMD Contract #18151

December 2021

# Develop & Demonstrate Battery Electric Switcher Locomotive

## Contractor

Rail Propulsion Systems

## Cosponsors

Coast Rail Services  
 South Coast AQMD  
 US Environmental Protection Agency (EPA)

## Project Officer

David Cook

## Background

Prior to the start of this project in 2018, there had been several attempts to develop and market battery-based hybrid or pure electric locomotives. Due primarily to the low energy density of the batteries used, new product reliability issues and poor cost benefit relative to the abundance of diesel locomotives available on the used market, these projects were unsuccessful in bringing a battery locomotive to market.

In 2017, following the implementation and subsequent EPA certification of the Blended Aftertreatment System (BATS) emissions reduction upgrade for existing passenger locomotives, Rail Propulsion Systems (RPS) proposed to South Coast AQMD a project for the design, development, and demonstration of a battery locomotive energy system. In 2018 South Coast AQMD notified RPS of available funding (\$210,000) and RPS offered to provide the additional funds, access to the facilities, locomotive platform, and batteries required to support the project.

## Project Objective

The goal of this project was to utilize available funds from South Coast AQMD along with contributions from RPS to demonstrate and assess the viability of a battery locomotive conversion. Further, this project utilized existing “2<sup>nd</sup> life”



Figure 1. The Simple Battery Switcher Locomotive

batteries both for economic reasons and to assess viability for use of 2<sup>nd</sup> life batteries in certain applications as a deferment of, or an alternative to, costly and inefficient recycling of the batteries after being removed from first life services such as electric passenger vehicles. The project required RPS to design, develop and implement a large (300 kW-hr) battery system, power electronics, and related subsystems necessary to convert a diesel locomotive platform to a zero-emissions battery locomotive on a limited budget. Following the conversion, RPS was to assess and report on the performance of the battery locomotive followed by an option for additional in-service operation.

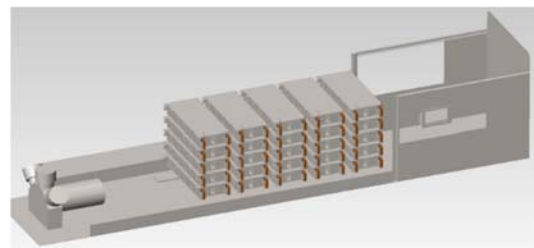


Figure 2. Battery module cans in locomotive chassis

## Technology Description

The RPS conversion package for the Simple Switcher project consists of an air cooled, modular, rack-based battery system, battery management, power electronics, motor driven cooling blowers and air compressor, and a lab view based locomotive control system. The

battery system contains approximately 300kW-hrs of second life Lithium-Ion batteries packaged into fifteen modules that could be individually removed and serviced or replaced. The battery management system consists of local monitoring units that measure the current, voltage and temperature of the batteries in a given module. This data is communicated to and monitored by a central controller unit that conveys data to the power electronics and locomotive control system to process fault indications and command power contactors to isolate specific modules if necessary. The power electronics receive inputs from the locomotive control system and battery management controller which are then processed to manage the flow of current from and to the battery system. The LabVIEW based locomotive controller receives command inputs from the operator control stand for throttle and direction and processes them into outputs to command the traction motor power contactors and the current input from the power electronics.

**Status**

The Simple Switcher completed the performance test requirements of the project, successfully pulling trains of up to five loaded hopper cars in the railyard. Though the testing was successful, the operators on site assessed that, in its current configuration, the 1201 was not sufficient for daily in-service use. The compressed air system on the locomotive did not have sufficient capacity to support the flow and pressure requirements necessary to affectively charge and control the trainline braking system on consists of greater than five cars. Furthermore, the locomotive control system specified in this project was determined to be too simplistic and lacked the ruggedness and features necessary for daily switching use. These two items would need to be addressed through redesign or upgrades requiring additional funds beyond the scope of work of this contract.

**Results and Benefits**

RPS successfully designed, manufactured and demonstrated that its battery locomotive conversion package is capable of powering a locomotive in place of a conventional internal combustion engine and generator package. The systems and related subsystems created in this

project will be further improved and utilized on future RPS battery locomotives. An on-site charging station and related training for the operators were both successfully completed as well. Conversely, the budget constraints for this project did not allow for sufficient upgrade of other systems on the test locomotive resulting in a reduction in the amount of in-service testing that was ultimately conducted as part of the project. Primarily, a more robust compressed air system and a more capable locomotive control system are both required. As for the assessment of 2<sup>nd</sup> life batteries, the results of the testing found the project batteries to be sufficient in energy density and remaining cycle life to support the project locomotive. Ultimately, the labor involved with harvesting and repurposing the second life batteries may outway the perceived cost benefit when compared to sourcing new batteries of alternate compositions that have lower energy density but much higher cycle life performance. Ultimately, replacing diesel switcher locomotives with zero emissions alternatives has the potential to significantly reduce emissions and improve air quality in metropolitan areas particularly in EJ communities where most rail yards are located.

**Project Costs**

| Participant  | Funding            |
|--|--------------------|
| South Coast AQMD<br><i>(pass-thru from US EPA)</i> | \$210,000          |
| Rail Propulsion Systems                            | \$2,059,603        |
| <b>Total</b>                                       | <b>\$2,269,603</b> |

**Commercialization and Applications**

The Simple Battery Switcher project provided a basis for requirements necessary to develop and market battery electric locomotives that would be acceptable to switching railyard operations and commuter rail service. Based on current battery and system development and manufacturing costs, it is estimated that battery switchers can be made available to the market for a retail cost of \$4-6M and passenger locomotives for a cost of \$12-15M for commuter applications. RPS is prepared to deliver battery switcher locomotives by early 2023 or sooner and battery commuter locomotives by 2025



# Demonstrate Zero-Emission Cargo Handling Vehicle at Port of Long Beach

**Contractor**

City of Long Beach Harbor Department  
Port of Long Beach (POLB)

**Cosponsors**

California Air Resources Board (CARB)  
South Coast AQMD

**Project Officer**

Patricia Kwon

**Background**

*C-PORT: The Commercialization of POLB Off-Road Technology (C-PORT) Demonstration* demonstrated the first zero-emission human-operated cargo-handling equipment (CHE) at the Port of Long Beach (POLB). C-PORT is focused on demonstrating zero emission battery electric yard tractors and top handlers since these represent 60% of the CHE utilized at the POLB. Utilizing battery electric yard tractors and top handlers would be a critical way to achieve the POLB’s emission reduction goals as well as meeting the goals in the POLB’s Clean Air Action Plan Update. The Clean Air Action Plan set a goal for zero emission CHE by 2030.

**Project Objective**

C-PORT’s objectives were to design, manufacture, and deploy three battery electric top handlers, one battery electric yard tractor, and one hydrogen fuel cell yard tractor across two port terminals with differing duty cycles; install sufficient infrastructure to support charging and operation of zero emission equipment in revenue service; and demonstrate the proposed equipment in revenue service for at least six months, collecting real-world data on equipment performance. The project also included important stakeholder and community engagement, workforce development and educational components.

**Technology Description**

Three battery electric top handlers were manufactured as a collaboration between original

equipment manufacturer (OEM) Taylor Machine Works, Inc., and the technology developer, BYD Motors, Inc. The battery-electric yard tractor was manufactured as a collaboration between Kalmar USA (OEM) and TransPower/Meritor, Inc. (technology developer). Each OEM provided its own 200kW proprietary charger at a one-to-one vehicle to charger ratio. The fuel cell yard tractor was manufactured as a collaboration between China National Heavy Duty Truck Group Co., Ltd. (OEM) and Loop Energy, Inc. (technology developer). Each of these vehicles represent the first zero emission technologies deployed from these OEMs. The fuel cell yard tractor was not demonstrated due to the lack of engineering documentation to fully address the POLB’s safety and design concerns.



Figure 1. Battery-Electric Kalmar Yard Tractor



Figure 2. Battery-Electric Taylor Top Handler

## Status

C-PORT was a 38-month long project, commencing in June of 2018 and completed in August of 2021. A final report is on file with complete technical details.

## Results

The demonstration of battery electric top handlers and yard tractors was successfully completed. The battery electric yard tractor was able to meet the performance requirements at the Long Beach Container Terminal (LBCT). The battery electric top handlers were not able to meet the performance requirements for the long shifts at the SSA Marine Terminal at the POLB. However, the battery electric top handler deployed at the LBCT was suitable for the required work.

SSA Marine is a busy container terminal where the top handlers have a challenging duty-cycle and are required to operate two entire shifts. As such, operators found that due to the nature of the work and limitations around opportunity charging, the units did not maintain enough battery life to be comfortably used for the full two shifts. The greatest measured battery discharge (usage) during the demonstration was 91% during operations for 7.61 hours. The longest day for the tested SSA Marine diesel top handler was 12.43 hours. A full 29% of the days in which data was collected showed operations longer than 7.61 hours.

Table 1. Daily averages for battery electric and diesel top handlers (top two) and yard tractor (bottom)

| Daily Averages                       | Electric SSA Marine Top Handler #1 | Electric SSA Marine Top Handler #2 | LBCT Top Handler |
|--------------------------------------|------------------------------------|------------------------------------|------------------|
| Energy Use (kWh)                     | 382                                | 301                                | 63               |
| SOC Use (%)                          | 38                                 | 43                                 | 7                |
| Hourly Electricity Use Rate (kWh/hr) | 67                                 | 57                                 | 28               |
| Time Operational (Hours)             | 5.2                                | 4.7                                | 2.6              |
| Speed (mph)                          | 3                                  | 2.5                                | 0.5              |
| Distance (miles/day)                 | 18                                 | 13                                 | 1                |

| Daily Averages             | SSA Marine Diesel Top Handler (a) | SSA Marine Diesel Top Handler (b) |
|----------------------------|-----------------------------------|-----------------------------------|
| Engine Load (%)            | 41                                | 22                                |
| Engine Torque (%)          | 27                                | 41.3                              |
| Time Operational (hours)   | 5                                 | 4.8                               |
| Speed (mph)                | 1.6                               | 1.4                               |
| Distance (miles/day)       | 7.4                               | 8.5                               |
| Fuel Consumption (gal/day) | 29                                | 21.7                              |

| Daily Averages | Electric Yard Tractor | Diesel Yard Tractor                 |
|----------------|-----------------------|-------------------------------------|
|                | 95 kWh                | 28% engine load                     |
|                | 56% of SOC use        | 57% engine torque                   |
|                | 15 kWh/hr             | 6.6 liters per hour of fuel per day |
|                | 6 hours               | 7 hours                             |
|                | 8 mph                 | 5.5 mph                             |
|                | 42 miles per day      | 44 miles per day                    |

Table 2. Greenhouse gas (GHG) and criteria pollutant emission reductions from the demonstration

| Units                    | Net GHG Reductions based on the Demonstration Period | Estimated Avoided NOx Emissions | Estimated Avoided THC Emissions | Estimated Avoided PM Emissions |
|--------------------------|--|---------------------------------|---------------------------------|--------------------------------|
|                          | MTCO <sub>2e</sub>                                   | ton                             | ton                             | ton                            |
| SSA Top Handler 80367    | 49.0   | 0.32                            | 0.00048                         | 0.010                          |
| SSA Top Handler 80368    | 44.3   | 0.28                            | 0.00041                         | 0.009                          |
| LBCT Top Handler BYD     | 17.4   | 0.09                            | 0.00013                         | 0.003                          |
| LBCT Yard Tractor Kalmar | 11.1   | 0.03                            | 0.00000                         | 0.0000007                      |
| <b>Total</b>             | <b>121.7</b>   | <b>0.72</b>                     | <b>0.00103</b>                  | <b>0.022</b>                   |

## Benefits

The project demonstrated that the vehicles were able to provide the expected operational benefits (GHG savings/operating hour). Based on the POLA & POLB 2019 Emission Inventories, deploying battery electric technologies across the entire fleet of yard tractors and top handlers would be equivalent to reducing annual emissions by 237,186 metric tons of CO<sub>2e</sub>, 445.1 tons of NO<sub>x</sub>, 85.8 tons of THC, and 7.2 tons of PM10.

## Project Costs

The total project cost was \$7,784,086. The California Air Resources Board (CARB) awarded \$5,339,820 through its Off-Road Advanced Technology Demonstration Project grant program. Of the required match funding, South Coast AQMD provided \$350,000 and the balance of \$2,184,266.74 was funded by the POLB.

## Commercialization and Applications

The project provided an important first step in full commercialization of these, and other battery electric CHE. Battery electric off-road vehicles, mobile equipment, and CHE are rapidly developing markets, and the knowledge gleaned from C-PORT will be applied to future products developed by Taylor and Kalmar.

Taylor has reported that the next generation of battery electric ZLC-996 series top handler will be a commercialized unit which will feature technology directly evolved from the precommercial C-PORT unit. Kalmar has reported that the information gleaned from C-PORT will be used to improve the next generation of battery electric yard tractors going into production in late 2022.

# Economic and Workforce Impact Analysis of Electric Revolution in Southern California

## Contractor

The Los Angeles County Economic Development Corporation

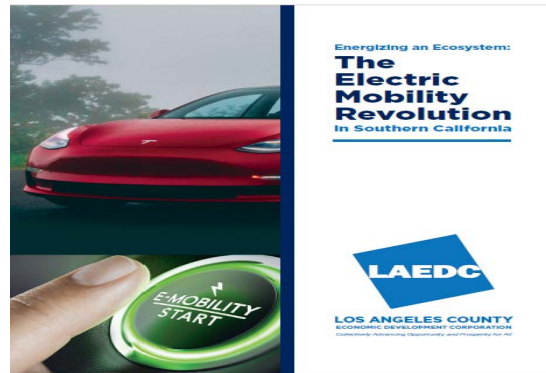
## Cosponsors

Southern California Edison  
Southern California Association of Governments (SCAG)  
Los Angeles County Metropolitan Transportation Authority (LA Metro)  
Los Angeles Department of Water and Power  
South Coast AQMD

## Project Officer

Seungbum Ha

## Technology Description



The final LAEDC Electric Vehicle report is divided into five sections followed by a conclusion.

## Background

The Energizing an Ecosystem: The Electric Mobility Revolution in Southern California (hereafter the LAEDC Electric Vehicle or EV report) was a collaboration between the LAEDC and five regional partners to analyze the electric vehicle ecosystem in the state of California as a whole and the five-county (Los Angeles, Orange, Ventura, San Bernardino and Riverside counties) Southern California region specifically. The purpose of this report was to build on existing LAEDC industry cluster development around electric mobility in addition to LAEDC research expertise in industry cluster and workforce analysis. This report was commissioned as of September 2019.

## Project Objective

The objective of this project was to define and assess the size and scope of the electric vehicle cluster in California from the perspective of firms and employment. The report was also to provide analysis of the scope of electric vehicle (EV) adoption thus far in the state; state and local goals and resources for adoption; the environmental concerns motivating adoption; and policies and programs that could be enacted to further the industrial and workforce development of the EV cluster in California.

The introductory stage qualitative sets the framework for a return of the automotive industry in California in the form of electric and alternative energy mobility. This section also includes a summary of the major findings of the report.

Section two of the report provides an asset mapping of all major firms in the state of California operating in the EV cluster. These firms were broken into three broad categories: passenger (light duty) vehicle companies; bus, truck, and tram companies; and charging and alternative fuel companies. Each category also included a summary of pertinent public and private initiatives and resources.

The third section focuses on the scope of EV deployment in the 5-county Southern California region, with an emphasis on City of Los Angeles and County of Los Angeles strategic plans for EV adoption and the environmental concerns the single out Southern California as a region for concentrated EV adoption and industry cluster development.

Section four provides a definition of the electric vehicle ecosystem across 17 industries as defined by the North American Industry Classification System (NAICS). Estimates and forecasts are given

for the electric vehicle cluster and for specific occupations in the cluster. Finally, consideration is given to jobs that might be lost as result of the EV cluster’s growth.

The final section of the report recommends certain policies, such as new commissions, incentives, and data tools, to motivate the continued growth and success of the EV cluster in California.

## Status

This report was released publicly on March 4<sup>th</sup>, 2020, at the 2020 Veloz Forum in Sacramento, California.

## Results

### Major Findings

#### New EVs to Reach 7 million by 2030

|                          |         |
|--------------------------|---------|
| Annual New Registrations | 565,300 |
| Annual % Change          | 25%     |

#### EV Companies in California

##### Passenger Vehicle

##### Companies

|                       |    |
|-----------------------|----|
| Headquarters          | 13 |
| Design & Tech Studios | 19 |
| Manufacturing         | 4  |
| R&D                   | 6  |

##### Bus, Truck & Tram

##### Companies

|               |    |
|---------------|----|
| Headquarters  | 16 |
| Other Offices | 17 |

##### EV Charging and Alternative Energy

##### Companies

|               |    |
|---------------|----|
| Headquarters  | 31 |
| Other Offices | 6  |

#### EV Employment

|            | 2018    | 2023f   |
|------------|---------|---------|
| California | 275,600 | 312,000 |
| SoCal      | 119,200 | 152,200 |

#### EV Wages

|            | EV Jobs  | Average  |
|------------|----------|----------|
| California | \$91,300 | \$68,500 |
| SoCal      | \$80,900 | \$54,900 |

Estimates by LAEDC

## Benefits

This report is intended to enhance the understanding of the EV cluster in California by estimating the scope of business development in the cluster; the extent to which the cluster does and can provide for meaningful job creation; and advocating for policies and programs to enhance EV adoption and EV-related economic development. This report should aid both public and private sector actors as a data tool demonstrating the significance of the EV ecosystem as a catalyst for long-term economic

growth. These anticipated benefits have not changed from the original inception and commencement of this project.

## Project Costs

### Project Costs by Funder

| Contributor  | Amount           |
|--------------|------------------|
| SoCal Edison | \$35,000         |
| LA Metro     | \$25,000         |
| SCAQMD       | \$10,000         |
| LA DWP       | \$25,000         |
| SCAG         | \$25,000         |
| <b>Total</b> | <b>\$120,000</b> |

### Project Costs by Item

| Item                            | Task Description                                      | Cost             |
|---------------------------------|---|------------------|
| Module 1                        | EV industry landscape analysis                        | \$16,500         |
| Module 2                        | Regional EV supply, demand and externality assessment | \$22,040         |
| Module 3                        | Regional workforce impact analysis                    | \$34,460         |
| Module 4                        | EV Policy Analysis                                    | \$22,000         |
| Infographic printing (estimate) |   | \$500            |
| Copy editor                     |   | \$2,000          |
| Rpt design-(estimate)           |   | \$7,500          |
| LAEDC Strategic Initiatives     |   | \$15,000         |
| <b>Total</b>                    |   | <b>\$120,000</b> |

## Commercialization and Applications

This report is the first of its kind in the state of California in that it takes a comprehensive look at the electric vehicle ecosystem from an industry and workforce standpoint. Most other reports analyze the scope of vehicle adoption and related incentives from a consumption standpoint. This report was created to be a public resource to all parties interested in electric vehicles as a unique industry cluster and who are invested in seeing this cluster grow not just to accomplish environmental policy aims but for economic development and job creation goals.



# Develop and Commercialize a Near-Zero Natural Gas Conversion System for On-Road Medium-Duty Vehicles

## Contractor

Landi Renzo USA Corporation (LRUSA)

## Cosponsors

South Coast AQMD  
US Environmental Protection Agency (EPA)  
California Air Resources Board (CARB)

## Project Officer

Joseph Lopat

## Background

Landi Renzo approached South Coast AQMD in August 2018 to discuss a potential partnership regarding the development of a near-zero emissions 7.3L compressed natural gas (CNG) engine for the automotive industry. Landi Renzo has significant experience in the field of emissions having been a manufacturer of ecological fuel systems and engines for nearly 70 years. Given the strong and growing interest in near-zero nitrogen oxide (NOx) emission engines for commercial use, there is a robust market potential for CNG engines for medium-duty vehicles. CNG is plentiful and can be sourced domestically as renewable natural gas (RNG) is a strong contributor in combating climate change. Based on previous studies it has been shown that fleets using CNG engines can meet air quality regulations more cost effectively.

## Project Objective

The objective of this project was to advance existing CNG engine and aftertreatment technologies to achieve engine NOx emission levels that are at least 90% lower than 2010 heavy-duty NOx emission standards. With this goal in mind, the objective was to modify a recently introduced 7.3-liter gasoline engine and demonstrate a 0.02 g/bhp-hr NOx CARB and EPA certified CNG engine for medium-duty vehicle applications. The initial plans involved changing

controller software and utilizing the latest catalyst technology.

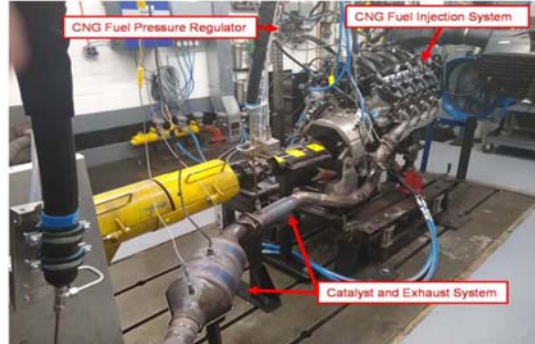


Figure 1: LRUSA / Ford 7.3L CNG Engine on Dynamometer

## Technology Description

The LRUSA CNG system consisted of a CNG fuel system containing a pressure regulator, engine feed lines, high pressure filter and supply, and fuel rail and injectors. All of these were installed on a Ford 7.3-liter engine within a Ford F-450 vehicle and a Ford E-450 vehicle. An original equipment manufacturer (OEM) specified catalyst and exhaust system was used. It was acknowledged that there were other potential projects of this nature that could involve modifications to the exhaust aftertreatment system.

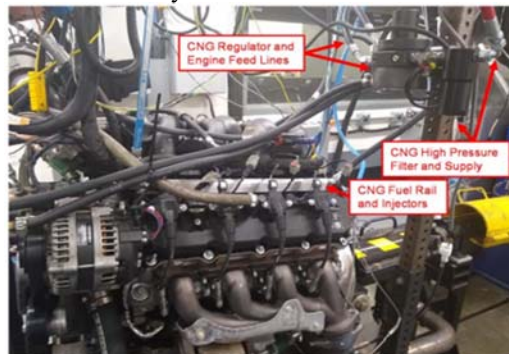


Figure 2: Close up of LRUSA CNG Fuel System Components

**Status**

The LRUSA 7.3-liter CNG engine project completed all eight (8) tasks associated with a successful project per the South Coast AQMD contract. It should be noted that the ultra-low NOx goal of 0.02 g/bhp-hr was not achieved with the 7.3L engine’s stock exhaust aftertreatment system. The certification results of 0.038 g/bhp-hr still resulted in achieving a lower NOx standard.

**Results and Benefits**

In January 2020, Landi Renzo USA completed engine durability and OEM compliance testing of the Ford 7.3-liter CNG engine. The test satisfied the requirements specified by Ford in their Qualified Vehicle Modifier Bulletin Q185-R1 (Found at <https://fordbbas.com/bulletins>). Engine emissions development, emissions testing, and on-board diagnostics testing was completed per the test plan arranged with EPA in early February 2020. On March 25, 2020, the EPA issued LRUSA a Certificate of Conformity with the Clean Air Act for the Ford 7.3-liter CNG engine. In April 2020, the demonstration vehicle was completed and shipped to the Ford wind tunnel in Allen Park, MI to undergo chassis-level durability and OEM compliance testing. The vehicle was also reviewed and scored by Ford QVM staff to ensure that the design, build, and components meet or exceed the performance and quality standards set forth by the QVM program. After the OEM chassis-level testing was completed, the vehicle returned to California to continue on-road testing and development. Official CARB testing in our CFR 1065 compliant lab with CARB certification fuel was completed June 2020, and achieved NOx emissions of 0.038 g/bhp-hr. Despite all the delays caused by the Covid-19 pandemic, LRUSA received a conditional CARB EO November 17, 2020.

or pulling forward the production of Ford’s catalyst system for an ultra-low NOx 7.3-liter gasoline engine for use in a Landi near-zero NOx system. Because of the time and resource constraints and the realities of working around the Covid-19 crisis, LRUSA was limited to utilizing the stock exhaust aftertreatment components for testing. LRUSA believes that with an improved aftertreatment system and further calibration development, a CNG system based on the 7.3-liter engine could achieve the goal of a near-zero NOx system. The Landi Renzo USA 7.3L CNG/RNG engine is currently the cleanest engine available for medium duty vehicles and allowed several fleets to meet their sustainability goals. These fleets include shuttle bus vehicles, food and beverage delivery trucks, general delivery vehicles etc. The Landi Renzo USA 7.3L engine covers a wide array of vocational vehicles that operate in high non-attainment areas, such as airports (e.g., shuttle buses). This is particularly key as Landi Renzo exclusively supplies to the #1 bus dealer in the United States.

**Project Costs**

| <b>Participant</b> | <b>Funding</b>     |
|--------------------|--------------------|
| South Coast AQMD   | \$600,000          |
| Landi Renzo USA    | \$900,000          |
| <b>Total</b>       | <b>\$1,500,000</b> |

**Commercialization and Applications**

Landi Renzo and Ford initially identified two possible development paths to meet the near-zero NOx target using either 7.3-liter chassis cert catalyst systems (used on lower gross vehicle weight rating chassis such as the MY2021 E-350)

# Develop and Demonstrate Vessel Performance Management Software and Equipment

## Contractor

California State University Maritime Academy  
SkySail GmbH  
Krohne Messtechnik GmbH  
Alliance Marine Inc.

## Cosponsors

Bay Area Air Quality Management District  
South Coast AQMD  
Cal State University Maritime Academy Maritime Administration

## Project Officer

Naveen Berry

## Technology Description

The V-PER Performance Monitoring System receives input from various peripheral instruments and measurements i.e. fuel meters, anemometers, shaft torque, gyro compass, and engine/ship speed. The integration of the existing navigation, weather, and engineering data, combined with data from the new V-PER inertial measuring unit (IMU) are used to reflect real-time conditions experienced by the vessel such that the Master can make more informed decisions on economically and environmentally sound operations via course and speed selection or vessel trim.

## Status

The installation of commercially available marine monitoring equipment combined with standardized emissions testing practices resulted in a highly complex logistical process impacting the original performance period objective. The conceptual phase of securing extramural funding support occupied most of 2017. Additionally, challenges presented themselves in acquisitions, software installation and vessel logistics which consumed all of 2018 and much of 2019. Control system electronic communication issues were difficult to identify and address which caused a delay in the finalization of this project. Though functional, we anticipate full capability to be realized in the spring of 2020 with significant sea time usage by the summer of 2020 on our blue water cruise on the Training Ship Golden Bear.

## Background

This project, funded by the Bay Area Air Quality Management District (BAAQMD) and South Coast AQMD along with others, constituted much of the first phase of a proposed multi-year project to incorporate and evaluate emissions reduction strategies. The SkySail V-PER project was associated with the California State University Maritime Academy’s (Cal Maritime) Golden Bear Research Center (GBRC) and centered on the 500-foot long United States Training Ship (USTS) Golden Bear.

## Project Objective

The V-PER performance management package, a novel marine monitoring system, focused on a decrease in exhaust emissions associated with decreased fuel consumption. The package was to be installed and qualitatively evaluated on the USTS Golden Bear by Cal State Maritime staff. This required associated upgrades be made to fuel sensors essential to the operation and evaluation of that equipment. Along with these upgrades, a baseline emissions qualitative profile for the vessel was developed and shared with sponsors. Though it is understood that the deliverable for this phase will be a qualitative evaluation, it is hoped that the work will lead to additional phases and a more lengthy quantitative assessment phase.

*Picture of technology that has been supported with SCAQMD/Technology Advancement cosponsorship, if applicable. The picture, preferably a photograph, should clearly illustrate the technology. The size of the image should be about 3x3 to fit this two column format. The picture of the technology should be positioned on the front page*

## Results

Though the time frame for the project extended beyond what was originally anticipated, it is now

moving toward a successful conclusion. The project will continue with a longitudinal evaluation of SkySail V-PER along with additional assessments being made.

Location of the primary Human Machine Interface (HMI) for the SkySail V-PER in a central location adjacent to engine and navigational controls will provide the Master and Bridge personnel with convenient real-time feedback on propulsion responses to course and speed changes as well as adjustments to vessel loading (Figure 1).

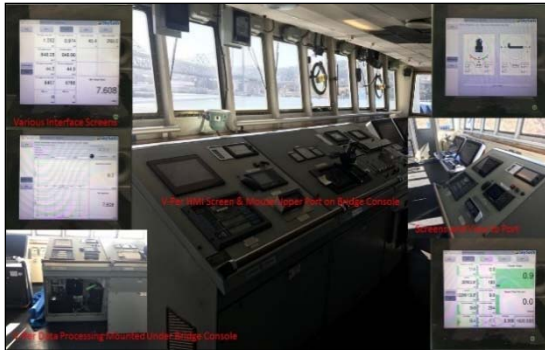


Figure 1: V-PER Installed on Training Ship Golden Bear Bridge

The HMI display is a clean and clear screen providing the viewer dimmable access to well laid out and intuitive pages. If there is any initial criticism of the provided display, it is that it is not a touch screen and requires a separate mouse or track-ball plus keyboard for input. Given current hardware technology and availability, this lack of a more cleanly integrated HMI component is somewhat surprising. Several of the intended users have expressed disappointment that a mouse and keyboard connection had to be provided on the console. Final assessment of this interface will be made after several more months of use through mid-2020.

Though the HMI provided an attractive, single-screen interface for the speed, wind direction, vessel trim and course, there was no added value given that all this data was available at nearly the same location on the bridge. As a monitoring tool, it is understood that further efforts would be required to gain engine and fuel data to fully realize the system potential.

All involved parties eagerly anticipate availability for the upcoming 2020 summer cruise in order to enhance vessel management in what is primarily an optimization effort. The Master and Chief Engineer, along with their crew must take port schedules,

weather, fuel consumption and regulatory requirements into account in finding the best and safest path for delivering their cargos or completing a mission. These new tools and immediate feedback promise to greatly enhance that optimization capability.

## Benefits

The primary benefit of the V-PER will be the ability to accurately monitor and assess vessel conditions affecting fuel consumption and associated exhaust emissions. Location of the primary HMI for the SkySail V-PER in a central location adjacent to engine and navigational controls will provide the Master and Bridge personnel with convenient real-time feedback on propulsion responses to course and speed changes as well as adjustments to vessel loading. This real-time data, provided in a clear and easy-to-read format, will likely be an appreciated tool in the day-to-day voyage planning.

## Project Costs

The project costs totaled \$135,230.14. Of this amount, South Coast AQMD and BAAQMD each paid \$50,086. CSU Maritime Academy had a cost share of \$35,058.14. The project came in at \$2,194.14 over budget. This additional amount was cost shared by CSU Maritime Academy. The cost overage is a result of unexpected customs duties of \$1,491.08, along with supplies and materials, and the associated overhead costs.

## Commercialization and Applications

The SkySail V-PER performance management software system and associated wind energy propulsion equipment are commercially available, but in limited use. The intent of this project was to demonstrate and evaluate the commercial advantages that might be achieved by shipowners and operators employing these and similar technologies. Our detailed benchmarking of significant installation challenges provided to our sponsors should be of significant value to entities interested in acquiring and utilizing performance management systems and will help inform commercial or market viability of the products. Further detailed quantitative assessments and results identifying reduced consumption and emissions results will ultimately determine the market competitiveness of this system.



# Conduct Emission Study on Use of Alternative Diesel Blends in Off-Road Heavy-Duty Engines

## Contractor

University of California Riverside, Center for Environmental Research and Technology.

## Cosponsors

California Air Resources Board (CARB)  
South Coast AQMD

## Project Officer

Joseph Lopat

## Background

On-road and off-road diesel engines have long been recognized as major sources of oxides of nitrogen (NO<sub>x</sub>), particulate matter (PM) and other toxic pollutants. The use of alternative diesel fuel formulations, such as renewable diesel will address California's efforts in reducing NO<sub>x</sub> and PM emissions from diesel engines and improve local and regional air quality. Although there are many studies characterizing combustion performance and emissions of renewable diesel and biodiesel, there is a lack of literature on the emissions characterization of renewable diesel-biodiesel blends. This is particularly true for blends in higher cetane diesel fuels, such as the California Air Resources Board (CARB) Ultra Low Sulfur Diesel (ULSD), which is the focus of CARB's Low Emission Diesel (LED) regulatory effort. There is also limited information available on the impacts of renewable diesel and renewable diesel blends in new technology diesel engines that are equipped with diesel particulate filters (DPFs) and selective catalytic reductors (SCR) or in off-road engines, where the benefits of renewable diesel fuel might be more long lasting due to their less stringent emissions standards over time. The characterization of toxic pollutants from these fuel blends is also limited and needs to be expanded.

## Project Objective

The goals of this study were to confirm and quantify the NO<sub>x</sub>, PM, ultrafine particles, and polycyclic aromatic hydrocarbons (PAHs) and their nitrated derivatives (nitro-PAHs) from the renewable diesel use in legacy off-road engines,

as well as the potential benefits of renewable diesel in modern on-road engines with robust aftertreatment controls.

## Technology Description

For this program, 2 heavy-duty diesel engines were used, including a legacy off-road John Deere engine without aftertreatment controls and a modern on-road Cummins engine equipped with diesel oxidation catalyst (DOC), DPF, and SCR systems. The off-road engine is typically used for construction applications. The on-road Cummins engine was selected because Cummins represents a good share of the California diesel engine market in Class 7 or Class 8 trucks. The test fuels included a reference CARB ULSD, used as a baseline fuel, a neat 100 percent or 99 percent renewable diesel fuel (R100/R99), a blend of 65 percent renewable diesel and 35 percent biodiesel (R65/B35), and a blend of 50 percent renewable diesel and 50 percent biodiesel (R50/B50). Testing was performed using federal testing procedures (FTP), the non-road-tested cycle (NRTC), and steady state ramped modal cycles. For the John Deere engine, a 5-mode D2 ISO 8718 cycle was used.

## Status

This project was successfully completed in March 2021. Comprehensive data analysis for the toxic pollutants was completed in May 2021.



Figure 1: John Deere off-road engine in testing lab

## Results

Results showed important NO<sub>x</sub> reductions with renewable diesel for the off-road engine compared to CARB ULSD. The R65/B35 showed no statistically significant differences compared to the CARB ULSD for the D2 and for the NRTC. The R50/B50 showed statistically significant increases in NO<sub>x</sub> emissions for the D2 and NRTC compared to the CARB ULSD. For the on-road

Cummins engine, no statistically significant differences were seen between the CARB ULSD and R100 over either the FTP or ramped modal cycles (RMCs). R65/B35 and R50/B50 showed statistically significant increases in NOx compared to CARB ULSD. The use of renewable diesel will likely provide NOx emission benefits from older construction engines with no aftertreatment and will not adversely affect air quality and ozone formation from newer on-road engines.

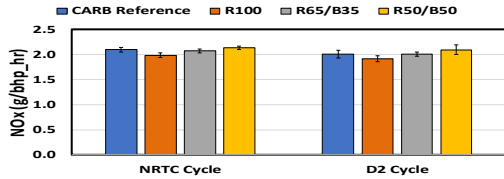


Table 1: NOx emissions for the John Deere engine

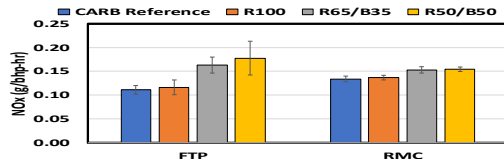


Table 2: NOx emissions for the Cummins engine

For the John Deere engine, PM emissions showed large reductions with R100 and the biodiesel blends. For the Cummins engine, PM mass emissions were found in very low levels due to the presence of DPF. Total and solid particle number emissions were generally lower for the biofuels compared to CARB ULSD. The biodiesel blends resulted in larger reductions of total and solid particle number emissions due to the oxygen content in the biodiesel molecule.

Formaldehyde and acetaldehyde were the predominant aldehydes in the tailpipe for both engines. Trends for lower carbonyl emissions were observed for the biofuels. Total gas- and particle-phase PAH emissions were significantly lower for the John Deere engine compared to the DOC/DPF-equipped engine. This finding suggests that modern heavy-duty diesel (HDD) engines equipped with robust aftertreatment controls will reduce the emissions exposures from toxic, mutagenic, and carcinogenic compounds that contribute to adverse health effects. For both engines, the use of biofuels showed reductions in particle- and gas-phase PAH emissions compared to CARB ULSD. These reductions were more pronounced with the higher biodiesel blends. Nitrate PAH emissions were seen in significantly lower levels than their parent PAHs. Nitrate PAH emissions showed mixed results

with the biofuels with no consistent fuel trends. However, nitro-PAH concentrations for the DPF-equipped Cummins engine were relatively higher than those of the John Deere engine without aftertreatment controls. This phenomenon was due to the de-novo formation of nitro-PAHs inside the DPF system via nitration reactions of the parent PAHs, suggesting that DPF-equipped engines may form elevated emissions of the highly toxic and carcinogenic nitro-PAHs.

Overall, renewable diesel and its blends with biodiesel showed lower carcinogenic potential, as well as reduced ozone forming potential compared to CARB ULSD. Our findings suggest that these fuels can provide a strong pathway for emissions and emissions toxicity reductions from heavy-duty diesel applications in the South Coast Air Basin.

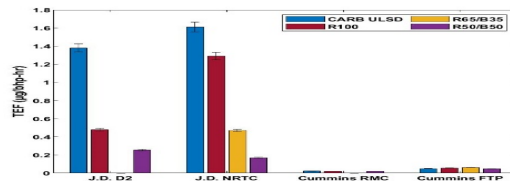


Table 3: Total grams produced per brake HP per hour

## Benefits

It is important to understand the emissions from current and older HDD engines with renewable diesel. Our findings suggest that these fuels can provide a strong pathway for emissions and emissions toxicity reductions from heavy-duty diesel applications in the South Coast Air Basin. This study provides a roadmap for the widespread use of these fuel formulations not only for on-road diesel engines, but also for off-road applications including construction, agricultural, marine, and locomotives. These fuels can also help achieve CARB LED standard and contribute to the Governor’s diesel emissions reduction target for California.

## Project Costs

|                     |           |
|---------------------|-----------|
|                     | SCAQMD    |
| Testing & Reporting | \$261,000 |

## Commercialization and Applications

It is expected that liquid renewable diesel fuels will play a major role in heavy-duty transportation for in off-road diesel applications. Their use will likely provide emissions and air quality benefits and will likely reduce emissions toxicity and adverse health effect.

# Evaluate Meteorological Factors and Trends Contributing to Recent Poor Air Quality in the Basin

## Contractor

University of California, Riverside

## Cosponsors

South Coast AQMD

## Project Officer

Sang-Mi Lee

## Background

The South Coast Air Basin (SCAB) of California has achieved tremendous reductions in ozone and particulate matter (PM, particularly fine PM, or PM<sub>2.5</sub>) levels over the last decades but has recently experienced a leveling off of the reductions and even an uptick in ozone in 2016 and 2017. The immediate question is why? Also, how much of this uptick is related to meteorological factors versus a response to emissions changes from mobile and stationary sources?

## Project Objective

The main objective of this project was to find why the ambient ozone and PM<sub>2.5</sub> levels in the South Coast Air Basin have plateaued in the past few years and to provide a robust understanding of the likely causes that led to the worsening of ozone and PM air quality in recent years. The results from the study will assist staff in better understanding the complex dynamics of air pollution and weather impacts and also help to develop more effective control strategies to improve air quality under changing climate conditions.

## Technology Description

The study employed long-term records of air quality data, emissions inventories and detailed meteorological information (from observations and models) to separate the contribution of meteorology and climate impacts from the effects of emission changes due to cleaner technologies

and air quality agencies' regulations. The study also used satellite-derived data on trace species loadings (e.g., nitrogen dioxide (NO<sub>2</sub>), formaldehyde (HCHO) and ozone (O<sub>3</sub>)) 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.

## Status

The study was expected to be complete by September of 2021. A no-cost extension was granted to accommodate the setbacks in research progress due to the COVID pandemic. Progress reports have been periodically provided to South Coast AQMD, and most tasks have been completed. The final report is being finalized and will be provided to South Coast AQMD staff for final review.

## Results

Preliminary results show that temperature is the dominant parameter that drives ozone high concentrations. Four different approaches were used in this study. The linear regression models, chemical transport models, and machine learning techniques indicate that higher temperatures lead to higher ozone concentrations, and as a result, general global warming is increasing the potential for high ozone events. High temperatures are also generally accompanied with stagnation that promotes pollutant concentration buildup. Meteorological conditions during La Nina phenomenon also contribute to a higher concentration of ozone. The effect of meteorological conditions on PM<sub>2.5</sub> concentration is more widely variable, as higher temperatures may lead to lowering ammonium nitrate concentrations while increasing other particulate matter components.

Using the four different approaches to accomplish the main objective provides a higher level of confidence in the findings of the study. Results are

consistent and complementary among the four approaches.

### **Benefits**

The project results provide a comprehensive analysis on the factors that lead to increasing ozone concentrations despite the decrease in ozone precursor emissions. While there are uncertainties associated with the use of any one of the analysis techniques employed in the study (regression modeling, chemical transport modeling, satellite observations, machine learning), results improve our understanding of why ozone may have increased in the past few years.

### **Project Costs**

The total cost of the study was \$188,798. The first three quarterly reports were provided earlier in 2020, and payment for \$113,277 was processed. The remaining \$75,521 will be paid once the final report is submitted and approved.

### **Commercialization and Applications**

This report will be posted on South Coast AQMD's website and made available to the general public. Several organizations have already expressed high interest in learning the results and conclusions of the report. This report will help South Coast AQMD and the people living in the South Coast Air Basin to better understand ozone dynamics and the meteorological parameters that affects smog formation.

South Coast AQMD Contract # 15635

September 2021

# ZECT II-Development and Demonstration of 1 Class 8 Fuel Cell Range Extended Electric Drayage Truck

## Contractor

Center for Transportation and the Environment  
(CTE)

## Cosponsors

US Department of Energy (DOE)  
California Energy Commission (CEC)  
Ports Technology Advancement Program (TAP)  
South Coast AQMD

## Project Officer

Seungbum Ha

## Background

The Fuel Cell Technologies Office (FCTO) is a key component of the Department of Energy's (DOE) Energy Efficiency and Renewable Energy (EERE) portfolio. The FCTO aims to provide clean, safe, secure, affordable, and reliable energy from diverse domestic resources, providing the benefits of increased energy security and reduced criteria pollutants and greenhouse gas (GHG) emissions.

In April 2014, DOE released DE-FOA-0001106: Zero Emission Cargo Transport II (ZECT II) Demonstration. This funding opportunity sought "to focus on accelerating the introduction and penetration of Zero Emission Carbon Transportation II (ZECT II) technologies." The FOA defined ZECT technologies as, "those that produce zero emissions from the transport vehicle (or other equipment) which propels cargo for all or large portions of their duty cycle."

South Coast AQMD wrote a proposal combining the DOE funding with funding from the California Energy Commission (CEC) and the Ports Technology Advancement Program (TAP). South Coast AQMD proposed to build and demonstrate trucks from three different teams as well as provide a single fueling infrastructure for all three teams. The Center for Transportation and the Environment (CTE) partnered with BAE Systems; Kenworth, a division of PACCAR; Total Transportation Services (TTSI); Ballard Power Systems; and

World CNG to form one team for this project. The other two teams were led by Transpower and US Hybrid.

In February 2016, South Coast AQMD executed a contract with CTE to lead the team developing the Kenworth/BAE truck as well as the fueling infrastructure for all three teams.



Figure 1: Zero Emission Electric Drayage Truck with Fuel Cell Range Extender

## Project Objective

The goal of this project was to build a robust zero-emission, heavy-duty Class 8 drayage fuel cell truck that can effectively demonstrate reliable service transporting up to 80,000 lbs. on multiple service routes with differing duty cycles. The intent was to leverage the success of tier one technology companies experienced at building fuel cell, hybrid-electric propulsion systems for heavy-duty transit buses. Working in partnership with Kenworth, a leading heavy-duty truck original equipment manufacturer (OEM), the project engineered and built a prototype vehicle that was then demonstrated and evaluated over a 24-month deployment on regularly scheduled routes serving outlying communities off the I-710 freeway in Los Angeles. Performance and operations data collected during the demonstration phase will help identify the pathways and barriers to commercialization.

## Technology Description

The purpose of this project is to accelerate deployment of zero-emission cargo transport technologies that reduce harmful diesel emissions, petroleum consumption, and GHGs in surrounding communities along goods movement corridors. To achieve this purpose, the project team developed a zero-emission battery electric Class 8 drayage truck

with a hydrogen fuel cell range extender. This prototype truck then demonstrated its use in goods movement operations between the Ports of Los Angeles and Long Beach and the near-dock rail yards and warehouses.

To develop the initial truck prototype, the project team adapted a hybrid electric fuel cell propulsion system that is currently used for transit buses so that it was suitable for a Class 8 truck used in a drayage application. The power output of the electric drive train was two electric motors with 270 kW combined power output, comparable to a current Class 8 truck engine's power output. One absorption chiller (AC) traction motor was mounted on each rear drive axle, and the electric drive train was designed to be fully redundant. The vehicle operates using 100 kWh Li-ion batteries, engaging the 85 kW (net) fuel cell system only when the batteries reach a specified state-of-charge (SOC). The hydrogen storage capacity is 30 kg (25 kg usable), which will provide approximately 112 miles of range between refueling.

### Status

The team achieved the primary goal of the project, which was to make significant strides developing zero-emission technologies for heavy-duty Class 8 trucks that would accelerate the improvement of air quality in southern California transportation corridors.

### Results

Kenworth and BAE Systems collaborated to develop the preliminary vehicle design including mechanical layout and installation drawings. The preliminary design was based on the defined operational requirements as well as duty cycle information from a diesel-equivalent vehicle. To finalize the vehicle design, a combined critical design review and pre-production meeting was held at Kenworth Research and Development Center in Renton, WA.



Figure 2: Overview of truck layout

Air Products' mobile refueler performed consistently throughout the demonstration, but mobile fueling infrastructure adds cost, time, and risk that can only be justified for a small, temporary

demonstration. An advantage for larger future deployments and for the heavy-duty vehicle market in general is investing in permanent on-site infrastructure. This will contribute to the cost-reduction goals achieved by mass deployment and shared resources. Expanding fueling infrastructure also guarantees the demand that hydrogen suppliers require to lower costs.

### Benefits

The specific design and development assessments and observations included the determination that the supply base is not yet ready for this technology. It was observed that the routing design is integral to the chassis layout, that there are currently too many connections (high voltage, low voltage, CAN, cooling, etc.), and that the high voltage interlocks are vital for functional safety. It was noted that minimizing to two voltages was difficult, cooling was a big challenge, and the battery management systems need self-diagnostics and auto-recovery. It was also determined that the power electronics firmware must become more automated, that human-machine-interface (HMI) is critical and that the procedures and infrastructure for vehicle testing are complex.

### Project Costs

The total project cost was \$7,109,384. South Coast AQMD provided \$821,198. An additional \$3,554,691 was provided by the DOE. The CEC provided \$2,400,000 and \$283,495 was provided by the Port's TAP program. The contractor provided the remaining \$50,000 as their cost share.

### Commercialization and Applications

Overall, the ZECT demonstration has laid the foundations for the commercialization of fuel cell electric heavy-duty trucks by successfully deploying the vehicle into TTSI's daily drayage operations. The lessons learned from demonstrating this prototype vehicle have informed improvements to both vehicle system design and manufacturing processes. By utilizing permanent on-site fueling infrastructure or existing public fueling infrastructure, increasing availability of off-the-shelf components, and achieving gains in efficiency of next generation technology, fuel cell electric trucks can enter the market at costs competitive with gasoline and diesel equivalents. The penetration of these zero-emission technologies into the heavy-duty market will maximize the impact to emissions reductions and help achieve local air quality targets on time.



## Participate in California Fuel Cell Partnership for CY 2021

### Contractor

Frontier Energy Inc.

### Cosponsors

South Coast AQMD  
Automakers, energy companies, local, state federal public agencies, technology companies, universities, transit agencies and others.

### Project Officer

Lisa Mirisola

### Background

Originally 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 Champion members (executive board level), 9 Champion members (steering team level), and 44 associate members. The focus is on furthering commercialization of fuel cell vehicles, fueling infrastructure technologies and renewable and decarbonized hydrogen production.

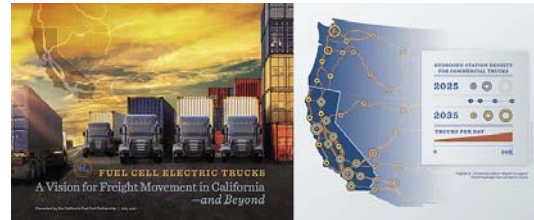
### Project Objectives

The goals for 2021 included the following:

- Identify technology challenges and information gaps within the state's hydrogen station network, and work collaboratively with members to advance the market
- Coordinate and collaborate on approaches to achieving an initial 200 hydrogen stations expanding to a state-wide sustainable infrastructure network in California
- Identify new concepts and approaches to initiate exponential station network growth for light- and heavy-duty applications
- 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 within California and have plans to expand activities in 2022 to advance the zero-emission vehicle (ZEV) technology benefits in-state and nationally. The final report covers the South Coast AQMD for 2021 membership. This contract was completed on schedule.



Graphic 1 - CaFCP published its truck vision in August, calling for 200 stations serving 70,000 heavy-duty fuel cell electric trucks by 2035.

### 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 second generation Mirai. Fuel cell bus operators include AC Transit, Sunline Transit, Orange County Transportation Authority and UC Irvine Student Transportation for a combined 46 buses, with 96 in the coming year or two, including Foothill Transit, Long Beach Transit, Golden Empire Transit, and others. More transit agencies are expected to adopt fuel cell buses over the next 5 to 10 years as they implement the Innovative Clean Transit regulation. Class 8 fuel cell drayage trucks include a Ballard powered BAE/Kenworth truck, the Hydrogenics fuel cell powered TransPower truck, Hyundai Xcient trucks and Toyota's Portal trucks.

### Results

Specific accomplishments include:

- Since 2015, more than 12,000 consumers and fleets have purchased or leased passenger FCEVs
- Transit agencies have 48 fuel cell electric buses in operation and more than 96 funded

- 48 plus light-duty retail hydrogen stations in operation in California and 124 in development; 4 bus stations in operation and 3 in early development, and 2 truck stations in operation, 2 in development and another 5 funded
- CaFCP staff and members continue to conduct targeted outreach and education 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 fuel cell electric vehicle (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 a truck vision document in 2021 which calls for 200 stations serving 70,000 trucks by 2035. Early discussions are under way for an implementation road map for California and western states.

## Benefits

Compared to conventional vehicles, fuel cell vehicles offer zero smog-forming emissions, reduced water pollution from oil leaks, higher efficiency, and much quieter and smoother operation. When renewable fuels and electricity are used as a source for hydrogen, fuel cell vehicles also encourage greater energy diversity and lower greenhouse gas emissions (CO<sub>2</sub>).

By combining efforts, the CaFCP can accelerate and improve the commercialization process for all categories of vehicles: passenger, bus, truck, etc. The members have a shared vision about the potential of fuel cells as a practical solution to many of California's environmental issues and similar issues around the world. The CaFCP provides a unique forum where infrastructure, technical and interface challenges can be identified early, discussed, and potentially resolved through cooperative efforts.

## Project Costs

Auto members provide vehicles along with the staff and facilities to support them. Energy members engage in fueling infrastructure activities, including hydrogen production. CaFCP's annual operating budget is about \$1.4 million, and includes operating costs, program administration, joint studies and public outreach and education. All members make annual contributions towards the common budget with executive government members making an annual contribution of approximately \$40,000. Some members contribute additional in-kind products and services to accelerate specific project and program activities.

## 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 2022, the primary goals are the same as the 2021 goals listed above but have been shifting to be more inclusive of heavy-duty vehicle applications due to the adoption of regulations for transit bus fleets and heavy-duty trucks as well as the technology's potential to significantly improve emissions in these applications.



South Coast AQMD Contract #15618

February 2021

## Installation of Eight Hydrogen Stations in Various Cities

### Contractor

FirstElement Fuel, Inc.

### Cosponsors

California Energy Commission  
South Coast AQMD

### Project Officer

Patricia Kwon

### Background

The California Energy Commission (CEC) issued solicitation PON-13-607 to provide funding opportunities under the ARFVT Program for projects which expand the network of publicly accessible hydrogen fueling stations to serve the current population of fuel cell vehicles (FCVs) and to also accommodate the planned large-scale roll-out of FCVs commencing between 2015 and 2016.

South Coast AQMD is a co-sponsor for this project.

### Project Objective

The objective of this project is to build and install eight public access hydrogen fueling stations in the cities of South Pasadena, Los Angeles (2 stations), Long Beach, Costa Mesa, La Canada Flintridge, Laguna Niguel and Lake Forest.

Six of the stations will have delivered hydrogen with 33% renewable content, and the remaining two stations will have 100% renewable hydrogen delivered. The fueling stations will be capable of delivering up to 100 kg of hydrogen per day nominal capacity, with a 35 kg per hour peak Type A fill. They will be designed to be easily expandable in the future. The stations will be able to fuel multiple vehicles back-to-back without delay to avoid congestion.

### Technology Description

Hydrogen fuel cell electric drive technology offers tremendous potential for the light-duty passenger vehicle market and medium- and heavy-duty truck and bus markets. These vehicles have zero tailpipe

emissions, and the carbon footprint is nearly the same as plug-in electric vehicles.

The hydrogen stations installed under this contract must use a minimum average of 33% renewable hydrogen on a per kg basis through direct physical pathways (on-site or offsite production).

### Status

Seven out of eight public access hydrogen fueling stations have been installed and are currently in operation. The following table summarizes the completion dates along with key milestone dates of our project. Note that final reports are on file with complete technical details of the project.

| Station                 | Develop    | Delivery   | Testing    | Completion |
|-------------------------|------------|------------|------------|------------|
| South Pasadena          | 8/26/2016  | 1/17/2017  | 2/22/2017  | 4/10/2017  |
| Los Angeles (Hollywood) | 11/16/2015 | 3/28/2016  | 4/30/2016  | 11/10/2016 |
| Los Angeles (PDR)       | 11/16/2015 | 4/12/2016  | 5/29/2016  | 8/18/2016  |
| Long Beach              | 6/22/2015  | 9/9/2015   | 10/30/2015 | 2/22/2016  |
| Costa Mesa              | 8/3/2015   | 10/13/2015 | 12/2/2015  | 1/21/2016  |
| La Canada Flintridge    | 8/20/2015  | 10/14/2015 | 12/9/2015  | 1/25/2016  |
| Laguna Niguel           |            |            |            |            |
| Lake Forest             | 8/6/2015   | 10/14/2015 | 2/27/2016  | 3/18/2016  |

The location of the remaining one station (Laguna Niguel) was relocated and the CEC approved location for this station was not located within South Coast AQMD jurisdiction.



Photo of installed Hydrogen Station at La Canada Flintridge. Source: FirstElement Fuel, Inc.

### Results

Per California Senate Bill 1505, Environmental Standards for Hydrogen Production, at least one

third of the hydrogen sold by FirstElement’s state funded hydrogen refueling stations will be produced from renewable sources. Hydrogen is supplied to the hydrogen fueling stations from Air Products’ hydrogen production facilities in Wilmington/Carson, CA. Renewable biogas will be procured as feedstock for the facilities, resulting in delivered hydrogen product that meets the requirements of this PON and the 33.3% renewable hydrogen requirements of California SB 1505. Renewable hydrogen at 100% is achievable through the same supply pathway, however at a higher cost.

Air Products currently has a contract for sourcing of the renewable biogas that meets Public Resources Code Section 2574(b)(1). Air Products’ biogas supply for this project is being sourced outside of California and transported to California with connection to a natural gas pipeline in the Western Electricity Coordinating Council (WECC) region that delivers gas into California.

As of July 1, 2019, FirstElement began purchasing and retiring attributes directly through a third party to better increase our renewable supply.

### Benefits

The Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model (GREET) produced by Argonne National Laboratory was used to determine the energy sources and greenhouse gas emissions data presented in the table below. As shown, over two-thirds of the energy feedstock is renewable, very little petroleum is used, and the only tailpipe emissions are water compared to the myriad of pollutants emitted by the combustion of gasoline. The entire well-to-wheels process results in zero greenhouse gas emissions due to our procurement of very low carbon intensity biogas feedstock.

| Energy Sources            | Zero Station (Gaseous Hydrogen) | Multi-Hose True Zero Station (Liquid Hydrogen) | Gasoline Vehicle  |
|---------------------------|---------------------------------|--|---|
| Petroleum                 | 5.20%                           | 1.40%  | 75.50%  |
| Natural Gas               | 16.70%                          | 31.60%   | 18.90%  |
| Coal                      | 0.40%                           | 0.50%  | 0.20%   |
| Renewable                 | 77.70%                          | 66.80%   | 7.10%   |
| <b>Total GHGs</b>         | <i>0 grams/mile</i>             | <i>0 grams/mile</i>                            | <i>428 grams/mile</i>   |
| <b>Tailpipe Emissions</b> | <i>Pure Water</i>               | <i>Pure Water</i>                              | <i>VOC, CO, NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>x</sub>, CH<sub>4</sub>, N<sub>2</sub>O</i> |

### Project Costs

The table below provides the summary of project costs for the program.

| Station                 | CEC                  | SCAQMD            | Match               |
|-------------------------|----------------------|-------------------|---------------------|
| South Pasadena          | 1,451,000            | 100,000           | 925,822             |
| Los Angeles (Hollywood) | 1,451,000            | 200,000           | 591,408             |
| Los Angeles (PDR)       | 1,451,000            | 200,000           | 600,161             |
| Long Beach              | 1,451,000            | 100,000           | 765,719             |
| Costa Mesa              | 1,451,000            | 100,000           | 589,103             |
| La Canada Flintridge    | 1,451,000            | 100,000           | 712,515             |
| Laguna Niguel           | -                    | -                 | -                   |
| Lake Forest             | 1,451,000            | 100,000           | 742,899             |
| <b>Total</b>            | <b>\$ 10,157,000</b> | <b>\$ 900,000</b> | <b>\$ 4,927,628</b> |

### Commercialization and Applications

By adding eight additional stations to the California Hydrogen Fueling Station Network, FirstElement has helped establish the infrastructure needed for the large scale roll out of Fuel Cell Vehicles. As of January 12, 2021, our stations, as part of the network of publicly accessible hydrogen fueling stations, served approximately 8,931 light-duty passenger fuel cell cars.

As this network expands, we see the continued roll out of this technology encouraging growth in the light-duty passenger markets as well as establishing the foundation for growth in the medium- and heavy-duty truck and bus markets.

## Develop and Demonstrate Commercial Mobile Hydrogen Fueler

### Contractor

H2 Frontier Inc

### Cosponsors

California Energy Commission (CEC)  
South Coast AQMD  
US Hybrid  
H2Frontier  
Gas Technology Institute (GTI)

### Project Officer

Lisa Mirisola/Patricia Kwon

### Background

Automakers targeted a 2015 roll-out of hydrogen fuel cell vehicles (FCEV), making the availability of hydrogen fueling stations critically important. FCEVs play an important role in promoting the transition of the mobile transportation sector towards zero emission technologies. These new technologies are necessary to attain the federal criteria pollutant standards as well as the state greenhouse gas targets. California has the most extensive fleet of fuel cell vehicles in the nation, supported by the nation's largest network of hydrogen fueling stations. Even though additional stations are expected to become available over the next few years there is little or no redundancy in the network. Consequently, the impact of a station going out of service due to planned (or unplanned) maintenance can leave fuel cell vehicle owners without a convenient reliable source of fuel until the station comes back on-line.

### Project Objective

H2 Frontier Inc. proposed to design, fabricate, test, and deploy a fully operational, commercial mobile hydrogen fueler in response to the California Energy Commission's (CEC) recent Program Opportunity Notice 13-607 (Alternative and Renewable Fuel and Vehicle Technology Program, Subject Area-Hydrogen Refueling Infrastructure). The mobile fueler would be designed to provide back-up to stations during extended maintenance or

upgrade and support fuel cell vehicle ride-and-drive events, while providing a fueling experience that would be similar to a full-scale station.

### Technology Description

The mobile fueler was not only intended to be a stand-alone station for remote filling but designed to provide the flexibility to integrate itself into stations that may have temporary dispensing issues. The design connects to the onsite hydrogen storage supply and can connect to existing hydrogen dispensers to fill onboard storage. Another design option to be explored on a case-by-case basis was the ability of the fueler to tow and connect to a secondary tube trailer to expand its capacity for any high demand locations thus helping to limit the need to remove it from the designated site to replenish on-board storage. The mobile hydrogen fueler would use renewable fuel when possible and would be deployed at hydrogen stations as needed.

Configured on board a medium-duty, Ford F550 truck platform, with hydrogen storage, compression, and dispensing capabilities, the mobile fueler was designed to be completely self-contained, with no need for external power, pre-cooling, or delivered hydrogen supplies. Additionally, the mobile fueler would have the capability to fill either 350 bar or 700 bar vehicle tanks while meeting U.S. DOT on-road vehicle requirements, along with the intent of SAE J2601 and SAE 2719 hydrogen fueling interface and hydrogen quality requirements and guidelines. The expected life of the equipment design was ten years, assuming 80% availability.

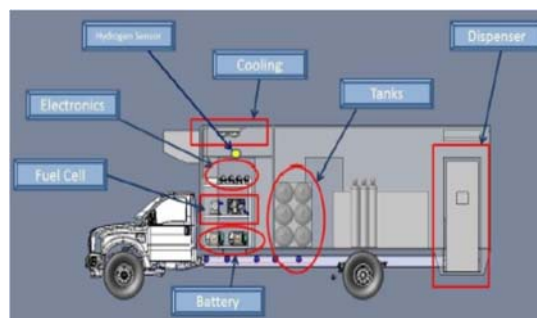


Figure 1: Mobile Refueler Design Layout

**Status**

The first task was to design the system, prepare the platform and specify the specific equipment. This task was completed. However, the design did not conform to revised SAE J2601 and automakers would not approve their new fuel cell vehicles to fuel with the obsolete design.

H2Frontier exited the project, but the team with CEC Grant Agreement ARV-14-003 determined that it would be necessary for the refueler to comply with the SAE International J2601:2014 fueling protocol for it to serve the industry appropriately. SAE International J2601:2014 is a fueling standard that defines conditions, such as the required hydrogen pressure and temperature, for filling light-duty FCEVs. At that time, the team focused on securing the additional funding necessary to expand the project scope to comply with the advanced fueling protocol.

The project team investigated several opportunities to secure additional funding for the project. They held discussions with private companies with needs for mobile refueling solutions, and with state agencies that have mandates for acquiring and operating fuel cell electric vehicles. The project team also contacted private station operators and constructed several design iterations and plans to develop a path forward that would satisfy all entities associated with the project and related end use. Unfortunately, the project team was not able to acquire the additional funds during the project period and, without the necessary funding to provide a viable system to the industry, the project concluded when it reached the term end date without constructing and deploying a mobile hydrogen refueler.

GTI submitted the Final Report CEC-600-2021-006 to CEC April 2021.



Figure 2: Base Truck Ford F650 with Custom Body

**Benefits**

In addition to criteria emission reductions, this project represented an investment in clean economical FCEV transportation to help meet California’s climate goals.

**Project Costs**

This project was not completed. The proposed total project costs to develop and deploy the commercial mobile hydrogen fueler were estimated at \$1,665,654. The proposed project costs were broken down as follows:

|                          | CEC Funding      | Partner Cost-Share |
|--------------------------|------------------|--------------------|
| Gas Technology Institute | \$224,677        | \$15,064           |
| U.S. Hybrid              | \$400,000        | \$375,913          |
| H2 Frontier, Inc.        | \$375,000        | 75,000             |
| South Coast AQMD         |                  | 200,000            |
| <b>Totals</b>            | <b>\$999,677</b> | <b>\$665,977</b>   |

The first task was completed for \$45,000. The remaining \$155,000 of Clean Fuels funds from South Coast AQMD were de-obligated.

**Commercialization and Applications**

New designs are being developed to address current fueling, safety and other standards.

# California Hydrogen Infrastructure Research Consortium H2 @ Scale Initiative

### Contractor

Alliance for Sustainable Energy, LLC,  
National Renewable Energy Laboratory (NREL)

### Cosponsors

US Department of Energy (DOE)  
South Coast AQMD  
California Air Resources Board (CARB)  
California Energy Commission (CEC)  
CA Go-Biz

### Project Officer

Lisa Mirisola

### Background

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 fuel cell electric vehicle deployment. This leadership has advanced a hydrogen network that is not duplicated anywhere in the United States and is unique in the world for its focus on providing a retail fueling experience. 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 United States.

### Project Objective

California agencies identified tasks based on top research needs and priorities for the benefit of state and national efforts to deploy a hydrogen fueling infrastructure and has identified a need to leverage national laboratory research capabilities and staff to support these efforts. The consortium used these tasks as the first step in a strategic partnership, balancing near-term research needs with accelerating earlier-stage research into the market. Specific focus was placed on sharing and translating lessons learned to other jurisdictions,

which is a priority in a partnership between state and federal agencies and laboratories.

### Technology Description

California agencies prioritized a certain set of tasks for the benefit of state and national efforts to deploy a hydrogen fueling infrastructure. The set of tasks focused on the near-term challenges for California hydrogen infrastructure development, deployment, and operation.

The set of tasks included hydrogen station data analysis, insights into medium and heavy-duty vehicles running on hydrogen, hydrogen contaminant detectors for use at hydrogen fueling stations, hydrogen nozzle freeze lock evaluation (component failure scenarios), hydrogen topics for integration into California energy management strategy, and a technical assistance project that analyzed liquid hydrogen modeling for a hydrogen station capacity tool.

### Status

The project was completed in April 2021. The final report is on file with complete technical details of all the project tasks.

For example, it was determined that understanding the conditions where nozzle freeze-lock occurs will help mitigate the issue in commercial hydrogen fueling stations. The observed trends can help station providers predict days when nozzle freeze-lock might occur and implement proactive countermeasures.



Figure 1. Nozzle Freeze-lock Chamber and Atmosphere Generating Cart at NREL

The medium/heavy-duty task was originally intended to analyze and report on retail and



experimental fueling of medium-/heavy-duty trucks, which were not operational in time for this project. The task was redirected towards a topical overview of medium/heavy duty truck fueling which resulted in a report and a presentation suitable for a webinar on April 7, 2021 that was shared with the California partners for their use as needed.

## Results

Results have been presented as part of DOE’s Annual Merit Review 2018-2021, DOE H2@Scale Working Group, and at the 2019 Fuel Cell Seminar and Energy Exposition.

The markets for trucks and light duty vehicles complement each other with the larger number of light duty vehicles providing the possibility for many parts being produced thus bringing down the prices for components used in trucking, while the trucks use a lot of hydrogen fuel encouraging increased hydrogen production and bringing down the price of hydrogen for light duty vehicles.

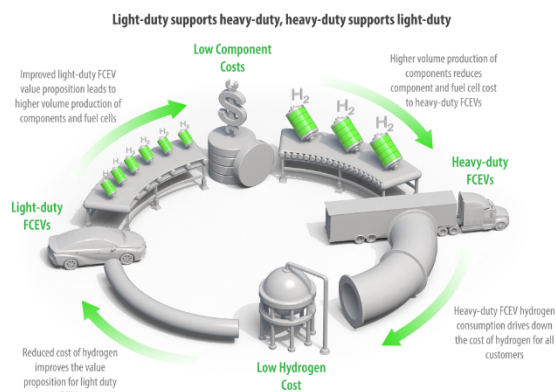


Figure 2. Light-duty fuel cell vehicles support heavy-duty cell vehicles simultaneously reducing component costs and hydrogen fuel costs as fuel cell manufacturing and hydrogen production scale increases

## Benefits

This consortium coordinates research efforts that support the DOE’s and California’s hydrogen goals and requirements, shares lessons learned with other states and stakeholders to inform implementation efforts outside of California, supports shifting the hydrogen infrastructure progress from a government push into a market pull, advances the station technology and operation to meet the next waves of vehicle demand, and leverages existing core capabilities and researchers at national labs.

## Project Costs

| Project Partner               | Co-Funding  |
|-------------------------------|-------------|
| Fuel Cell Technologies Office | \$700,000** |
| California Air Resources      | \$100,000   |
| California Energy Commission  | \$100,00    |
| South Coast AQMD              | \$100,000   |
| California Go-Biz             | In kind     |
| Total                         | \$1,000,000 |

\*\*subject to partial award, funding may be scale

The California Air Resources Board was unable to enter into a joint Cooperative Research and Development Agreement (CRADA), so CARB executed an individual CRADA with NREL for their portion.

## Commercialization and Applications

To provide a more comprehensive picture of when nozzle freeze-lock occurs, NREL recommends both repeated testing and evaluating multiple nozzle manufacturers. Statistical significance and trends could be further expanded upon. New heavy-duty high flow rate nozzles will also need testing. Testing with freeze mitigation technology, such as nitrogen purging, could help determine if mitigation strategies are effective.

Hydrogen contaminant detectors are not expected to meet all requirements of SAE J2719.

Follow-on tasks focusing on heavy-duty applications proposed to DOE for H2@Scale 2020 funding were approved and a new contract is under final review. Three new tasks have been set. The first new task is an HD Reference Station Design led by Sandia National Lab. The second task is an HD Station Test Device Design to analyze hydrogen fueling performance and the third task is the development of a HD Station Capacity Tool. A fourth task under a separate agreement, is an H2 Contaminant Detector Design focused on water vapor contaminant sensing at stations. This task was determined as necessary as more electrolysis stations are expected and there will be a need to ensure compatibility of hydrogen contaminant detector (HCD) pneumatic systems with regulated contaminants with validating HCDs in the field at a California station.

# Develop Optimal Operation Model for Renewable Electrolytic Fuel Production

## Contractor

University of California, Irvine

## Cosponsors

South Coast AQMD

California Energy Commission (CEC)

US Department of Energy (DOE)

## Project Officer

Seungbum Ha

## Background

There is a growing interest in the use of renewable electrolytic hydrogen (green hydrogen) and methane as substitutes for natural gas. In the case of pure hydrogen, the fuel would be used as a blend stock at fractions that may be as high as 20%. The allowable blend fraction for renewable synthetic methane (also referred to as synthetic natural gas or SNG) could be as high as 100%. Both fuels have the potential to change the pollutant emissions of combustion systems with NO<sub>x</sub> being the constituent of concern.

## Project Objective

The objective of the project was to assess the potential local and regional NO<sub>x</sub> emissions and air quality impacts of electrolytic fuel production systems injecting hydrogen or synthetic methane onto the natural gas grid.

## Technology Description

Electrolyzers use electric power to split water into hydrogen and oxygen through a catalytic electrochemical process. When the input electricity is renewable, the product hydrogen is a renewable fuel, also called green hydrogen. Green hydrogen (GH<sub>2</sub>) can be combined with biogenic CO<sub>2</sub> to create methane in a process called methanation. The result is a renewable substitute for natural gas also referred to as synthetic natural gas (SNG). Both GH<sub>2</sub> (up to a blend limit that may reach 20%) and SNG (potentially up to a blend limit of 100%) can be injected onto the natural gas grid to reduce the carbon intensity of system gas.

## Status

Three hypothetical electrolyzer projects were defined (size, location, electric supply sources). The (RoDEO) model developed and run by the National Renewable Energy Laboratory (NREL) was used to optimize the operating schedules of the electrolyzers to minimize hydrogen production cost based on the cost of input electricity. The result of this analysis confirmed the general feasibility of producing natural gas substitutes within the target price range and provided estimates of the quantities of produced fuel to be injected onto the natural gas grid.

## Results

Air quality analysis was conducted at the local and regional levels assuming hydrogen reaches the maximum allowed blend limit of 20% by volume to bound the impacts. Impacts were assessed based on NO<sub>x</sub> emissions impacts of hydrogen methane blends and methane-CO<sub>2</sub> (SNG proxy) blends measured in parallel projects. SNG shows reduction in NO<sub>x</sub> formation for all burner types and so does not present an air quality concern. In contrast, some common burner types show reduced NO<sub>x</sub> formation with hydrogen blends and other burner types show increases. An inventory of burner types and replacement trends is needed to ensure that deployment of hydrogen blends for greenhouse gas (GHG) mitigation does not lead to upward pressure on secondary 8-hour ozone and PM<sub>2.5</sub> levels in the South Coast Air Basin. The best and worst case 8-hour ozone results are shown below.

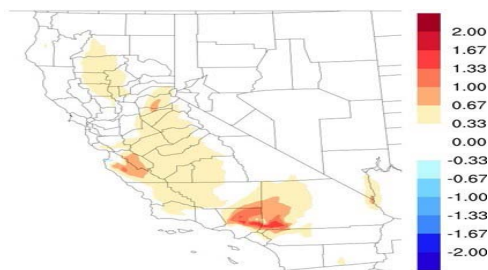


Figure 1: Worst-case increase in summer average MD8H ozone (ppb) for 20% hydrogen blend on the gas grid

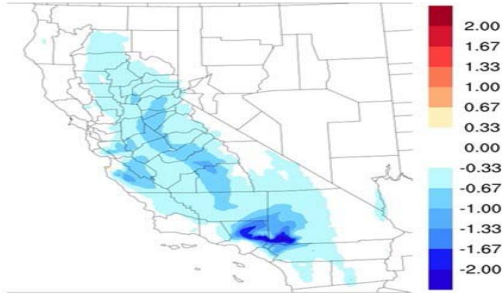


Figure 2: Best-case decrease in summer average MD&H ozone (ppb) for 20% hydrogen blend on the gas grid

and regulations for deployment of these important resources fully considers air quality impact along with safety, reliability and GHG reductions is key to achieving an equitable energy transition. This project is important to establishing the foundations for the development of air quality policies to support a truly sustainable deployment of renewable hydrogen and methane.

### Benefits

The work shed light on the potential for upward pressure on NOx and secondary ozone and PM2.5 concentrations that could result from injecting hydrogen into the natural gas grid while also showing the reduced NOx is possible from hydrogen blends. Given the potential GHG benefits of green hydrogen, future technical and policy analysis should focus on ensuring that hydrogen deployment results in net negative emissions. This can be accomplished by design specifications for hydrogen-ready burners and combustors, aftertreatment requirements and deployment of non-combustion conversion devices such as fuel cells.

### Project Costs

The total planned project cost was \$500,000 with \$100,000 to be provided by South Coast AQMD and \$400,000 from other related efforts funded by the California Energy Commission and the U.S. Department of Energy. The project was completed within the agreed budget.

### Commercialization and Applications

Introduction of zero and low-carbon fuels to decarbonize the fuel provided over the natural gas grid is a key strategy for achieving deep decarbonization. A growing number of national strategies including those of Canada, the United Kingdom and the European Union are embracing these solutions. The current U.S. Department of Energy Hydrogen Shot and the local green hydrogen initiative, HyDeal LA, demonstrate growing momentum for the deployment of these solutions driven in large part by rapidly declining costs of decarbonized gaseous fuel.

Proceedings are ongoing at the California Public Utilities Commission to establish regulatory frameworks for the introduction of hydrogen and synthetic methane on the gas grid as they have done for biomethane. Ensuring that the policies



## **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 Benefits

Criteria Pollutant Emission Reduction potential continues to receive the highest priority for projects that facilitate NOx 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 leverages funds available through several state and federal programs, as well as overall health benefits in reducing exposure to Ozone and PM2.5, especially in 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 the assessed importance of a particular technology. Some key metrics that are considered include Infrastructure Constructability, which evaluates the potential of fuel or energy for the technology and readiness of associated infrastructure, and Technology Readiness, which includes research and development of the technology and large scale deployments that consider ability for near-term implementation and operational compatibility for 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 technology research, development, demonstration and deployment projects. In an effort to accelerate the demonstration and deployment, especially of pre-commercialization technologies, local, state and federal incentive programs are crucial, but may be underfunded to enable large scale deployments.

Staff has developed an approach to evaluating 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 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 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 Satisfactory to Excellent for Technology Maturity, Poor to Excellent for 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/<br>Duty Cycle Fulfillment<br>Capability | Operations Compatibility | Relative Cost & Economic Sustainability | Incentives Available |
| <b>Electric/Hybrid Technologies &amp; Infrastructure</b>                                  |                      |                         |                 |                                     |                      |   |                          |   |                      |
| Plug-In Hybrid Heavy-Duty Trucks with Zero-Emission Range                                 | ●                    | ○                       | ●               | ●                                   | ○                    | ●   | ●                        | ●                                       | ●                    |
| Heavy-Duty Zero-Emission Trucks   | ●                    | ●                       | ●               | ●                                   | ○                    | ●   | ○                        | ●                                       | ●                    |
| Medium-Duty Zero-Emission Trucks  | ●                    | ●                       | ●               | ●                                   | ○                    | ○   | ●                        | ●                                       | ●                    |
| Medium- and Heavy-Duty Zero-Emission Buses  | ●                    | ●                       | ●               | ●                                   | ○                    | ●   | ○                        | ●                                       | ●                    |
| Light-Duty Zero-Emission Vehicles   | ●                    | ●                       | ●               | ●                                   | ●                    | ●   | ●                        | ○                                       | ●                    |
| Plug-In Hybrid Light-Duty Vehicles with Zero-Emission Range                               | ●                    | ○                       | ●               | ●                                   | ●                    | ●   | ●                        | ●                                       | ●                    |
| Infrastructure  | -                    | -                       | -               | ●                                   | ●                    | ●   | ●                        | ●                                       | ●                    |
| <b>Hydrogen &amp; Fuel Cell Technologies &amp; Infrastructure</b>                         |                      |                         |                 |                                     |                      |   |                          |   |                      |
| Heavy-Duty Trucks   | ●                    | ●                       | ●               | ○                                   | ●                    | ○   | ●                        | ●                                       | ●                    |
| Heavy-Duty Buses  | ●                    | ●                       | ●               |                                     | ●                    | ●   | ●                        | ●                                       | ●                    |
| Off-road – Locomotive/Marine  | ●                    | ●                       | ●               | ○                                   | ○                    | ●   | ●                        | ●                                       | ●                    |
| Light-Duty Vehicles   | ●                    | ●                       | ●               |                                     | ●                    | ○   | ○                        | ●                                       | ●                    |
| Infrastructure – Production, Dispensing, Certification                                    | -                    | -                       | -               | ○                                   | ○                    | ●   |                          | ●                                       | ●                    |
| <b>Engine Systems</b>   |                      |                         |                 |                                     |                      |   |                          |   |                      |
| Ultra-Low Emission Medium- and Heavy-Duty Renewable Diesel Vehicles                       | ●                    | ●                       | ●               | ●                                   | ○                    | ●   | ●                        | ●                                       | ●                    |
| Renewable Gaseous and Alternative Fuel Ultra-Low Emission Medium- and Heavy-Duty Vehicles | ●                    | ●                       | ●               | ●                                   | ●                    | ●   | ●                        | ●                                       | ●                    |
| Ultra-Low Emission Off-Road Applications  | ●                    | ●                       | ●               | ●                                   | ○                    | ●   | ●                        | ●                                       | ●                    |
| <b>Fueling Infrastructure &amp; Deployment</b>  |                      |                         |                 |                                     |                      |   |                          |   |                      |
| Production of Renewable Natural Gas – Biowaste/Feedstock                                  | ●                    | ●                       | ●               | ●                                   | ●                    | ●   | ●                        | ●                                       | ●                    |
| Synthesis Gas to Renewable Natural Gas  | ●                    | ●                       | ●               | ●                                   | ●                    | ●   | ●                        | ○                                       | ○                    |
| Expansion of Infrastructure/Stations/Equipment/RNG Transition                             | ●                    | ●                       | ●               | ●                                   | ●                    | ●   | ●                        | ●                                       | ○                    |
| <b>Stationary Clean Fuel Technologies</b>   |                      |                         |                 |                                     |                      |   |                          |   |                      |
| Low-Emission Stationary & Control Technologies  | ●                    | ●                       | ●               | ●                                   | ○                    | ○   | ●                        | ○                                       | ●                    |
| Renewable Fuels for Stationary Technologies   | ○                    | ●                       | ●               | ●                                   | ○                    | ○   | ○                        | ○                                       | ●                    |
| Vehicle-to-Grid or Vehicle-to-Building/Storage  | ●                    | ●                       | ●               | ○                                   | ○                    | ●   | ○                        | ●                                       | ●                    |
| <b>Emission Control Technologies</b>  |                      |                         |                 |                                     |                      |   |                          |   |                      |
| Alternative/Renewable Liquid Fuels  | ○                    | ●                       | ●               | ●                                   | ●                    | ●   | ●                        | ●                                       | ○                    |
| Advanced Aftertreatment Technologies  | ●                    | ○                       | ●               | ○                                   | ○                    | ●   | ●                        | ●                                       | ○                    |
| Lower-Emitting Lubricant Technologies   | ○                    | ○                       | ●               | -                                   | ●                    | ●   | ●                        | ●                                       | ○                    |
| ● Excellent    ● Good    ○ Satisfactory    ● Poor    ● Unacceptable                       |                      |                         |                 |                                     |                      |   |                          |   |                      |

## **Appendix E**

### **List of Acronyms**

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## LIST OF ACRONYMS

|  |  |
|--|--|
| 3B-MAW—3-bin moving average windows  | CHE—cargo handling equipment   |
| AB—Assembly Bill   | CMAQ—community multi-scale air quality   |
| AC—absorption chiller  | CNG—compressed natural gas   |
| ACT – American Clean Truck regulation  | CNGVP—California Natural Gas Vehicle Partnership                                     |
| ADA—American with Disabilities Act   | CO <sub>2</sub> —carbon dioxide  |
| AER—all-electric range   | CO—carbon monoxide   |
| AFRC—air/fuel ratio control  | ComZEV—Commercial Zero-Emission Vehicle  |
| AFVs—alternative fuel vehicles   | CPA—Certified Public Accountant  |
| AGL – Academy of Global Logistics  | C-PORT – Commercialization of POLB Off-Road<br>Technology                            |
| ALPR – automated license plate recognition   | CPUC—California Public Utilities Commission  |
| APCD—Air Pollution Control District  | CRADA-Cooperative Research and Development<br>Agreement                              |
| AQMD—Air Quality Management District   | CRDS—cavity ring-down spectroscopy   |
| AQMP—Air Quality Management Plan   | CRT—continuously regenerating technology   |
| ARB—Air Resources Board  | CSC—city suburban cycle  |
| ARRA—American Recovery & Reinvestment Act  | CTE – Center for Transportation and the Environment                                  |
| AWMA—Air & Waste Management Association  | CVAG—Coachella Valley Association of<br>Governments                                  |
| BACT—best available control technology   | CWI—Cummins Westport, Inc.   |
| BATS – blended aftertreatment system   | CY—calendar year   |
| BEB—battery electric bus   | DAC – disadvantaged community  |
| BET – battery electric tractor   | DC—direct connection   |
| BET—battery electric truck   | DC – direct current  |
| BEV—battery electric vehicle   | DCFC—direct connection fast charger  |
| BSNO <sub>x</sub> —brake specific NO <sub>x</sub>  | DCM—dichloromethane  |
| BMEP – brake mean effective pressure   | DEF—diesel exhaust fluid   |
| BMS—battery management system  | DEG—diesel equivalent gallons  |
| CAP – Clean Air Protection   | DERA – Diesel Emissions Reduction Act  |
| CAAP—Clean Air Action Plan   | DGE—diesel gallon equivalents  |
| CAFR—Comprehensive Annual Financial Report   | DF—deterioration factor  |
| CaFCP—California Fuel Cell Partnership   | DME—dimethyl ether   |
| CARB—California Air Resources Board  | DMS—Division of Measurement Standards  |
| CATI—Clean Air Technology Initiative   | DMV—Department of Motor Vehicles   |
| CBD—Central Business District (cycle) - a Dyno test<br>cycle for buses                   | DOC—diesel oxidation catalysts   |
| CCF—California Clean Fuels   | DOE—Department of Energy   |
| CCHP—combined cooling, heat and power  | DOT—Department of Transportation   |
| CCV—closed crankcase ventilation   | DPF—diesel particulate filters   |
| CDA—cylinder deactivation  | D-PMag – dual permanent magnet motor   |
| CDFR/DMS—California Department of Food<br>&Agriculture/Division of Measurement Standards | DPT3—Local Drayage Port Truck (cycle) - where<br>3=local (whereas 2=near-dock, etc.) |
| CEC—California Energy Commission   | DRC—Desert Resource Center   |
| CE-CERT—College of Engineering – Center for<br>Environmental Research and Technology     | DRI—Desert Research Institute  |
| CEMS—continuous emission monitoring system   | ECM—emission control monitoring  |
| CERP – Community Emission Reduction Plan   | EDD—electric drayage demonstration   |
| CEQA—The California Environmental Quality Act  | EDTA—Electric Drive Transportation Association                                       |
| CFCI—Clean Fuel Connection, Inc.   | EERE – Energy Efficiency and Renewable Energy  |
| CFD—computational fluid dynamic  | EGR—exhaust gas recirculation  |
| CHBC—California Hydrogen Business Council  | EIA—Energy Information Administration  |

## LIST OF ACRONYMS (cont'd)

|  |   |
|--|---|
| EIN—Energy Independence Now  | HHDDT—heavy heavy-duty diesel truck schedule                        |
| EMFAC—Emission FACTors   | HMI – Human Machine Interface                                       |
| EPRI—Electric Power Research Institute   | HPLC—high-performance liquid chromatography                         |
| E-rEV—extended-range electric vehicles   | HRSC – heat recovery steam cycle                                    |
| ESD—emergency shut down  | HT—high throughput  |
| ESS—energy storage system  | HTFCs—high-temperature fuel cells                                   |
| EV—electric vehicle  | H2NIP—Hydrogen Network Investment Plan                              |
| EVSE—electric vehicle supply equipment   | HTPH—high throughput pretreatment and enzymatic hydrolysis          |
| FCEB – fuel cell electric bus  | HyPPO—Hydrogen Progress, Priorities and Opportunities report        |
| FCET – fuel cell electric truck  | Hz—Hertz  |
| FCEBCC - Fuel Cell Electric Bus Commercialization Consortium                   | ICE—internal combustion engine                                      |
| FCEV – fuel cell electric vehicle  | ICEV—internal combustion engine vehicle                             |
| FCTO – Fuel Cell Technologies Office   | ICT – Innovative Clean Transit Regulation                           |
| FCV—fuel cell vehicle  | ICU—inverter-charger unit   |
| FTA—Federal Transit Administration   | ICTC—Interstate Clean Transportation Corridor                       |
| FTP—federal test procedures  | ITS – intelligent transportation system                             |
| G2V—grid-to-vehicle  | IVOC—intermediate volatility organic compound                       |
| g/bhp-hr—grams per brake horsepower per hour                                   | JETSI - Joint Electric Truck Scaling Initiative                     |
| GC/MS—gas chromatography/mass spectrometry                                     | kg—kilogram   |
| GCW—gross combination weight   | kWh – kilowatt-hour   |
| GCVW—gross container vehicle weight  | LADOT—City of Los Angeles Dept. of Transportation                   |
| GDI—gasoline direct injection  | LADWP—Los Angeles Department of Water and Power                     |
| GGE—gasoline gallon equivalents  | LAEDC – Los Angeles Economic Development Corporation                |
| GGRF—Greenhouse Gas Reduction Relief Fund                                      | LA Metro – Los Angeles County Metropolitan Transportation Authority |
| GH2 – green hydrogen   | LBCT – Long Beach Container Terminal                                |
| GHG—greenhouse gas   | LCA—life cycle assessment   |
| GNA—Gladstein, Neandross & Associates, LLC                                     | LCFS—Low Carbon Fuel Standard                                       |
| Go-Biz – Governor’s Office of Business and Economic Development                | LED – low emission diesel   |
| GPCI – Green Paradigm Consulting, Inc.   | LFP – lithium iron phosphate  |
| GPU—gas processing unit  | Li—lithium ion  |
| GREET- Greenhouse Gasses, Regulated Emissions and Energy Use in Transportation | LIGHTS – Low Impact Green Heavy Transport Solutions                 |
| GTI – Gas Technology Institute   | LIMS—Laboratory Information Management System                       |
| GTL—gas to liquid  | LLC—low load cycle  |
| GVW – gross vehicle weight   | LLNL—Lawrence Livermore National Laboratory                         |
| GVWR—gross vehicle weight rating   | LNG—liquefied natural gas   |
| H&SC—California Health and Safety Code   | LO-SCR—light-off selective catalytic reduction                      |
| HCCI—Homogeneous Charge Combustion Ignition                                    | LPG—liquefied petroleum gas or propane                              |
| HCD – hydrogen contaminant detector  | LRUSA – Landi Renzo USA Corporation                                 |
| HCHO - formaldehyde  | LSM—linear synchronous motor  |
| HCNG—hydrogen-compressed natural gas (blend)                                   | LSV—low-speed vehicle   |
| HD – heavy duty  | LUV—local-use vehicle   |
| HDD – heavy-duty diesel  | LVP—low vapor pressure  |
| HDDT—highway dynamometer driving schedule                                      | MATES—Multiple Air Toxics Exposure Study                            |
| HD-FTP—Heavy-Duty Federal Test Procedure                                       | MCE—multi cylinder engine   |
| HD I/M – heavy-duty inspection and maintenance                                 |   |
| HD-OBD—heavy-duty on-board diagnostics   |   |



**LIST OF ACRONYMS (cont'd)**

|  |   |
|--|---|
| MCFC—molten carbonate fuel cells                                       | OCTA—Orange County Transit Authority                                  |
| MD—medium duty   | OEHHA—Office of Environmental Health Hazard Assessment                |
| MECA—Manufacturers of Emission Controls Association                    | OEM—original equipment manufacturer                                   |
| MOA—Memorandum of Agreement  | One-off—industry term for prototype or concept vehicle                |
| MOVES—Motor Vehicle Emission Simulator                                 | PAH—polycyclic aromatic hydrocarbons                                  |
| MPa—MegaPascal   | PbA—lead acid   |
| MPFI—Multi-Port Fuel Injection   | PCM—powertrain control module   |
| MPG—miles per gallon   | PEMFC—proton exchange membrane fuel cell                              |
| MPGde—miles per gallon diesel equivalent                               | PEMS—portable emissions measurement system                            |
| MSRC—Mobile Source Air Pollution Reduction Review Committee            | PEV—plug-in electric vehicle  |
| MSW—municipal solid wastes   | PFI – port fuel injection   |
| MY—model year  | PHET – plug in hybrid electric tractor                                |
| MTA—Metropolitan Transportation Authority (Los Angeles County “Metro”) | PHET—plug-in hybrid electric truck                                    |
| NAAQS—National Ambient Air Quality Standards                           | PHEV—plug-in hybrid vehicle   |
| NAFA—National Association of Fleet Administrators                      | PM—particulate matter   |
| NAICS – North American Industry Classification System                  | PM – permanent magnet   |
| NFPA—National Fire Protection Association                              | PM2.5—particulate matter ≤ 2.5 microns                                |
| NCP—nonconformance penalty   | PM10—particulate matter ≤ 10 microns                                  |
| NEV—neighborhood electric vehicles                                     | POH – Port of Hueneme   |
| NextSTEPS—Next Sustainable Transportation Energy Pathways              | POLA – Port of Los Angeles  |
| NG/NGV—natural gas/natural gas vehicle                                 | POLB – Port of Long Beach   |
| NGO—non-governmental organization                                      | PON – Program Opportunity Notice                                      |
| NH3—ammonia  | POS—point of sale   |
| Nitro-PAHs – nitrated polycyclic aromatic hydrocarbons                 | ppm—parts per million   |
| NHTSA—National Highway Traffic Safety Administration                   | ppb—parts per billion   |
| NMC – nickel manganese cobalt  | PSI—Power Solutions International                                     |
| NMHC—non-methane hydrocarbon   | PTR-MS—proton transfer reaction-mass spectrometry                     |
| NO—nitrogen monoxide   | QVM – qualified vehicle modifiers                                     |
| NO <sub>2</sub> —nitrogen dioxide                                      | R&D – research and development  |
| NO + NO <sub>2</sub> —nitrous oxide                                    | RD&D—research, development and demonstration                          |
| NOPA—Notice of Proposed Award  | RDD&D (or RD3)—research, development, demonstration and deployment    |
| NOx—oxides of nitrogen   | REMD – roadside emissions monitoring device                           |
| NRC—National Research Council  | RFA – Renewable Fuels Association                                     |
| NREL—National Renewables Energy Laboratory                             | RFI – Request for Information   |
| NRTC – non-road-tested cycle   | RFP—Request for Proposal  |
| NSPS—new source performance standard                                   | RFS—renewable fuel standards  |
| NSR—new source review  | RI—reactive intermediates   |
| NZ—near zero   | RMC – ramped modal cycle  |
| NZE – near zero emission   | RMC-SET— ramped modal cycle supplemental emissions test               |
| O <sub>3</sub> - ozone   | RNG—renewable natural gas   |
| OBD—on-board diagnostics   | ROG – reactive organic gases  |
| OCS—overhead catenary system   | RPS – Rail Propulsion Systems   |
|  | RTP/SCS—Regional Transportation Plan/Sustainable Communities Strategy |

### LIST OF ACRONYMS (cont'd)

|   |  |
|---|--|
| S2S – Shore to Store  | UCR—University of California, Riverside  |
| SAE—Society of Automotive Engineers                                       | UCR/CE-CERT—UCR/College of Engineering/Center<br>for Environmental Research & Technology |
| SB—Senate Bill  | UCLA—University of California, Los Angeles   |
| SCAB—South Coast Air Basin or “Basin”                                     | UDDS—urban dynamometer driving schedule  |
| SCAG – Southern California Association of<br>Governments                  | $\mu\text{g}/\text{m}^3$ —microgram per cubic meter                                      |
| SCAQMD—South Coast Air Quality Management<br>District                     | ULEV—ultra low emission vehicle  |
| SCFM—standard cubic feet per minute                                       | ULSD – ultra low sulfur diesel   |
| SCE – single cylinder engine  | UPS—United Postal Service  |
| SCE—Southern California Edison  | U.S.—United States   |
| SCE – Southern Counties Express   | U.S.EPA—United States Environmental Protection<br>Agency                                 |
| SCR—selective catalytic reduction   | USTS – United States Training Ship   |
| SCRT - Selective Catalytic Regenerating Technology                        | V2B—vehicle-to-building  |
| SCCRT - Selective Catalytic Continuously<br>Regenerating Technology       | V2G—vehicle-to-grid  |
| SHR—steam hydrogasification reaction                                      | V2G/B—vehicle-to-building functionality  |
| SI—spark ignited  | VMT—vehicle miles traveled   |
| SI-EGR—spark-ignited, stoichiometric, cooled exhaust<br>gas recirculation | VOC—volatile organic compounds   |
| SIP—State Implementation Plan   | V-PER – vessel performance management package  |
| SJVAPCD—San Joaquin Valley Air Pollution Control<br>District              | VPP—virtual power plant  |
| SMR – steam methane reforming   | WAIRE - Warehouse Actions and Investments to<br>Reduce Emissions Program                 |
| SNG – synthetic natural gas   | WGS – water gas shift  |
| SOAs—secondary organic aerosols   | WVU—West Virginia University   |
| SOC – state-of-charge   | ZANZEFF – Zero and Near Zero Emission Freight<br>Facilities                              |
| SoCalGas—Southern California Gas Company (A<br>Sempra Energy Utility)     | ZE – zero emission   |
| SOFC – solid oxide fuel cells   | ZEB – zero-emission bus  |
| START – Sustainable Terminals Accelerating Regional<br>Transportation     | ZECT—Zero Emission Cargo Transport   |
| SULEV—super ultra-low emission vehicle                                    | ZEDT – Zero Emission Drayage Truck   |
| SUV—sports utility vehicle  | ZEV—zero emissions vehicle   |
| SwRI – Southwest Research Institute                                       |  |
| TAC – toxic air contaminants  |  |
| TAO—Technology Advancement Office   |  |
| TAP— (Ports’) Technology Advancement Program                              |  |
| TC—total carbon   |  |
| TCO – total cost of ownership   |  |
| TEMS—transportable emissions measurement system                           |  |
| THC—total hydrocarbons  |  |
| TLS – Toyota Logistics Services   |  |
| 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  |  |
| UCI – University of California, Irvine                                    |  |

[↑ Back to Agenda](#)

BOARD MEETING DATE: March 4, 2022

AGENDA NO. 32

PROPOSAL: Approve Annual RECLAIM Audit Report for 2020 Compliance Year

SYNOPSIS: The Annual RECLAIM Audit Report for 2020 for the NO<sub>x</sub> and SO<sub>x</sub> RECLAIM program is prepared in accordance with Rule 2015 - Backstop Provisions. This report assesses emission reductions, availability and average annual prices of RECLAIM Trading Credits (RTCs), job impacts, compliance issues, and other measures of performance for the twenty-seventh 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 2020 Compliance Year is also included in the report. This action is to approve the Annual RECLAIM Audit Report for 2020.

COMMITTEE: Stationary Source, February 18, 2022, Reviewed

RECOMMENDED ACTION:

Approve the Annual RECLAIM Audit Report for 2020 Compliance Year.

Wayne Nastri  
Executive Officer

JA:JW:DO

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### **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<sub>x</sub> and SO<sub>x</sub>. 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.

Although the NO<sub>x</sub> RECLAIM program is transitioning to a command-and-control regulatory structure, 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 2020 (which encompasses the time period for Cycle 1 from January 1, 2020 to December 31, 2020 and for Cycle 2 from July 1, 2020 to June 30, 2021). Based on audited emissions in this report and previous annual reports, staff has determined that RECLAIM met its emissions goals for Compliance Year 2020, as well as for all previous compliance years with the only exception of NO<sub>x</sub> emissions in Compliance Year 2000. For that year, NO<sub>x</sub> emissions exceeded programmatic allocations (by 11 percent) primarily due to emissions from electric generating facilities during the California energy crisis. For Compliance Year 2020, audited NO<sub>x</sub> emissions were 27 percent less than programmatic NO<sub>x</sub> allocations and audited SO<sub>x</sub> emissions were 35 percent less than programmatic SO<sub>x</sub> allocations.

### **Audit Findings**

The audit of the RECLAIM Program's Compliance Year 2020 and trades of RTCs that occurred during calendar year 2021 show:

- **Overall Compliance** – Audited NO<sub>x</sub> and SO<sub>x</sub> emissions from RECLAIM facilities were significantly below programmatic allocations;
- **Universe** – The RECLAIM universe consisted of 246 facilities as of June 30, 2020. No new facilities were included, no facilities were excluded, and six facilities in the RECLAIM universe shut down during Compliance Year 2020. Thus, 240 active facilities were in the RECLAIM universe on June 30, 2021, the end of Compliance Year 2020.

Of the six facilities that shutdown, two facilities removed their RECLAIM equipment and sold their remaining property to new owners for real estate development, three facilities cited financial reasons, and one facility cited their shutdown was due to the coronavirus (COVID-19) global pandemic. All six facilities

permanently ceasing operations were in NOx RECLAIM and two facilities were in both NOx and SOx RECLAIM.

- **Facility Compliance** – 93 percent of NOx facilities and 100 percent of SOx facilities in RECLAIM complied with their allocations during the 2020 compliance year. Seventeen facilities (seven percent of total facilities) exceeded their NOx allocations, and no facility exceeded its SOx allocations during Compliance Year 2020. The 17 facilities that exceeded their NOx allocations had total NOx emissions of 64.3 tons and did not have adequate allocations to offset 16.3 of those tons. The exceedances represent 0.22 percent of total RECLAIM NOx universe allocations and 25.3 percent of total NOx emissions from the 17 facilities. Pursuant to Rule 2010(b)(1)(A), all affected 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 2020 allocations.
- **Job Impacts** – Based on a survey of RECLAIM facilities, the RECLAIM program had minimal impact on employment during the 2020 compliance year, which is consistent with previous years. RECLAIM facilities reported an overall net loss of 3,687 jobs, representing about 4 percent of their total employment. A comparison of reported job impacts between Cycle 1 and Cycle 2 facilities suggests that the coronavirus (COVID-19) global pandemic affected Cycle 2 facility job losses. No facility cited RECLAIM as a factor contributing to the addition of any jobs during Compliance Year 2020. No RECLAIM facility reported job losses due to RECLAIM during Compliance Year 2020. 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 2021 was slightly lower in terms of number of trades (2.3 percent), slightly lower in volume for discrete-year RTCs (1.8 percent) and lower in volume of infinite-year block (IYB) RTCs excluding swaps (50.6 percent), when compared to calendar year 2020. However, market activity in calendar year 2021 was higher with respect to total value (20.9 percent) compared to calendar year 2020. A total of \$1.56 billion in RTCs has been traded since the adoption of RECLAIM, of which \$22.0 million occurred in calendar year 2021 (compared to \$18.2 million in calendar year 2020), excluding swaps.

The annual average prices of traded discrete-year SOx RTCs and IYB SOx RTCs for Compliance Years 2020 thru 2022 were below the applicable review thresholds for average RTC prices.

The annual average prices of discrete-year NOx RTCs for Compliance Years 2021 and 2022 exceeded the Rule 2015 backstop threshold of \$15,000 per ton. However,

the annual average price of traded discrete-year NOx RTCs for Compliance Years 2020 was below the applicable review threshold for average RTC prices and the annual average prices of traded IYB NOx RTCs for Compliance Years 2020 thru 2022 were below the applicable review thresholds for average RTC prices.

The annual average prices of RTCs traded during calendar years 2020 and 2021 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 2020 and 2021**

| Year Traded | Average Price (\$/ton) |              |                       |                       | Review Thresholds (\$/ton) |                                  |
|-------------|------------------------|--------------|-----------------------|-----------------------|----------------------------|----------------------------------|
|             | 2019 NOx RTC           | 2020 NOx RTC | 2021 NOx RTC          | 2022 NOx RTC          | Rule 2015 (b)(6)           | Health and Safety Code §39616(f) |
| 2020        | \$4,287                | \$8,323      | \$9,418               | None traded           | \$15,000                   | \$49,737                         |
| 2021        |                        | \$5,603      | \$18,846 <sup>1</sup> | \$33,085 <sup>1</sup> |                            |                                  |
| Year Traded | 2019 SOx RTC           | 2020 SOx RTC | 2021 SOx RTC          | 2022 SOx RTC          | Rule 2015 (b)(6)           | Health and Safety Code §39616(f) |
| 2020        | \$4,387                | \$2,300      | None traded           | None traded           | \$15,000                   | \$35,811                         |
| 2021        |                        | None traded  | \$3,000               | None traded           |                            |                                  |

**Table 2 – Average Prices for IYB RTCs Traded During Calendar Years 2020 and 2021**

| RTCs | Average Price (\$/ton) |                | Review Threshold (\$/ton)<br>[Health and Safety Code §39616(f)] |
|------|------------------------|----------------|---|
|      | Traded in 2020         | Traded in 2021 |   |
| NOx  | \$116,405              | \$94,576       | \$746,056   |
| SOx  | \$32,251               | None traded    | \$537,160   |

- **Role of Investors** – Investors remained active in the RTC market, and their involvement in 2021 was comparable to prior years. Investors were involved in 131 of the 184 discrete NOx trades with price, and none of the 1 discrete SOx trades with price. With respect to IYB trades, investors’ participation was notable, and were involved in 10 of the 14 IYB NOx trades with price. There were no IYB SOx RTCs traded with price. Compared to calendar year 2020, investor holdings of total IYB

<sup>1</sup> Rule 2015(b)(6) specifies that, if the annual average price of discrete-year NOx or SOx RTCs exceeds \$15,000 per ton, within six months of the determination thereof the Executive Officer shall, in addition to the annual report, submit to CARB and USEPA results of an evaluation and review of the compliance and enforcement aspects of the RECLAIM program, to include at a minimum the following assessments: the deterrent effect of Rule 2004(d)(1) through (d)(4), Prohibition of Emissions in Excess of Annual Allocation, the rates of compliance with applicable emission caps, the rate of compliance with monitoring, recordkeeping, and reporting requirements, South Coast AQMD’s ability to obtain appropriate penalties in cases of noncompliance, and whether the program provides appropriate incentives to comply.

NOx RTCs increased slightly from 1.3 percent to 2.0 percent and remained the same at 4.2 percent for IYB SOx RTCs at the end of calendar year 2021. Investors purchase RTCs, and they 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 2020 Compliance Year
2. Board Presentation

## ATTACHMENT 1

# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

## Annual RECLAIM Audit Report for 2020 Compliance Year

**March 4, 2022**

**Executive Officer**

Wayne Nastri

**Deputy Executive Officer**

**Engineering & Permitting**

Jason Aspell

**Assistant Deputy Executive Officer**

**Engineering & Permitting**

Jillian Wong

**Senior Air Quality Engineering Manager**

**RECLAIM Administration and Automation**

David Ono

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David Ono, Senior Air Quality Engineering Manager  
Barbara Baird, Chief Deputy Counsel  
Karin Manwaring, Senior Deputy District Counsel



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

### **GOVERNING BOARD**

Chair: Ben Benoit  
Mayor, Wildomar  
Cities of Riverside County

Vice Chair: Vanessa Delgado  
Senate (Ret.)  
Senate Rules Committee Appointee

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Michael A. Cacciotti  
Mayor, South Pasadena  
Cities of Los Angeles County/Eastern Region

Andrew Do  
Supervisor, Fifth District  
County of Orange

Gideon Kracov  
Governor's Appointee

Sheila Kuehl  
Supervisor, Third District  
County of Los Angeles

Larry McCallon  
Mayor, Highland  
Cities of San Bernardino County

Veronica Padilla-Campos  
Speaker of the Assembly Appointee

V. Manuel Perez  
Supervisor, Fourth District  
County of Riverside

Nithya Raman  
Council Member, Fourth District  
City of Los Angeles Representative

Rex Richardson  
Vice Mayor, Long Beach  
Cities of Los Angeles County/Western Region

Carlos Rodriguez  
Mayor, Yorba Linda  
Cities of Orange County

Janice Rutherford  
Supervisor, Second District  
County of San Bernardino

### **EXECUTIVE OFFICER**

Wayne Nastri

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## LIST OF ABBREVIATIONS

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|          |   |
|----------|---|
| AAQS     | Ambient Air Quality Standards                         |
| ACEMS    | Alternative Continuous Emissions Monitoring System(s) |
| AER      | Annual Emission Report                                |
| APEP     | Annual Permit Emissions Program                       |
| AQMD     | Air Quality Management District                       |
| AQMP     | Air Quality Management Plan                           |
| BACT     | Best Available Control Technology                     |
| BARCT    | Best Available Retrofit Control Technology            |
| CAA      | Clean Air Act   |
| CARB     | California Air Resources Board                        |
| CCAA     | California Clean Air Act                              |
| CEMS     | Continuous Emissions Monitoring System(s)             |
| CEQA     | California Environmental Quality Act                  |
| CGA      | Cylinder Gas Audit                                    |
| COVID-19 | Coronavirus Disease 2019                              |
| 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                                  |
| SCEMS    | Semi-Continuous Emission Monitoring System            |
| SIP      | State Implementation Plan                             |
| SOx      | Oxides of Sulfur                                      |
| TAC      | Toxic Air Contaminant                                 |
| USEPA    | United States Environmental Protection Agency         |
| VOC      | Volatile Organic Compound                             |
| WATERS   | Web Access To Electronic Reporting System             |

## EXECUTIVE SUMMARY

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### Introduction

The South Coast Air Quality Management District (South Coast AQMD) 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 2020 (January 1 through December 31, 2020 for Cycle 1 and July 1, 2020 through June 30, 2021 for Cycle 2 facilities). This annual audit report covers activities for the twenty-seventh 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, 2020, the overall changes in RECLAIM participants were 134 facilities included into the program, 73 facilities excluded from the program, and 209 facilities ceased operation. Thus, the RECLAIM universe consisted of 246 active facilities at the end of Compliance Year 2019 (December 31, 2019 for Cycle 1 facilities and June 30, 2020 for Cycle 2 facilities). During Compliance Year 2020 (January 1, 2020 through December 31, 2020 for Cycle 1 facilities and July 1, 2020 through June 30, 2021 for Cycle 2 facilities), no facilities were included into the RECLAIM universe, no facilities were excluded, and six facilities (two facilities in both the NO<sub>x</sub> and SO<sub>x</sub> universes and four in the NO<sub>x</sub> universe only) shut down and are no longer in the active RECLAIM universe. These changes resulted in a net decrease of six facilities in the universe, bringing the total number of active RECLAIM facilities to 240 as of the end of Compliance Year 2020.

### Chapter 2: RTC Allocations and Trading

On November 5, 2010, the Board adopted amendments to SO<sub>x</sub> RECLAIM to phase in SO<sub>x</sub> reductions beginning in Compliance Year 2013 and full implementation in Compliance Year 2019 and beyond. The amendments resulted in an overall reduction of 48.4 percent (or 5.7 tons per day) in SO<sub>x</sub> allocations.

On December 4, 2015, the 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 amendments will result in an overall NOx reduction of 45 percent (or 12 tons per day) when fully implemented for Compliance Year 2022 and beyond. Through Compliance Year 2020, the fifth year of implementation, the NOx allocation supply was reduced by 22.6 percent (or 6.0 tons per day). The only remaining changes in RTC supply during Compliance Year 2020 were due to allocation adjustments for clean fuel production pursuant to Rule 2002(c)(12) which decreased overall NOx RTC supply by 6.2 tons and SOx RTC supply by 4.8 tons.

Since the inception of the RECLAIM program in 1994, a total value of \$1.56 billion dollars has been traded in the RTC trading market, excluding swap trades (trades exchanging different types of RTCs, that maybe of equal value or different values). During calendar year 2021, there were 293 RTC trade registrations, including swap trades. There were 260 RTC trade registrations with a total value of \$22.0 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 2021 a total of 1,716 tons of discrete-year NOx RTCs, 475 tons of discrete-year SOx RTCs, 81 tons of IYB NOx RTCs and 6 tons of IYB SOx RTCs were traded. The RTC trading market activity decreased during calendar year 2021 compared to calendar year 2020, in number of trades (by 2.3%), and in volume both for discrete-year RTCs (by 1.8%) and IYB RTCs (by 50.6%). However, the RTC trading market increased in total value (by 20.9%) from calendar year 2020 to 2021.

Discrete-year RTC trades with price (i.e., price >\$0.00) registered during calendar year 2021 include trades for Compliance Years 2020, 2021, 2022, and 2023 NOx RTCs, and Compliance Year 2021 SOx RTCs, excluding swap trades. The annual average prices of discrete-year NOx RTCs traded during calendar year 2021 were \$5,603, \$18,846, \$33,085, and \$37,808 per ton for Compliance Years 2020, 2021, 2022, and 2023 RTCs, respectively. The annual average price for discrete-year SOx RTCs traded during the same period was \$3,000 per ton for Compliance Years 2021 RTCs.

The annual average price of Compliance Year 2021, 2022, and 2023 NOx RTCs exceeded the Rule 2015 backstop threshold of \$15,000 per ton while SOx RTC prices remained below the threshold. Prices for discrete-year NOx and SOx RTCs for all compliance years are still below the \$49,737 per ton of NOx and \$35,811 per ton of SOx discrete-year RTCs pre-determined overall program review thresholds established by the Board pursuant to Health and Safety Code §39616(f)<sup>1</sup>.

The annual average price during calendar year 2021 for IYB NOx RTCs was \$94,576 per ton. During calendar year 2021, no IYB SOx RTCs were traded with price. Therefore, annual average IYB RTC prices did not exceed the \$746,056 per ton of IYB NOx RTCs or the \$537,160 per ton of IYB SOx RTCs

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<sup>1</sup> September 7, 2007 Board Agenda item No. 43 regarding Health and Safety Code §39616(f) can be found at: <http://www3.aqmd.gov/hb/2007/September/070943a.html>

pre-determined overall program review thresholds established by the Board pursuant to Health and Safety Code §39616(f).

Investors were active in the RTC market during calendar year 2021. They were involved in 131 of the 184 discrete-year NO<sub>x</sub> trade registrations and were not involved in the 1 discrete-year SO<sub>x</sub> trade registration with price. Investors were also involved in 10 of the 14 IYB NO<sub>x</sub>. There were no IYB SO<sub>x</sub> trades with price. Investors were involved in 56 percent of total value and 62 percent of total volume for discrete-year NO<sub>x</sub> trades. Investors were not involved in discrete-year SO<sub>x</sub> trades for this calendar year. At the end of calendar year 2021, investors' holdings of IYB NO<sub>x</sub> RTCs increased slightly to 2.0 percent of total NO<sub>x</sub> RECLAIM RTCs from 1.2 percent in 2020. Investors' holdings of IYB SO<sub>x</sub> RTCs stayed consistent at 4.2 percent of the total SO<sub>x</sub> RECLAIM RTCs when compared to investor's holdings in calendar year 2020.

### **Chapter 3: Emission Reductions Achieved**

For Compliance Year 2020, aggregate NO<sub>x</sub> emissions were below total allocations by 27 percent and aggregate SO<sub>x</sub> emissions were below total allocations by 35 percent. No emissions associated with breakdowns were excluded from reconciliation with facility allocations in Compliance Year 2020. 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 2020. With respect to the Rule 2015 backstop provisions, Compliance Year 2020 aggregate NO<sub>x</sub> and SO<sub>x</sub> 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 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 2020, a total of three NO<sub>x</sub> RECLAIM facilities had NSR NO<sub>x</sub> emission increases, and no SO<sub>x</sub> RECLAIM facilities had an NSR SO<sub>x</sub> emission increase due to expansion or modification. Consistent with all prior compliance years, there were sufficient NO<sub>x</sub> and SO<sub>x</sub> RTCs available to allow for expansion, modification, and modernization by RECLAIM facilities.

RECLAIM is required to comply with federal NSR emissions offset requirements at a 1.2-to-1 offset ratio programmatically for NO<sub>x</sub> emission increases and a 1-to-1 offset ratio for SO<sub>x</sub> emission increases on a programmatic basis. In Compliance Year 2020, RECLAIM demonstrated federal equivalency with a programmatic NO<sub>x</sub> offset ratio of 365-to-1 based on the compliance year's total unused allocations and total NSR emission increases for NO<sub>x</sub>. There were no SO<sub>x</sub> NSR emission increases that resulted from starting operations of new or modified permitted sources during the compliance year. RECLAIM inherently complies with the federally-required 1-to-1 SO<sub>x</sub> offset ratio for any compliance year, provided aggregate SO<sub>x</sub> emissions under RECLAIM are lower than or equal to aggregate SO<sub>x</sub> allocations for that compliance year. As shown in Chapter 3 (Table 3-2 and Figure 3-2), there was a surplus of SO<sub>x</sub> RTCs during



Compliance Year 2020. Therefore, RECLAIM more than complied with the federally-required SOx offset ratio and further quantification of the SOx offset ratio is unnecessary. Also, the NNI is satisfied by the program's 1-to-1 offset ratio. In addition, RECLAIM requires application of, at a minimum, California Best Available Control Technology (BACT), which is at least as stringent as federal Lowest Achievable Emission Rate (LAER) for major sources. The same BACT guidelines are used to determine BACT applicable to RECLAIM and non-RECLAIM facilities.

## Chapter 5: Compliance

Based on South Coast AQMD Compliance Year 2020 audit results, 242 of the 259 (93%) NOx RECLAIM facilities complied with their NOx allocations, and 31 of the 31 SOx facilities (100%) complied with their SOx allocations based on South Coast AQMD audit results. So, 17 facilities exceeded their allocations (17 facilities exceeded their NOx allocations, and no facility exceeded its SOx allocation). The 17 facilities that exceeded their NOx allocations had aggregate NOx emissions of 64.3 tons and did not have adequate allocations to offset 16.3 tons (or 25.3%) of their combined emissions. The NOx exceedance amounts are relatively small compared to the overall NOx allocations for Compliance Year 2020 (0.22% of total NOx allocations). The exceedances from these facilities did not impact the overall RECLAIM emission reduction goals. The overall RECLAIM NOx and SOx emission reduction targets and goals were met for Compliance Year 2020 (*i.e.*, aggregate emissions for all RECLAIM facilities were well below aggregate allocations). Pursuant to Rule 2010(b)(1)(A), all affected facilities had their respective exceedances deducted from their annual allocations for the compliance year subsequent to the date of South Coast AQMD determination that the facilities exceeded their Compliance Year 2020 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 determining 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 2020 employment survey data gathered from APEP reports, RECLAIM facilities reported a net loss of 3,687 jobs, representing 4.04 percent of their total employment. A comparison of reported job impacts between Cycle 1 and Cycle 2 facilities suggests that the coronavirus (COVID-19) global pandemic affected job losses at Cycle 1 facilities. No RECLAIM facility cited RECLAIM as a factor contributing to the addition of any jobs during Compliance Year 2020. No facility reported job losses due to RECLAIM, during Compliance Year 2020.

## 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 2020 NO<sub>x</sub> and SO<sub>x</sub> emissions decreased 15 percent and 16 percent, respectively, relative to Compliance Year 2019. Quarterly calendar year 2020 NO<sub>x</sub> emissions fluctuated within twelve percent of the mean NO<sub>x</sub> emissions for the year. Quarterly calendar year 2020 SO<sub>x</sub> emissions fluctuated within fifteen percent of the year's mean SO<sub>x</sub> emissions. There was no significant shift in seasonal emissions from the winter season to the summer season for either pollutant.

The California Clean Air Act (CCAA) required a 50 percent 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 2021, the per capita exposure to ozone (the average length of time each person is exposed) continued to be well below the target set for December 2000.

Air toxic health risk is primarily caused by emissions of certain volatile organic compounds (VOCs) and fine particulates, such as metals. RECLAIM facilities are subject to the same air toxic, VOC, and particulate matter regulations as other sources in the Basin. All sources are subject, where applicable, to the NSR rule for toxics (Rule 1401 and/or Rule 1401.1). In addition, new or modified sources with NO<sub>x</sub> or SO<sub>x</sub> emission increases are required to be equipped with BACT, which minimizes to the extent feasible the increase of NO<sub>x</sub> and SO<sub>x</sub> emissions. RECLAIM and non-RECLAIM facilities that emit toxic air contaminants are required to report those emissions to South Coast AQMD. Those emissions reports are used to identify candidates for the Air Toxics Hot Spots program (AB2588). This program requires emission inventories and, depending on the type and amount of emissions, facilities may be required to do public notice and/or prepare and implement a plan to reduce emissions. There is no evidence that RECLAIM has caused or allowed higher toxic risk in areas adjacent to RECLAIM facilities, than would occur under command-and-control, because RECLAIM facilities must comply with the same toxics rules as non-RECLAIM facilities.

## INTRODUCTION

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The South Coast Air Quality Management District (South Coast AQMD) REgional CLean Air Incentives Market (RECLAIM) program was adopted in October 1993 and replaced certain command-and-control rules regarding oxides of nitrogen (NOx) and oxides of sulfur (SOx) with a new market incentives program for facilities that meet the inclusion criteria. The goals of RECLAIM are to provide facilities with added flexibility in meeting emissions reduction requirements while lowering the cost of compliance. The RECLAIM program was designed to meet all state and federal Clean Air Act (CAA) and other air quality regulations and program requirements, as well as various other performance criteria, such as equivalent or better air quality improvement, enforcement, implementation costs, job impacts, and no adverse public health impacts.

Since RECLAIM represents a significant change from traditional command-and-control regulations, RECLAIM rules include provisions for program audits in order to verify that the RECLAIM objectives are being met. The rules provide for a comprehensive audit of the first three years of program implementation and for annual program audits. The audit results are used to help determine whether any program modifications are appropriate. South Coast AQMD staff has completed the initial tri-annual program audit and each individual annual program audit report through the 2020 Compliance Year Audit.

This report presents the annual program audit and progress report of RECLAIM's twenty-seventh compliance year (January 1 through December 31, 2020 for Cycle 1 and July 1, 2020 through June 30, 2021 for Cycle 2 RECLAIM facilities), also known as Compliance Year 2020. 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, 2020 (covered under the Annual RECLAIM Audit Report for 2019 Compliance Year), then discusses changes to the RECLAIM universe of sources in detail through the end of Compliance Year 2020.
2. **RTC Allocations and Trading**  
This chapter summarizes changes in emissions allocations in the RECLAIM universe, RTC supply and RTC trading activity, annual average prices, availability of RTCs, and market participants.
3. **Emission Reductions Achieved**  
This chapter assesses emissions trends and progress towards emission reduction goals for RECLAIM sources, emissions associated with equipment breakdowns, and emissions control requirement impacts on RECLAIM sources compared to other stationary sources. It also discusses the latest amendments to the RECLAIM program.
4. **New Source Review Activity**  
This chapter summarizes New Source Review (NSR) activities at RECLAIM facilities.
5. **Compliance**  
This chapter discusses compliance activities and the compliance status of RECLAIM facilities. It also evaluates the effectiveness of South Coast AQMD's compliance program, as well as the monitoring, reporting, and recordkeeping (MRR) protocols for NOx and SOx.
6. **Reported Job Impacts**  
This chapter addresses job impacts and facilities permanently ceasing operation of all emission sources.
7. **Air Quality and Public Health Impacts**  
This chapter discusses air quality trends in the South Coast Air Basin, seasonal emission trends for RECLAIM sources, per capita exposure to air pollution, and the toxic impacts of RECLAIM sources.

## CHAPTER 1 RECLAIM UNIVERSE

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### Summary

*When RECLAIM was adopted in October 1993, a total of 394 facilities were identified as the initial “universe” of sources subject to the requirements of RECLAIM. From program adoption through June 30, 2020, the overall changes in RECLAIM participants were 134 facilities included into the program, 73 facilities excluded from the program, and 209 facilities ceased operation. Thus, the RECLAIM universe consisted of 246 active facilities at the end of Compliance Year 2019 (December 31, 2019 for Cycle 1 facilities and June 30, 2020 for Cycle 2 facilities). During Compliance Year 2020 (January 1, 2020 through December 31, 2020 for Cycle 1 facilities and July 1, 2020 through June 30, 2021 for Cycle 2 facilities), no facilities were included into the RECLAIM universe, no facilities were excluded, and six facilities (two facilities in both the NOx and SOx universes and four in the NOx universe only) shut down and are no longer in the active RECLAIM universe. These changes resulted in a net decrease of six facilities in the universe, bringing the total number of active RECLAIM facilities to 240 as of the end of Compliance Year 2020.*

### 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 were not automatically included but did 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 was not in a category specifically excluded from the program could voluntarily join RECLAIM regardless of its emission level. Additionally, a facility could be required to enter the RECLAIM universe if:

- It increased its NO<sub>x</sub> and/or SO<sub>x</sub> emissions from permitted sources above the four ton per year threshold; or
- It ceased to be categorically excluded and its reported NO<sub>x</sub> and/or SO<sub>x</sub> emissions were greater than or equal to four tons per year; or
- It was 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 was 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 conducted a process of identifying facilities 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 Board to modify Control Measure CMB-05 – Further NO<sub>x</sub> Reductions from RECLAIM Assessment to achieve an additional five tons per day NO<sub>x</sub> emission reductions as soon as feasible but no later than 2025, and to transition the RECLAIM program to a command-and-control regulatory structure requiring Best Available Retrofit Control Technology (BARCT) level controls as soon as practicable. Additionally, California State Assembly Bill (AB) 617, approved in July 2017, required an expedited schedule for implementing BARCT at cap-and-trade facilities, under which many RECLAIM facilities are also subject, and required that the implementation of BARCT be no later than December 31, 2023.

### **2018 Rule Amendments**

On January 5, 2018, the Board amended two rules, Rule 2001 – Applicability, and Rule 2002 – Allocations for Oxides of Nitrogen (NO<sub>x</sub>) and Oxides of Sulfur (SO<sub>x</sub>), to initiate the transition of the NO<sub>x</sub> and SO<sub>x</sub> RECLAIM program to a command-and-control regulatory structure as soon as practicable. The amendments also precluded new or existing facilities from entering the NO<sub>x</sub> and SO<sub>x</sub> RECLAIM programs. On October 5, 2018, the 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 Board amended Rule 2001 on July 12, 2019 to remove the opt-out provision so that facilities cannot exit RECLAIM (see further discussion in Chapter 3).

Following approval of these Rule 2001 amendments, the only allowable changes to the RECLAIM Universe result from facilities that cease operations, as indicated by removing all equipment requiring a South Coast AQMD permit to operate, or by rendering such equipment permanently inoperable (*i.e.*, from facility shutdowns).

## 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, 2020 (the last day of Compliance Year 2019 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 73 facilities, and the shutdown of 209 facilities. Thus, the net change in the RECLAIM universe from October 15, 1993, through June 30, 2020 was a decrease of 148 facilities from 394 to 246 facilities. In Compliance Year 2020 (January 1, 2020 through December 31, 2020 for Cycle 1 facilities and July 1, 2020 through June 30, 2021 for Cycle 2 facilities), no facilities were included, no facilities were excluded, and six facilities shut down. These changes brought the total number of facilities in the RECLAIM universe to 240 facilities. The Compliance Year 2020 RECLAIM universe includes 212 NO<sub>x</sub> only, no SO<sub>x</sub>-only, and 28 both NO<sub>x</sub> and SO<sub>x</sub> RECLAIM facilities. The list of active facilities in the RECLAIM universe as of the end of Compliance Year 2020 is provided in Appendix A.

### Facility Inclusions and Exclusions

No RECLAIM facilities were included in or excluded from the RECLAIM universe during Compliance Year 2020.

### Facilities Permanently Ceasing Operations

Six NO<sub>x</sub> RECLAIM facilities permanently ceased operations in Compliance Year 2020. Two of these facilities removed all equipment requiring a South Coast AQMD permit to operate, shut down, and sold the property to new owners for real estate development. Three facilities cited financial reasons for shutdown, and one facility cited their shutdown was due to the coronavirus (COVID-19)

global pandemic. 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 six facilities in the RECLAIM universe during Compliance Year 2020. Table 1-1 summarizes overall changes in the RECLAIM universe between the start of the program and end of Compliance Year 2020 (December 31, 2020 for Cycle 1 facilities and June 30, 2021 for Cycle 2 facilities). Changes to the RECLAIM universe that occurred in Compliance Year 2020 are illustrated in Figure 1-1.

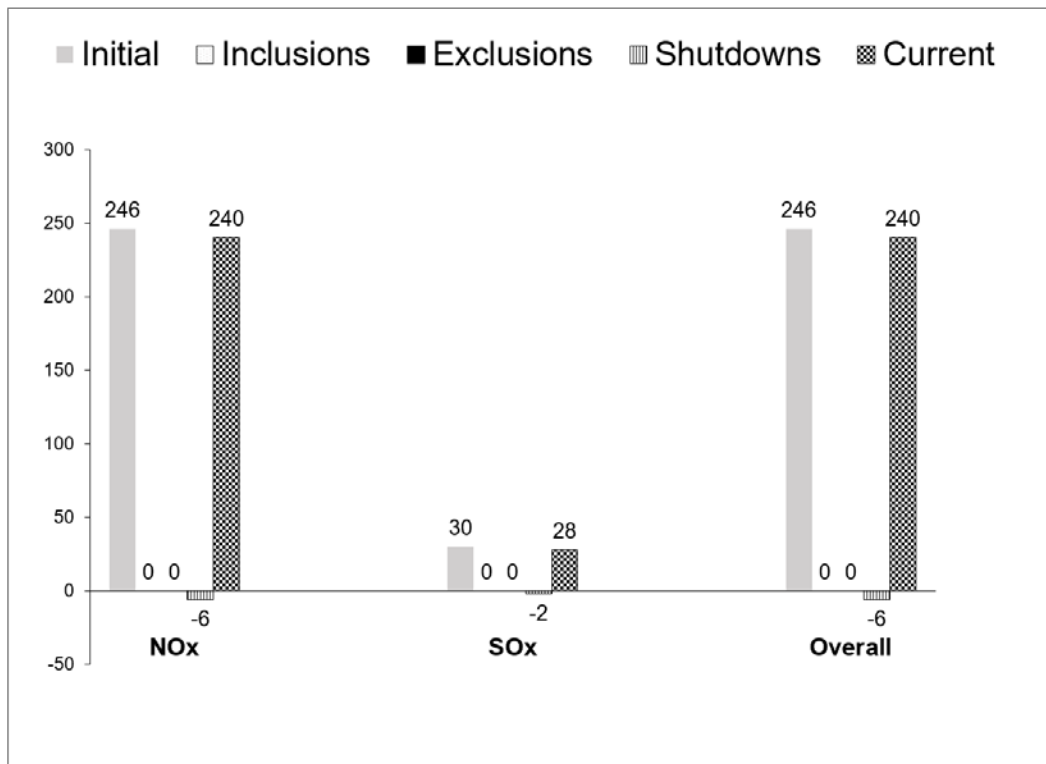
**Table 1-1  
RECLAIM Universe Changes**

|   | <b>NOx<br/>Facilities</b> | <b>SOx<br/>Facilities</b> | <b>Total*<br/>Facilities</b> |
|---|---------------------------|---------------------------|------------------------------|
| <b>Universe – October 15, 1993 (Start of Program)</b>       | 392                       | 41                        | 394                          |
| Inclusions – October 15, 1993, through Compliance Year 2019 | 134                       | 13                        | 134                          |
| Exclusions – October 15, 1993, through Compliance Year 2019 | -72                       | -4                        | -73                          |
| Shutdowns – October 15, 1993, through Compliance Year 2019  | -208                      | -20                       | -209                         |
| <b>Universe – June 30, 2020</b>                             | 246                       | 30                        | 246                          |
| Inclusions – Compliance Year 2020                           | 0                         | 0                         | 0                            |
| Exclusions – Compliance Year 2020                           | 0                         | 0                         | 0                            |
| Shutdowns – Compliance Year 2020                            | -6                        | -2                        | -6                           |
| <b>Universe – End of Compliance Year 2020</b>               | 240                       | 28                        | 240                          |

\* “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 2020**



## CHAPTER 2

### RTC ALLOCATIONS AND TRADING

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#### Summary

*On November 5, 2010, the 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 resulted in an overall reduction of 48.4 percent (or 5.7 tons per day) in SOx allocations. On December 4, 2015, the 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 amendments will result in an overall NOx reduction of 45 percent (or 12 tons per day) when fully implemented for Compliance Year 2022 and beyond. For Compliance Year 2020, the fifth year of implementation, the NOx allocation supply was reduced by 22.6 percent (or 6.0 tons per day). The only remaining changes in RTC supply during Compliance Year 2020 were due to allocation adjustments for clean fuel production pursuant to Rule 2002(c)(12) which decreased overall NOx RTC supply by 6.2 tons and SOx RTC supply by 4.8 tons.*

*Since the inception of the RECLAIM program in 1994, a total value of \$1.56 billion dollars has been traded in the RTC trading market, excluding swap trades (trades exchanging different types of RTCs, that maybe of equal value or different values). During calendar year 2021, there were 293 RTC trade registrations, including swap trades. There were 260 RTC trade registrations with a total value of \$22.0 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 2021 a total of 1,716 tons of discrete-year NOx RTCs, 475 tons of discrete-year SOx RTCs, 81 tons of IYB NOx RTCs and 6 tons of IYB SOx RTCs were traded. The RTC trading market activity decreased during calendar year 2021 compared to calendar year 2020, in number of trades (by 2.3%), and in volume both for discrete-year RTCs (by 1.8%) and IYB RTCs (by 50.6%). However, the RTC trading market increased in total value (by 20.9%) from calendar year 2020 to 2021.*

*Discrete-year RTC trades with price (i.e., price >\$0.00) registered during calendar year 2021 include trades for Compliance Years 2020, 2021, 2022, and 2023 NOx RTCs, and Compliance Year 2021 SOx RTCs, excluding swap trades. The annual average prices of discrete-year NOx RTCs traded during calendar year 2021 were \$5,603, \$18,846, \$33,085, and \$37,808 per ton for Compliance Years 2020, 2021, 2022, and 2023 RTCs, respectively. The annual average price for discrete-year SOx RTCs traded during the same period was \$3,000 per ton for Compliance Years 2021 RTCs.*

*The annual average price of Compliance Year 2021, 2022, and 2023 NOx RTCs exceeded the Rule 2015 backstop threshold of \$15,000 per ton while SOx RTC prices remained below the threshold. Prices for discrete-year NOx and SOx RTCs for all compliance years are still below the \$49,737 per ton of NOx and*

*\$35,811 per ton of SOx discrete-year RTCs pre-determined overall program review thresholds established by the Board pursuant to Health and Safety Code §39616(f)<sup>1</sup>.*

*The annual average price during calendar year 2021 for IYB NOx RTCs was \$94,576 per ton. During calendar year 2021, no IYB SOx RTCs were traded with price. Therefore, annual average IYB RTC prices did not exceed the \$746,056 per ton of IYB NOx RTCs or the \$537,160 per ton of IYB SOx RTCs pre-determined overall program review thresholds established by the Board pursuant to Health and Safety Code §39616(f).*

*Investors were active in the RTC market during calendar year 2021. They were involved in 131 of the 184 discrete-year NOx trade registrations and were not involved with the 1 discrete-year SOx trade registrations with price. Investors were also involved in 10 of the 14 IYB NOx. There were no IYB SOx trades with price. Investors were involved in 56 percent of total value and 62 percent of total volume for discrete-year NOx trades. Investors were not involved in discrete-year SOx trades for this calendar year. At the end of calendar year 2021, investors' holdings of IYB NOx RTCs increased slightly to 2.0 percent of total NOx RECLAIM RTCs from 1.2 percent in 2020. Investors' holdings of IYB SOx RTCs stayed consistent at 4.2 percent of the total SOx RECLAIM RTCs when compared to investor's holdings in calendar year 2020.*

## **Background**

On January 5, 2018, the South Coast AQMD 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. Prior to this amendment, South Coast AQMD issued 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 was calculated based on each facility's historical production levels as reported to South Coast AQMD in its annual emission reports (AERs), NOx emission factors listed in Tables 1, 3, and 6 of Rule 2002, or SOx emission factors in Tables 2 and 4 of Rule 2002 for the appropriate equipment category, any qualified<sup>2</sup> external offsets previously provided by the facility, and any unused ERCs generated at and held by the facility. Facilities entering RECLAIM after 1994 were 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 the 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 staggered compliance cycles—Cycle 1 with a compliance period of January 1 through

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<sup>1</sup> September 7, 2007 Board Agenda item No. 43 regarding Health and Safety Code §39616(f) can be found at: <http://www3.aqmd.gov/hb/2007/September/070943a.html>

<sup>2</sup> Only external offsets provided at a one-to-one offset ratio after the base year were used as the basis for allocation quantification purposes.

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 2020 data, new RTC trade data discussed in this chapter is for RTC trades that occurred during calendar year 2021.

## **RTC Allocations and Supply**

The methodology for determining RTC allocations is established by Rule 2002. According to this rule, allocations may change when the universe of RECLAIM facilities changes, emissions associated with the production of re-formulated gasoline increase or decrease, reported historical activity levels are updated, or emission factors used to determine allocations are changed. In addition to these RTCs allocated by South Coast AQMD, RTCs may have been generated by conversion of emissions reduction credits from mobile and area sources pursuant to approved protocols. The total RTC supply in RECLAIM is made up of all RECLAIM facilities' allocations, conversions of ERCs owned by RECLAIM and non-RECLAIM facilities<sup>3</sup>, emissions associated with the production of re-formulated gasoline, and conversion of emission reduction credits from mobile sources and area sources pursuant to approved protocols. The South Coast AQMD Board may adopt additional rules that affect RTC supply. Changes in the RTC supply during Compliance Year 2020 are discussed below.

### **Allocations Adjustments Due to Inclusion and Exclusion of Facilities**

As noted above, the South Coast AQMD Board discontinued facility inclusions into RECLAIM. Previous to this amendment, facilities existing prior to October 1993 and entering RECLAIM after 1994 may have received allocations just like facilities that were included at the beginning of the program. However, allocations issued for these facilities were only applicable for the compliance year of entry and forward. In addition, these facilities were 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

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<sup>3</sup> Per Rule 2002(c)(4), the window of opportunity for non-RECLAIM facilities to convert ERCs to RTCs, other than during the process of a non-RECLAIM facility entering the program, closed June 30, 1994.

trading zone restriction to ensure net ambient air quality improvement 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<sub>x</sub> or SO<sub>x</sub> 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 Board amended Rule 2001 on October 5, 2018, to allow qualifying facilities to opt-out of the RECLAIM program. Based on continuing conversations with U.S. EPA, the Board subsequently amended Rule 2001 on July 12, 2019, to remove the opt-out provision so that facilities can no longer exit RECLAIM. Facilities that were excluded by means of this opt-out provision, as opposed to the normal exclusion criteria described in the preceding paragraph, retained their initially-allocated RTCs<sup>4</sup>. No facilities were excluded during Compliance Year 2020. Therefore, there were no changes to the NO<sub>x</sub> or SO<sub>x</sub> supplies in Compliance Year 2020 due to facility exclusions from RECLAIM.

On January 5, 2018, the South Coast AQMD 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 2020. Therefore, there are no changes to the NO<sub>x</sub> or SO<sub>x</sub> RTC supplies in Compliance Year 2020 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<sub>x</sub> 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.

Six RECLAIM facilities shut down during Compliance Year 2020, one of which was listed in Table 8 of Rule 2002. No adjustment of this facility's NO<sub>x</sub> RTC Allocations was required pursuant to Rule 2002(i)(3) because all facility NO<sub>x</sub> sources operated since calendar year 2015 were permitted with BARCT-equivalent emission limits. Therefore, there were no changes to the NO<sub>x</sub> RTC supplies in Compliance Year 2020 due to facility shutdowns. Most of the shutdown facilities sold their RTC credits.

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<sup>4</sup> Except for shutdown facilities that are subject to Rule 2002(i); see discussion in the next section.

### **Allocations Adjustments Due to Clean Fuel Production**

Rule 2002(c)(12) – Clean Fuel Adjustment to Starting Allocation, provides refineries with RTCs to compensate for their actual emissions increases caused by the production of California Air Resources Board (CARB) Phase II reformulated gasoline. The amount of these RTCs is based on actual emissions for the subject compliance year and historical production data. The quantities of such clean fuels RTCs needed were projected based on the historical production data submitted, and qualifying refineries were issued in 2000 an aggregate baseline of 86.5 tons of NO<sub>x</sub> and 42.3 tons of SO<sub>x</sub> for Compliance Year 1999, 101.8 tons of NO<sub>x</sub> and 41.4 tons of SO<sub>x</sub> for Compliance Year 2000, and 98.4 tons of NO<sub>x</sub> and 40.2 tons of SO<sub>x</sub> for each subsequent Compliance Year on the basis of those projections. These refineries are required to submit, at the end of each compliance year in their Annual Permit Emissions Program (APEP) report, records to substantiate actual emission increases due solely to the production of reformulated gasoline. If actual emission increases for a subject year are different than the projected amount, the RTCs issued are adjusted accordingly (*i.e.*, excess RTCs issued are deducted if emissions were less than projected; conversely, additional RTCs are issued if emissions were higher than projected).

As a result of the amendment to Rule 2002 in January 2005 to further reduce RECLAIM NO<sub>x</sub> allocations, the NO<sub>x</sub> historical baseline Clean Fuel Adjustments for Compliance Year 2007 and subsequent years held by the facility were also reduced by the appropriate factors as stated in Rule 2002(f)(1)(A). On the other hand, Rule 2002(c)(12) provides refineries a Clean Fuels adjustment based on actual emissions. Therefore, each refinery is subject to an adjustment at the end of each compliance year equal to the difference between the amount of actual emission increases due solely to production of reformulated gasoline at each refinery and the amount of credits it was issued in 2000 after discounting by the factors for the corresponding compliance year. For Compliance Year 2020, 6.2 tons of NO<sub>x</sub> RTCs (0.08% of total NO<sub>x</sub> allocation for Compliance Year 2020) and 4.8 tons of SO<sub>x</sub> RTCs (0.22% of total SO<sub>x</sub> allocation for Compliance Year 2020) were deducted from refineries' Compliance Year 2020 RTC holdings at the end of the compliance year.

### **Changes in RTC Allocations Due to Activity Corrections**

RECLAIM facilities' allocations are determined by their reported historical activity levels (*e.g.*, fuel usage, material usage, or production) in their AERs. In the case where a facility's AER reported activity levels are updated within five years of the AER due date, its allocation is adjusted accordingly<sup>5</sup>. There were no changes in RTC allocations due to activity corrections in Compliance Year 2020.

### **Conversions of Other Types of Emission Reduction Credits**

Conversions of Mobile Source Emission Reduction Credits (MSERCs) and other types of emission reduction credits, other than regular stationary source ERCs issued under Regulation XIII – New Source Review, to RTCs are allowed under Rule 2008 – Mobile Source Credits, and several programs under Regulation XVI

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<sup>5</sup> Pursuant to Rule 2002(b)(5) as amended on December 4, 2015, any AERs (including corrections) submitted more than five years after the original due date are not considered in the RTC quantification process.

– Mobile Source Offset Programs and Regulation XXV – Intercredit Trading. Conversion of these credits to RTCs is allowed based on the respective approved protocol specified in each rule. Currently, Rules 1610 – Old-Vehicle Scrapping and 1612 – Credits for Clean On-Road Vehicles allow the creation of MSERCs. However, there are no State Implementation Plan (SIP) approved protocols for conversion of MSERCs to RTCs. No new RTCs were issued by conversion of other types of emission reduction credits in Compliance Year 2020.

**Net Changes in RTC Supplies**

The changes to RTC supplies described in the above sections resulted in a net decrease of 6.2 tons of NOx RTCs (0.08% of the total) and a decrease of 4.8 tons of SOx RTCs (0.22% of the total) for Compliance Year 2020. Table 2-1 summarizes the changes in NOx and SOx RTC supplies that occurred in Compliance Year 2020 pursuant to Rule 2002.

**Table 2-1  
Changes in NOx and SOx RTC Supplies during Compliance Year 2020 (tons per year)**

| Source                           | NOx         | SOx         |
|----------------------------------|-------------|-------------|
| Universe changes                 | 0           | 0           |
| Clean Fuel/Reformulated Gasoline | -6.2        | -4.8        |
| Activity corrections             | 0           | 0           |
| MSERCs                           | 0           | 0           |
| <b>Net change</b>                | <b>-6.2</b> | <b>-4.8</b> |

Note: The data in this table represents the changes that occurred over the course of Compliance Year 2020 to the Compliance Year 2020 aggregate NOx and SOx RTC supplies originally issued pursuant to Rule 2002, not the difference between 2020 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 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 Board implemented CMB-10 by adopting changes to the RECLAIM program that resulted in a 22.5 percent 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.

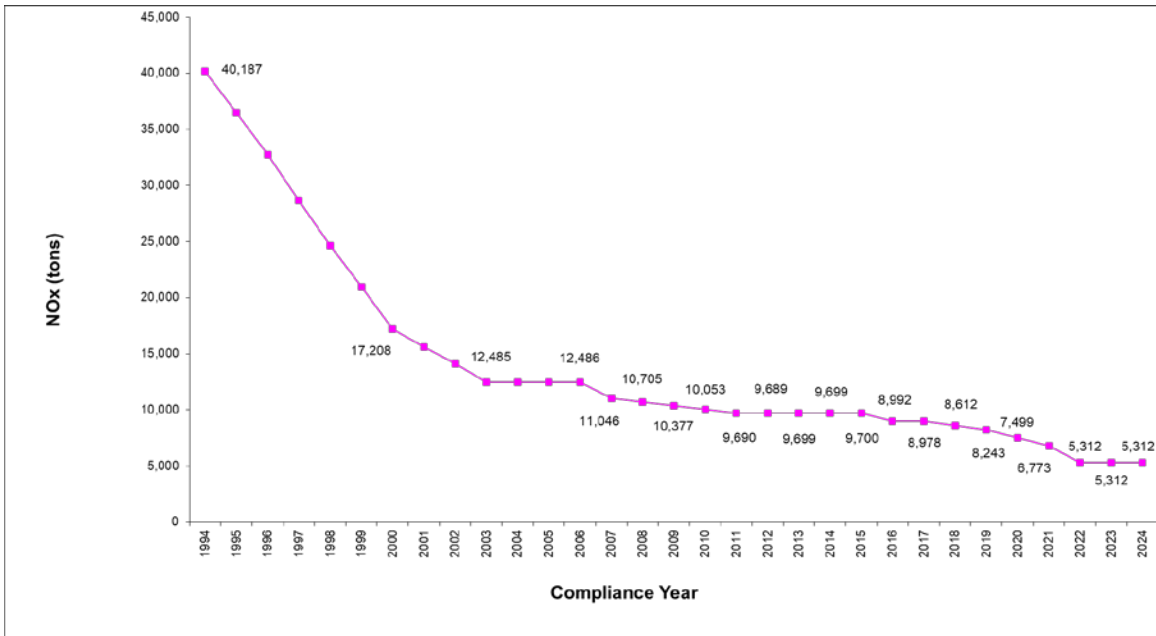
On November 5, 2010, the Board adopted changes to the RECLAIM program implementing the 2007 AQMP Control Measure CMB-02 – Further SOx Reductions for RECLAIM (SOx). These amendments resulted in a BARCT-based

overall reduction of 5.7 tons SOx per day when fully implemented in Compliance Year 2019 (the reductions were 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 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 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.

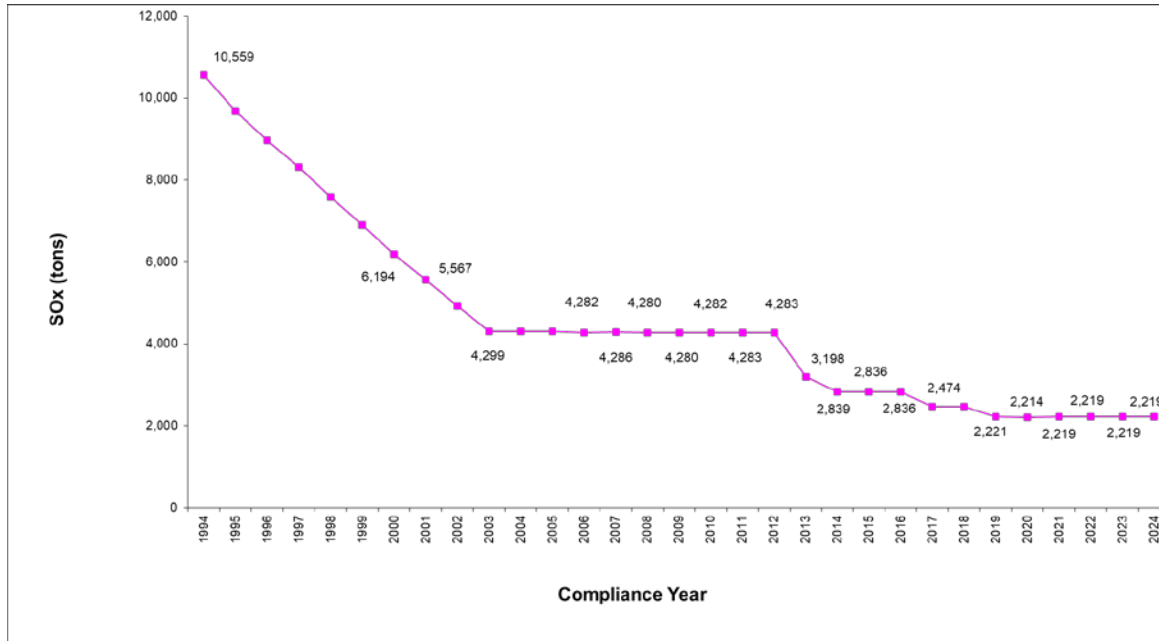
Figures 2-1 and 2-2 illustrate the total NOx and SOx RTC supplies, respectively, through the end of Compliance Year 2024, incorporating all the changes discussed above.

**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 discrete-year 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 prices 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

As noted in the Summary above and Table 2-14, the annual average price of Compliance Year 2021, 2022, and 2023 NOx RTCs at \$18,846, \$33,085, and \$37,808 per ton, respectively, exceeded the Rule 2015 backstop threshold of

\$15,000 per ton, while SOx RTC prices remained below the threshold. Additionally, as reported in Informational Item #4 – [“Twelve-month and Three-month Rolling Average Price of Compliance Years 2021 and 2022 NOx and SOx RTCs \(October – December 2021\)”](#), at the January 21, 2022 meeting of the Stationary Source Committee, the 12-month and 3-month rolling average NOx RTC prices for Compliance Year 2020 NOx RTCs for the reporting month of January 2022 of \$33,085 per ton and \$38,803 per ton, respectively, also exceeded the \$22,500 per ton 12-month and \$35,000 per ton 3-month rolling average thresholds specified by Rule 2002(f)(1)(H).

Rule 2015(b)(6) specifies that, if the annual average price of discrete-year NOx or SOx RTCs exceeds \$15,000 per ton, within six months of the determination<sup>6</sup> thereof the Executive Officer shall, in addition to the annual report, submit to CARB and USEPA results of an evaluation and review of the compliance and enforcement aspects of the RECLAIM program, to include at a minimum the following assessments:

- the deterrent effect of Rule 2004(d)(1) through (d)(4), Prohibition of Emissions in Excess of Annual Allocation,
- the rates of compliance with applicable emission caps,
- the rate of compliance with monitoring, recordkeeping, and reporting requirements,
- South Coast AQMD’s ability to obtain appropriate penalties in cases of noncompliance, and
- whether the program provides appropriate incentives to comply.

Rule 2015(b)(6) specifies that the Executive Officer shall submit, with the results of the evaluation, either a recommendation that paragraphs (d)(1) through (d)(4) be continued without change, or amendments to the RECLAIM rules setting forth revisions to paragraphs (d)(1) through (d)(4) of Rule 2004 if the South Coast AQMD’s Board determines that revisions are appropriate in light of the results of the evaluation.

Rule 2002(f)(1)(H) also specifies that in the event 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 Board and 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.

Additionally, pursuant to Rule 2002, if the 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 Board concurrence.

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<sup>6</sup> The Executive Officer will notify CARB and USEPA no later than the September 2022 Board meeting, which is six months from the determination presented in this March 2022 annual report.

At its January 21, 2022, meeting, the Executive Officer notified the Stationary Source Committee that the Executive Officer will conduct an assessment of the RECLAIM Program including control technology implementation and socioeconomic impacts due to Compliance Year 2022 NOx RTCs' exceedance of the 12-month and 3-month rolling average thresholds specified Rule 2002. This assessment is targeted to be completed by July 1, 2022.

The 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.

For RTC trades occurring in calendar year 2021, the overall program review thresholds<sup>7</sup> in 2021 dollars, pursuant to Health and Safety Code §39616(f), are \$49,737 per ton of discrete-year NOx RTCs, \$35,811 per ton of discrete-year SOx RTCs, \$746,056 per ton of IYB NOx RTCs, and \$537,160 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 2021 was slightly lower than the market activity in calendar year 2020 in terms of the number of trades. Table 2-2 compares NOx and SOx trade registrations for calendar years 2021 and 2020.

**Table 2-2**  
**Trade Registrations in Calendar Years 2021 and 2020, Including Swaps**

| <b>RTC</b> | <b>2021</b> | <b>2020</b> |
|------------|-------------|-------------|
| NOx        | 280         | 279         |
| SOx        | 13          | 21          |
| Total      | 293         | 300         |

The total value of RTCs traded in calendar year 2021 was significantly higher than in calendar year 2020, excluding swap trades. Table 2-3 compares the value of NOx and SOx RTCs traded in calendar years 2021 and 2020. Figure 2-3 illustrates the annual value of RTCs traded in RECLAIM since the inception of the program.

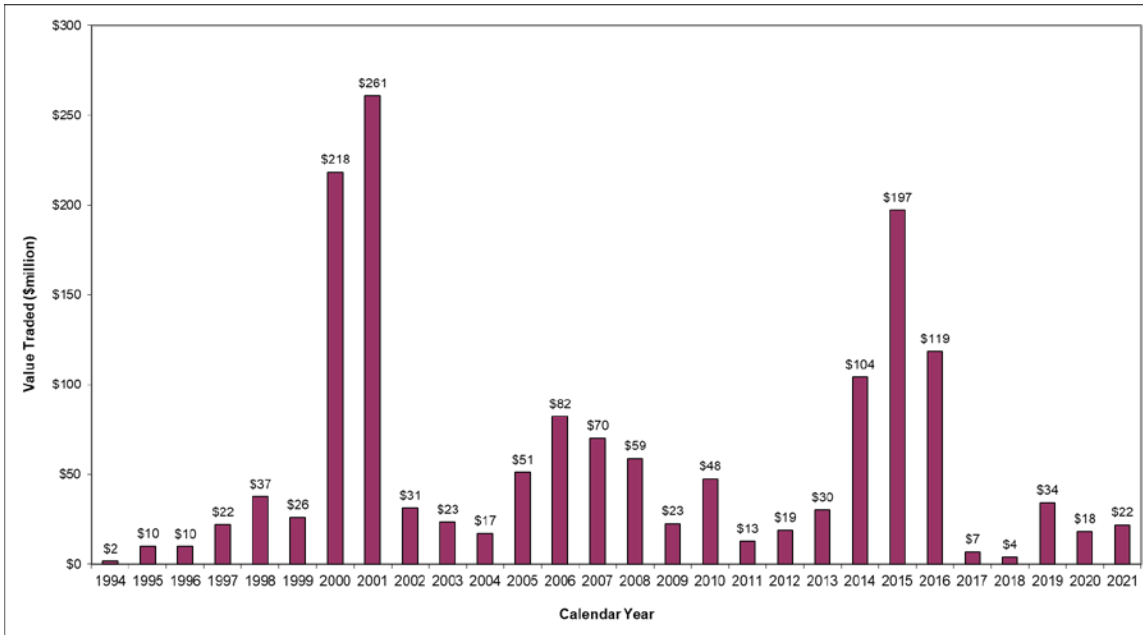
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<sup>7</sup> These program review thresholds were adjusted using the August 2021 Consumer Price Index (CPI), due to the unavailability of the December 2021 CPI by the end of January 2022 when this report was compiled.

**Table 2-3**  
**Value Traded in Calendar Years 2021 and 2020, Excluding Swaps (millions of dollars)**

| RTC   | 2021    | 2020    |
|-------|---------|---------|
| NOx   | \$21.87 | \$17.52 |
| SOx   | \$0.11  | \$0.67  |
| Total | \$21.98 | \$18.19 |

**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 for NOx but moderately higher for SOx in calendar year 2021 than in calendar year 2020, while trades of IYB RTCs of both NOx and SOx in calendar year 2021 were significantly lower than the trading volume in 2020. Tables 2-4 and 2-5 compare 2021 and 2020 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 2021 by pollutant. Additional information on the discrete-year and IYB trading activities, value, and volume are discussed later in this chapter.

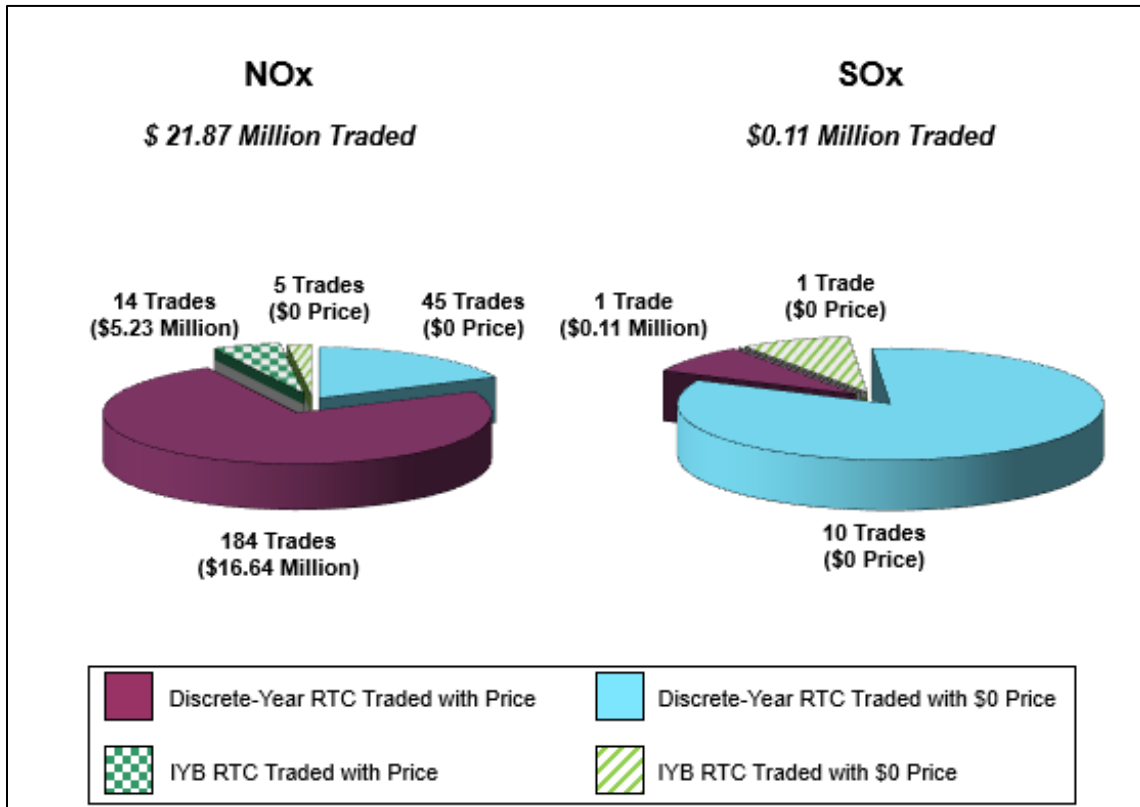
**Table 2-4**  
**Volume of Discrete-Year RTCs Traded in Calendar Years 2021 and 2020, Excluding Swaps (tons)**

| RTC   | 2021  | 2020  |
|-------|-------|-------|
| NOx   | 1,716 | 1,854 |
| SOx   | 475   | 377   |
| Total | 2,191 | 2,231 |

**Table 2-5**  
**Volume of IYB RTCs Traded in Calendar Years 2021 and 2020, Excluding Swaps (tons)**

| RTC   | 2021 | 2020 |
|-------|------|------|
| NOx   | 81   | 156  |
| SOx   | 6    | 20   |
| Total | 87   | 176  |

**Figure 2-4**  
**Calendar Year 2021 Overall Trading Activity (Excluding Swaps)**



There were 61 trades with zero price in calendar year 2021. 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 2021, 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 2021, there were a total of 229 discrete-year NOx RTC trades and 11 discrete-year SOx RTC trades, excluding swap trades. The trading of discrete-year NOx RTCs included RTCs for Compliance Years 2020 through 2023 (see Table 2-14). The trading of discrete-year SOx RTCs included RTCs for Compliance Years 2020 through 2022, though 2021 credit trades were the only trades with price (see Table 2-15). Table 2-6 compares the number of trade registrations in 2021 and 2020, both with price and with zero price.

**Table 2-6  
Discrete-Year Trade Registrations in Calendar Years 2021 and 2020 by Price, Excluding Swaps**

| Year | RTC   | With Price | With \$0 Price | Total |
|------|-------|------------|----------------|-------|
| 2021 | NOx   | 184        | 45             | 229   |
|      | SOx   | 1          | 10             | 11    |
|      | Total | 185        | 55             | 240   |
| 2020 | NOx   | 189        | 41             | 230   |
|      | SOx   | 5          | 7              | 12    |
|      | Total | 194        | 48             | 242   |

Total discrete-year RTC trading values significantly increased for NOx and significantly decreased for SOx on a relative basis in calendar year 2021 when compared to calendar year 2020. Table 2-7 compares the total value of the discrete-year RTC trades in 2021 and 2020.

**Table 2-7  
Discrete-Year RTC Value Traded in 2021 and 2020, Excluding Swaps (millions of dollars)**

| RTC   | 2021    | 2020   |
|-------|---------|--------|
| NOx   | \$16.64 | \$7.46 |
| SOx   | \$0.11  | \$0.22 |
| Total | \$16.75 | \$7.68 |

In calendar year 2021, the overall quantities of discrete-year NOx RTCs traded slightly decreased compared to calendar year 2020, while the quantities of

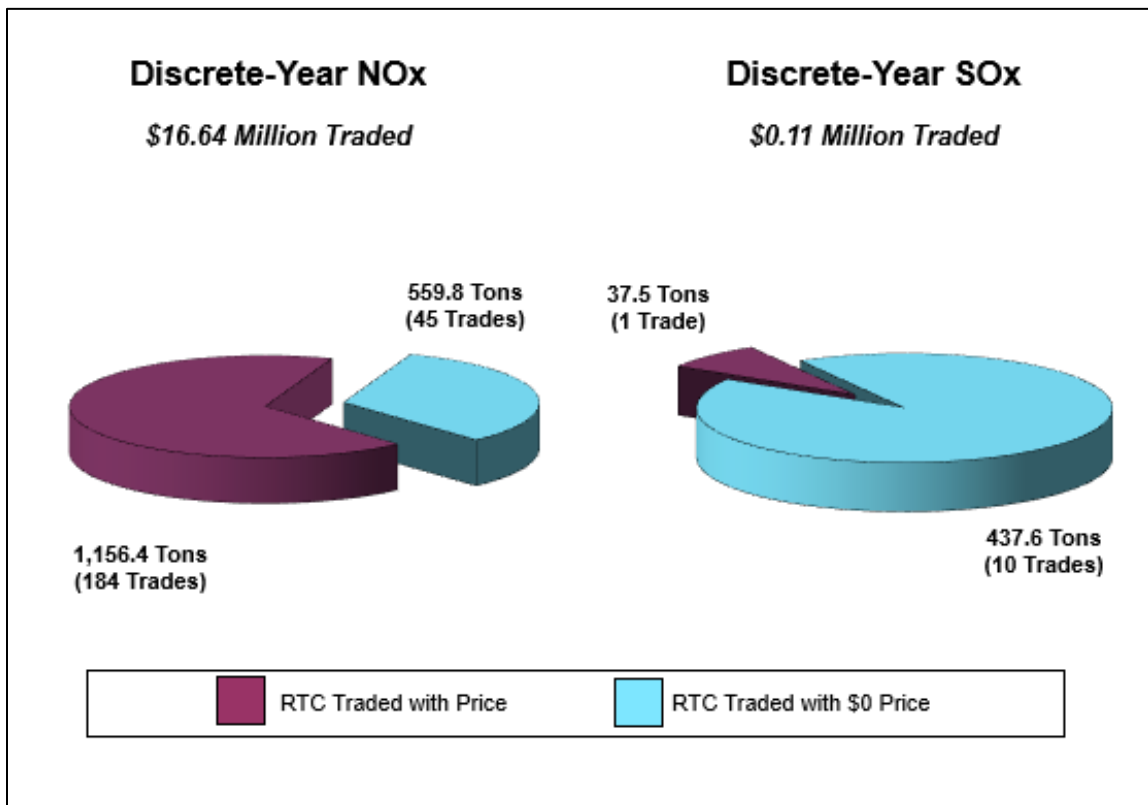
discrete-year SOx RTCs traded significantly increased. Table 2-8 compares the volume of NOx and SOx RTCs traded in calendar years 2021 and 2020, excluding swap trades. Figure 2-5 illustrates the trading activity of discrete-year RTCs (excluding swaps) for calendar year 2021.

**Table 2-8**  
**Discrete-Year RTC Volume Traded in Calendar Years 2021 and 2020 by Price, Excluding Swaps (tons)**

| Year | RTC   | With Price | With \$0 Price | Total |
|------|-------|------------|----------------|-------|
| 2021 | NOx   | 1,156      | 560            | 1,716 |
|      | SOx   | 38         | 438            | 475*  |
|      | Total | 1,194      | 997*           | 2,191 |
| 2020 | NOx   | 1,267      | 586            | 1,854 |
|      | SOx   | 52         | 325            | 377   |
|      | Total | 1,319      | 911            | 2,231 |

\* Due to rounding, some totals may not correspond with the sum of the separate figures.

**Figure 2-5**  
**Calendar Year 2021 Trading Activity for Discrete-Year RTCs (Excluding Swaps)**



***IYB RTC Trading Activity***

In calendar year 2021, there were 19 IYB NOx trades and one IYB SOx trade, excluding swaps. The IYB NOx trades included RTCs with Compliance Years 2021 through 2024 as start years, while the IYB SOx trade was for RTCs with a Compliance Year 2022 start year. Table 2-9 compares the number of IYB RTC trade registrations from 2021 and 2020.

**Table 2-9  
IYB Trade Registrations in Calendar Years 2021 and 2020 by Price**

| Year | RTC   | With Price | With \$0 Price | Total |
|------|-------|------------|----------------|-------|
| 2021 | NOx   | 14         | 5              | 19    |
|      | SOx   | 0          | 1              | 1     |
|      | Total | 14         | 6              | 20    |
| 2020 | NOx   | 18         | 13             | 31    |
|      | SOx   | 2          | 2              | 4     |
|      | Total | 20         | 15             | 35    |

Total IYB RTC trade values significantly decreased in calendar year 2021 compared to calendar year 2020. Table 2-10 compares the NOx and SOx IYB RTC trade values in calendar years 2021 and 2020.

**Table 2-10  
IYB RTC Value Traded in 2021 and 2020, Excluding Swaps (millions of dollars)**

| RTC   | 2021   | 2020    |
|-------|--------|---------|
| NOx   | \$5.23 | \$10.06 |
| SOx   | \$0    | \$0.45  |
| Total | \$5.23 | \$10.51 |

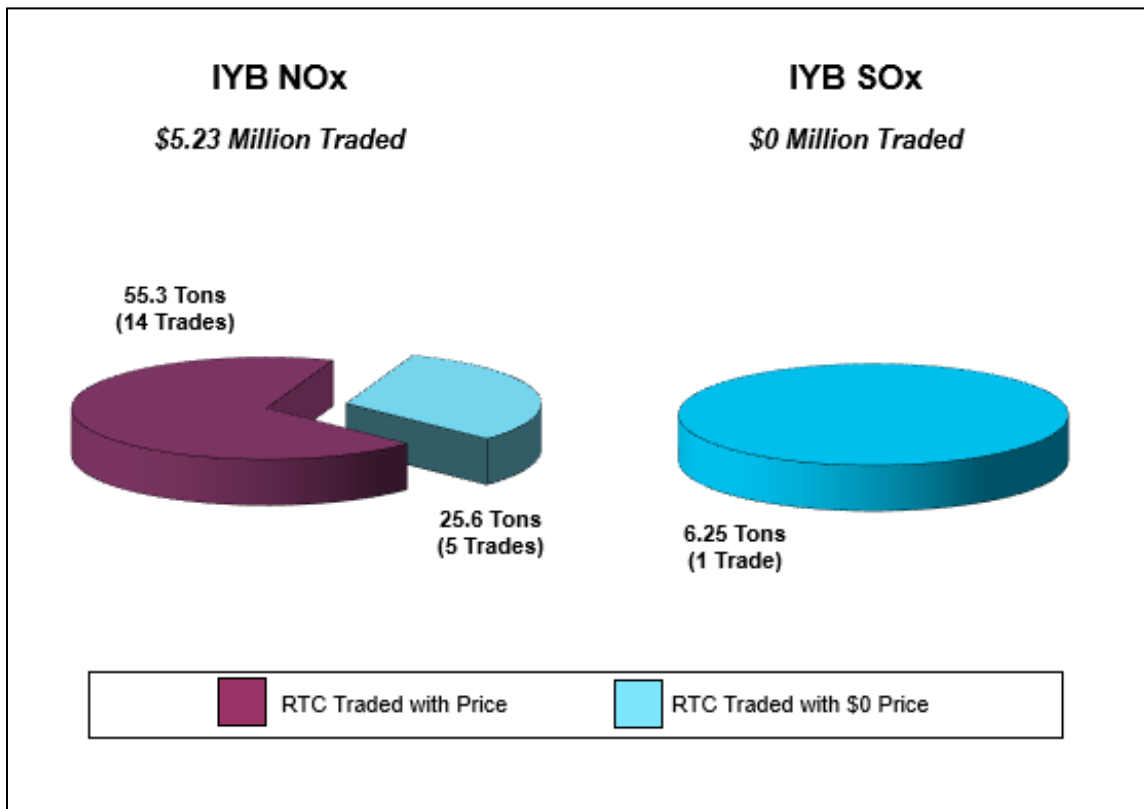
In calendar year 2021, the total volume of IYB RTCs traded (excluding swap trades) decreased significantly compared to calendar year 2020. Table 2-11 compares the NOx and SOx IYB RTCs trade volumes in calendar years 2021 and 2020. As described earlier, the majority of trades with zero price were between facilities under common ownership and facilities that had a change of operator. Figure 2-6 illustrates the calendar year 2021 IYB RTC trading activity excluding swap trades.



**Table 2-11**  
**IYB RTC Volume Traded in Calendar Years 2021 and 2020 by Price, Excluding Swaps (tons)**

| Year | RTC   | With Price | With \$0 Price | Total |
|------|-------|------------|----------------|-------|
| 2021 | NOx   | 55         | 26             | 81    |
|      | SOx   | 0          | 6              | 6     |
|      | Total | 55         | 32             | 87    |
| 2020 | NOx   | 86         | 70             | 156   |
|      | SOx   | 14         | 6              | 20    |
|      | Total | 100        | 76             | 176   |

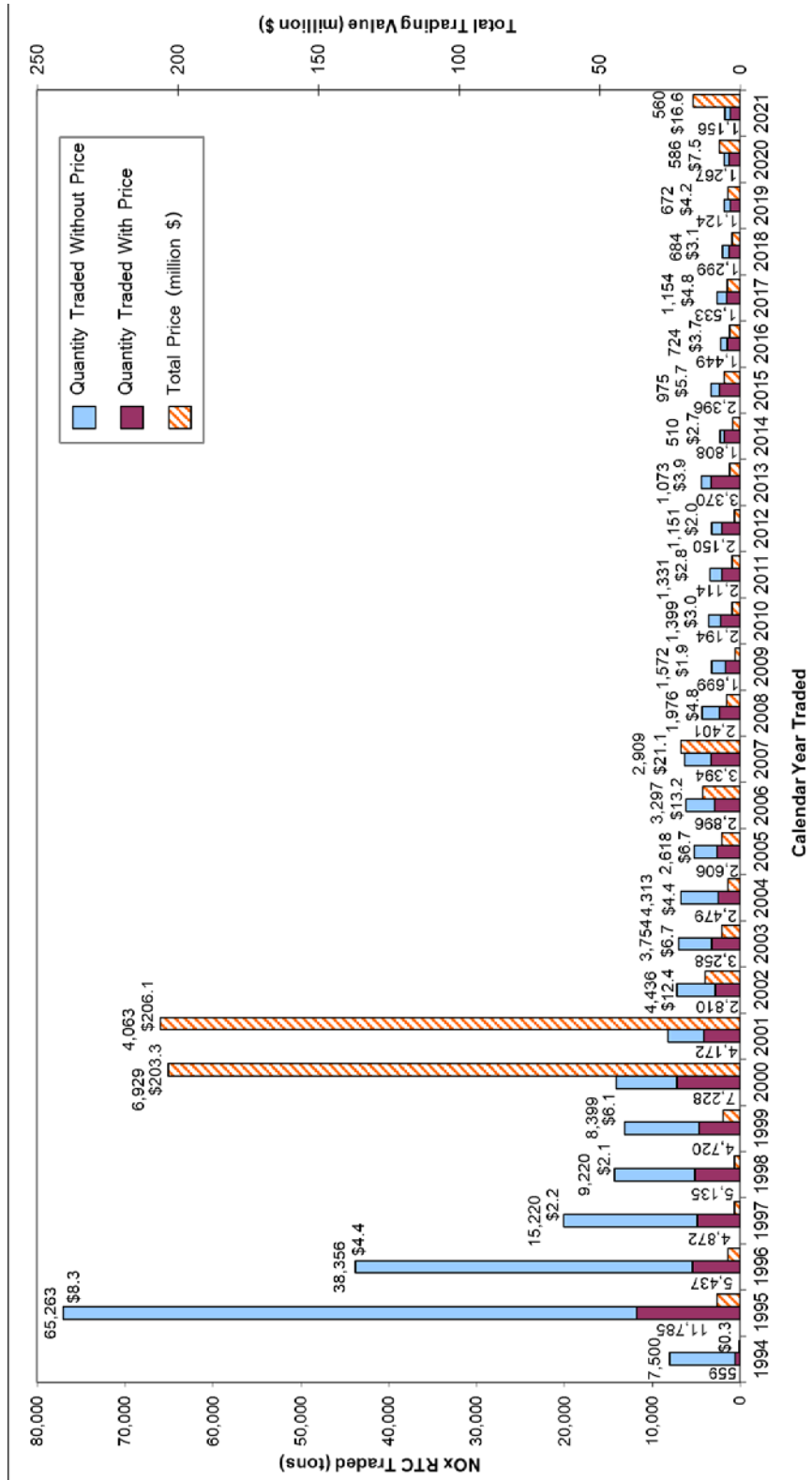
**Figure 2-6**  
**Calendar Year 2021 Trading Activity for IYB RTCs (Excluding Swaps)**



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)**

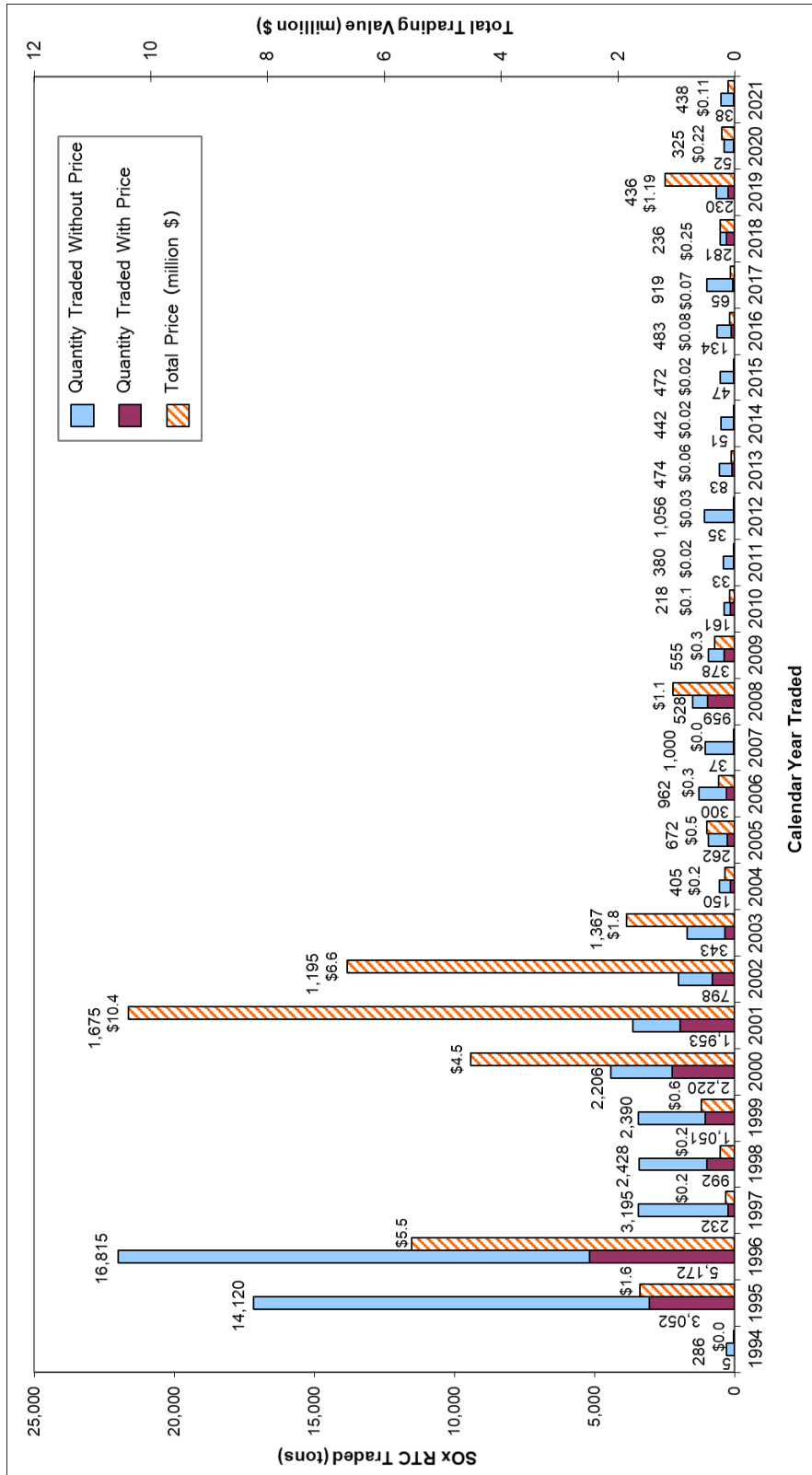


Figure 2-9  
 IYB NOx RTC Trades (Excluding Swaps)

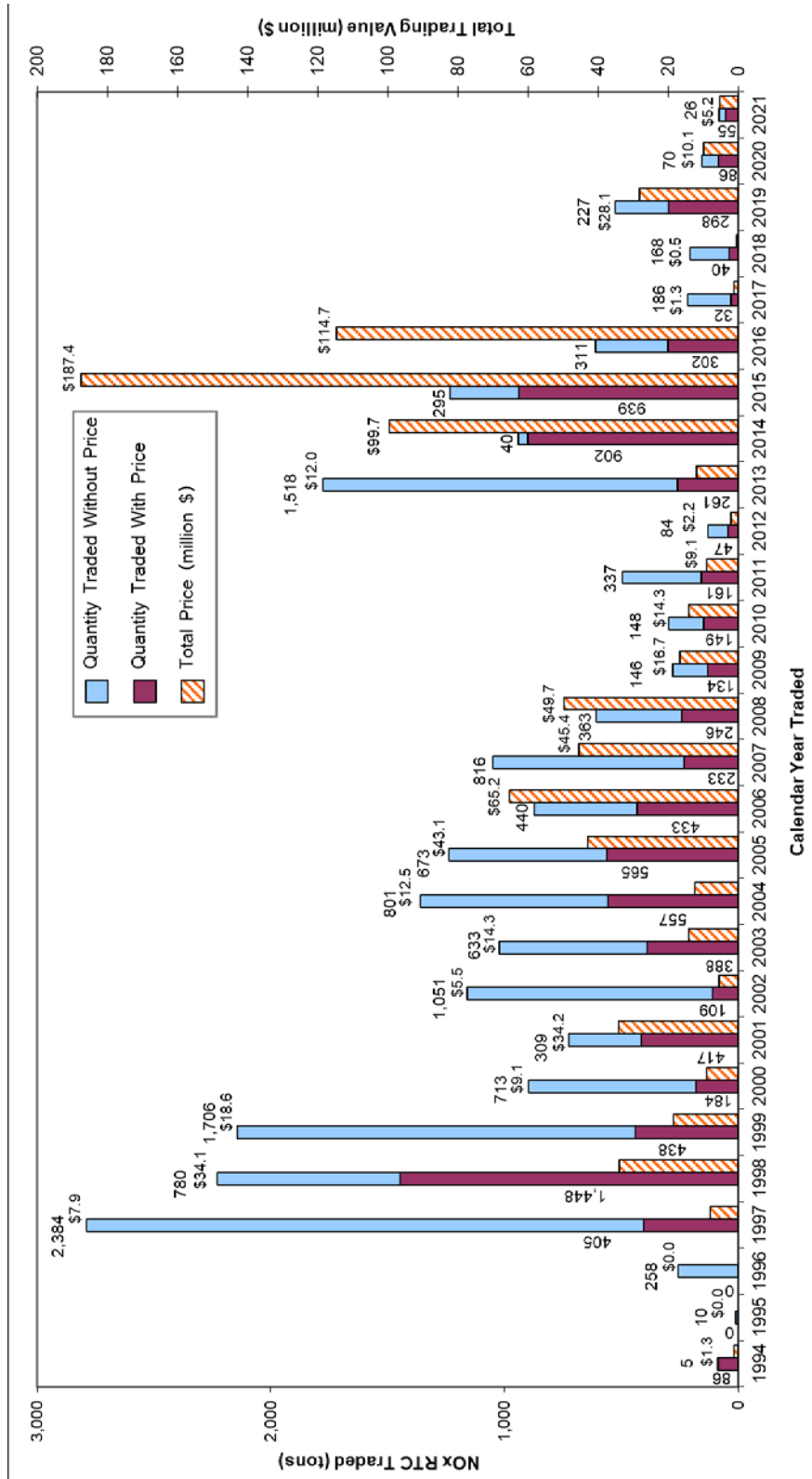
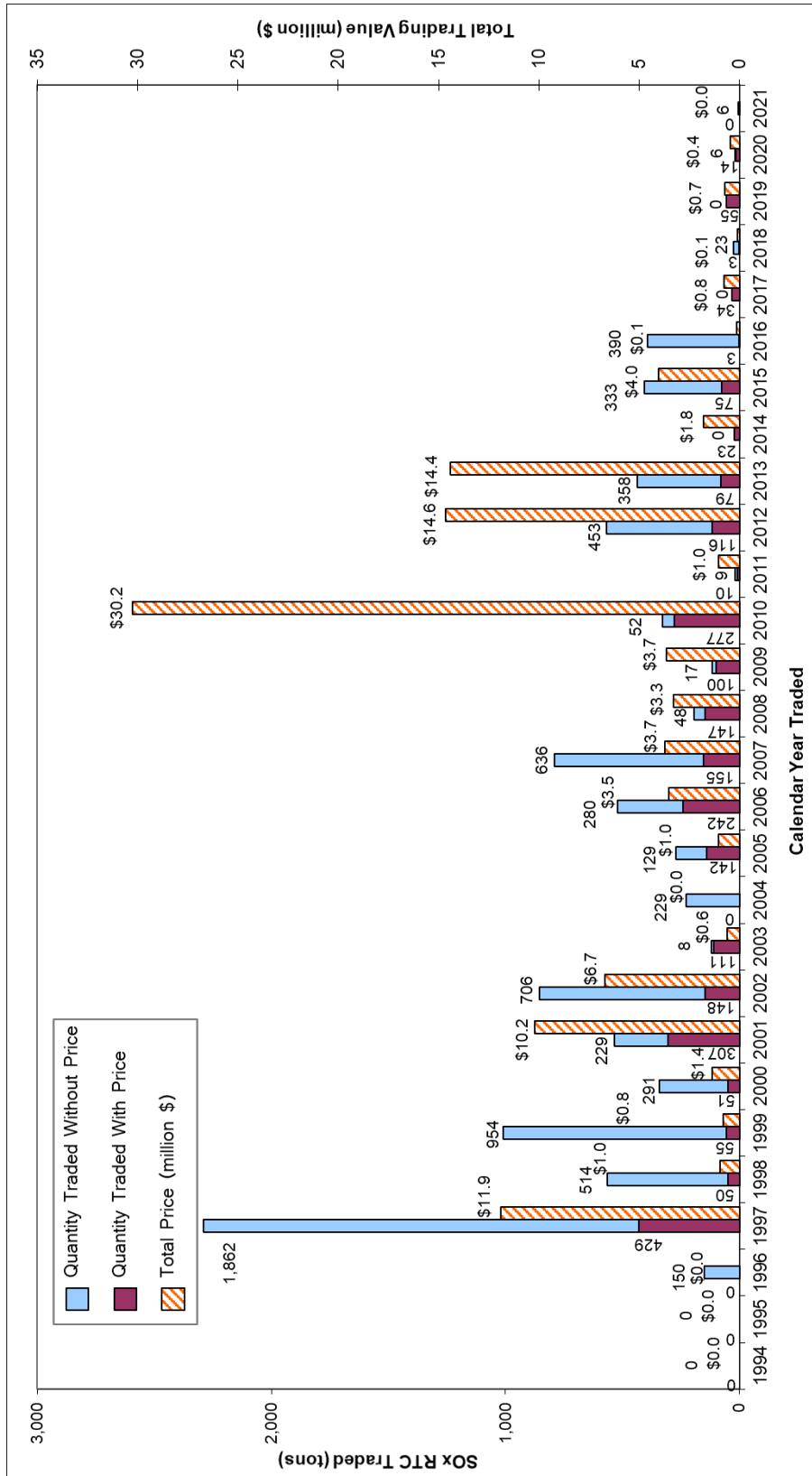


Figure 2-10  
 IYB SOx RTC Trades (Excluding Swaps)



**Swap Trades**

In addition to traditional trades of RTCs for a price, RTC swaps also occur between trading partners. Most swap trades are exchanges of RTCs with different zones, cycles, expiration years, and/or pollutants. Some swaps involve a combination of RTCs and cash payment as a premium. There are also swaps of RTCs for ERCs. Trading parties swapping RTCs are 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.

During calendar year 2021, thirty-three trade registrations included RTC swaps with a total value of about \$3.4 million. Twenty-one swap trades involved swapping a larger quantity of discrete-year RTCs for a smaller quantity of discrete-year RTCs with a later expiration date. These trades were collectively valued at \$2.5 million. Two trades involved swapping the same amount of inland credits for coastal credits with a price premium. The total value of these trades was \$0.1 million. Two trades involved swapping NO<sub>x</sub> credits for a greater quantity of SO<sub>x</sub> credits. The total value of these trades was \$0.1 million. One swap trade involved a forward contract, in which one party agreed to sell RTCs during 2019 and purchase the same volume and vintage of RTCs back from the other party in 2021 at zero price. The seven remaining trades were between facilities or RTC holders under common ownership. The total value of the remaining seven trades is \$0.7 million. Upon further investigation, staff concluded that these seven transactions were not at arm's-length, and that the prices reported for the transfer of RTCs for these seven 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 these 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 NO<sub>x</sub> 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 or a true market-based price. Tables 2-12 and 2-13 present the calendar years' 2001 through 2021 RTC swaps for NO<sub>x</sub> and SO<sub>x</sub>, 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                                  |
| 2020 | \$1.79                    | 0                                 | 324.6                                       | 18                                      | 18                                 |
| 2021 | \$3.40                    | 35.4                              | 200.0                                       | 31                                      | 32                                 |

\* 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                                  |
| 2020 | \$0.51                    | 0                                 | 80.2  | 5                                       | 5                                  |
| 2021 | \$0.04                    | 0                                 | 40.0  | 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 2016 through 2021. The table shows that the annual average price of discrete Compliance Year 2021, 2022, and 2023 NOx RTCs exceeded the Rule 2015 backstop threshold of \$15,000 per ton while SOx RTC prices remained below the threshold. Annual average prices for all discrete-year NOx and SOx RTCs vintages were below the \$49,737 per ton of NOx and \$35,811 per ton of SOx discrete-year RTCs pre-determined overall program review thresholds established by the Board pursuant to Health and Safety Code §39616(f).

**Table 2-14**  
**Annual Average Prices for Discrete-Year NOx RTCs during Calendar Years 2016 through 2021 (price per ton)**

| RTC Compliance Year | Calendar Year during which RTCs Traded |           |          |           |          |           |
|---------------------|--|-----------|----------|-----------|----------|-----------|
|                     | 2016                                   | 2017      | 2018     | 2019      | 2020     | 2021      |
| 2014                |  |           |          |           |          |           |
| 2015                | 1,625.75                               |           |          |           |          |           |
| 2016                | 2,926.90                               | 2,202.90  |          |           |          |           |
| 2017                | 6,606.21                               | 4,181.75  | 1,871.76 |           |          |           |
| 2018                |  | 10,639.19 | 3,788.31 | 2,261.39  |          |           |
| 2019                |  |           | 5,645.67 | 5,409.79  | 4,286.74 |           |
| 2020                |  |           | 5,673.91 | 12,189.81 | 8,322.89 | 5,603.36  |
| 2021                |  |           |          | 8,677.54  | 9,417.56 | 18,846.39 |
| 2022                |  |           |          |           |          | 33,085.16 |
| 2023                |  |           |          |           |          | 37,808.27 |
| 2024                |  |           |          |           |          |           |

**Table 2-15**  
**Annual Average Prices for Discrete-Year SOx RTCs during Calendar Years 2016 through 2021 (price per ton)**

| RTC Compliance Year | Calendar Year during which RTCs Traded |          |        |          |          |          |
|---------------------|--|----------|--------|----------|----------|----------|
|                     | 2016                                   | 2017     | 2018   | 2019     | 2020     | 2021     |
| 2014                |  |          |        |          |          |          |
| 2015                | 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 | 4,386.87 |          |
| 2020                |  | 4,800.00 |        |          | 2,300.00 |          |
| 2021                |  |          |        |          |          | 3,000.00 |
| 2022                |  |          |        |          |          |          |
| 2023                |  |          |        |          |          |          |
| 2024                |  |          |        |          |          |          |

***Rolling Average NOx and SOx RTCs Price Report***

On December 4, 2015, the 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 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 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.

The December 2015 amendments directed the Executive Officer to report to the 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 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 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.”

A November 5, 2010 amendment to Rule 2002 established a \$50,000 per ton of SOx RTC threshold based on the twelve-month rolling average prices for current compliance year SOx RTCs calculated and reported by the Executive Officer during the period of January 1, 2017 through February 1, 2020. Although no longer required, the Executive Officer continues to calculate and report twelve-month average SOx RTC prices for informational purposes. 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 below the applicable reporting thresholds.

**Table 2-16  
Twelve-Month Rolling Average Prices of Compliance Year 2021 Discrete-Year NOx RTCs**

| <b>Reporting Month</b> | <b>12-Month Period</b>              | <b>Average Price (\$/ton)</b> |
|------------------------|-------------------------------------|-------------------------------|
| January 2021           | January 2020 through December 2020  | \$9,418                       |
| February 2021          | February 2020 through January 2021  | \$9,488                       |
| March 2021             | March 2020 through February 2021    | \$9,321                       |
| April 2021             | April 2020 through March 2021       | \$9,439                       |
| May 2021               | May 2020 through April 2021         | \$12,470                      |
| June 2021              | June 2020 through May 2021          | \$14,545                      |
| July 2021              | July 2020 through June 2021         | \$16,898                      |
| August 2021            | August 2020 through July 2021       | \$17,072                      |
| September 2021         | September 2020 through August 2021  | \$17,091                      |
| October 2021           | October 2020 through September 2021 | \$17,455                      |
| November 2021          | November 2020 through October 2021  | \$17,529                      |
| December 2021          | December 2020 through November 2021 | \$17,523                      |
| January 2022           | January 2021 through December 2021  | \$18,846                      |

**Table 2-17**  
**Three-Month Rolling Average Prices of Compliance Year 2021 Discrete-Year NOx RTCs**

| Reporting Month | 3-Month Period                       | Average Price (\$/ton) |
|-----------------|--------------------------------------|------------------------|
| January 2021    | October 2020 through December 2020   | \$13,400               |
| February 2021   | November 2020 through January 2021   | \$13,218               |
| March 2021      | December 2020 through February 2021  | \$12,238               |
| April 2021      | January 2021 through March 2021      | \$13,079               |
| May 2021        | February 2021 through April 2021     | \$14,900               |
| June 2021       | March 2021 through May 2022          | \$14,900               |
| July 2021       | April 2021 through June 2021         | \$17,201               |
| August 2021     | May 2021 through July 2021           | \$17,921               |
| September 2021  | June 2021 through August 2021        | \$17,575               |
| October 2021    | July 2021 through September 2021     | \$17,974               |
| November 2021   | August 2021 through October 2021     | \$17,865               |
| December 2021   | September 2021 through November 2021 | \$18,346               |
| January 2022    | October 2021 through December 2021   | \$20,636               |

**Table 2-18**  
**Twelve-Month Rolling Average Prices of Compliance Year 2021 Discrete-Year SOx RTCs**

| Reporting Month | 12-Month Period                     | Average Price (\$/ton) |
|-----------------|-------------------------------------|------------------------|
| January 2021    | January 2020 through December 2020  | -                      |
| February 2021   | February 2020 through January 2021  | -                      |
| March 2021      | March 2020 through February 2021    | -                      |
| April 2021      | April 2020 through March 2021       | -                      |
| May 2021        | May 2020 through April 2021         | -                      |
| June 2021       | June 2020 through May 2021          | -                      |
| July 2021       | July 2020 through June 2021         | -                      |
| August 2021     | August 2020 through July 2021       | -                      |
| September 2021  | September 2020 through August 2021  | -                      |
| October 2021    | October 2020 through September 2021 | -                      |
| November 2021   | November 2020 through October 2021  | -                      |
| December 2021   | December 2020 through November 2021 | -                      |
| January 2022    | January 2021 through December 2021  | \$3,000                |

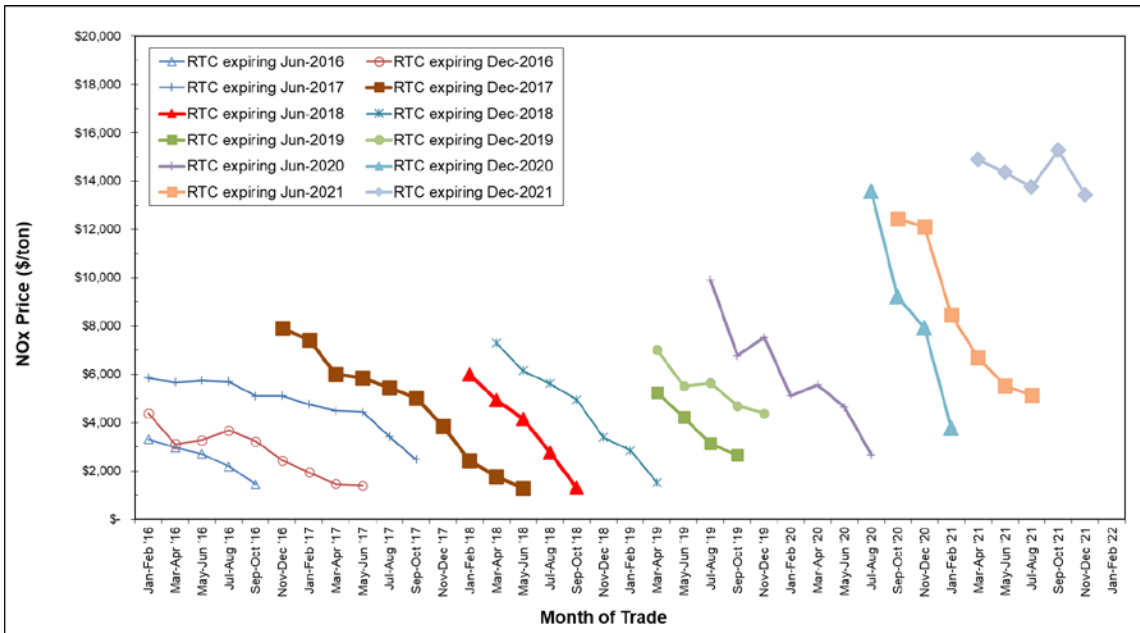
### Average Price for NOx RTCs Nearing Expiration

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.

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. Prices for discrete Compliance Year 2020 RTCs expiring in December 2020 and June 2021 followed the historic declining price trend. However, the price of Compliance Year 2021 RTCs expiring December 2021 remained relatively high through the end of calendar year 2021 indicating a tightening supply. Although the price for these expired Compliance Year 2021 RTCs is expected to fall during the reconciliation period for Cycle 1 facilities ending March 1, 2022, current indications are that the price of Compliance Year 2021 RTCs will remain well above the price of RTCs for previous compliance years shown on this chart.

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 2021, there was only one discrete-year SOx trade with price, for Compliance Year 2021 RTCs. The credits were priced at \$3000 per ton.

**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 2021 was \$94,576 per ton, which is lower than the annual average price of \$116,405 per ton traded in calendar year 2020. There were no IYB SOx RTCs traded in calendar year 2021. 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 2021, the annual average IYB RTC prices did not exceed the \$746,056 per ton of NOx RTCs or the \$537,160 per ton of SOx RTCs program review thresholds established by the 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               |
| 2020          | \$10.1                             | 86.4                             | 18                                     | \$116,405              |
| 2021          | \$5.23                             | 55.3                             | 14                                     | \$94,576               |

\* 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               |
| 2020          | \$0.45                             | 13.89                            | 2                                      | \$32,251               |
| 2021          | \$0.0                              | 0.0                              | 0                                      | N/A                    |

\* No information regarding swap trades was reported until May 9, 2001.

### Recent Program Amendments' Effect on IYB NOx RTC Trading Trend

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 the values of volume traded and of IYB NOx RTCs to decrease as they did in calendar years 2017 and 2018. However, in subsequent working group meetings and discussion with USEPA, several issues were identified in transitioning the New Source Review component of the program. These 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 led to a significant increase in demand for IYB



NOx RTCs relative to calendar year 2017 and 2018 levels as shown in Table 2-19.

The total volumes traded and values of IYB NOx RTCs spiked in calendar year 2019 and have fallen each of the past two years but remain significantly higher than in calendar years 2017 and 2018. The price for IYB NOx RTCs also spiked in calendar year 2019 and remained high in calendar years 2020 and 2021.

### **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 was one report submitted in calendar year 2021 identifying an agreed upon contingent right to buy or sell RTCs. This contingent right was constantly modified as time progressed, but its rights were not exercised in calendar year 2021. However, one contingent right to purchase NOx RTCs signed and agreed upon last year was exercised through four separate trades during calendar year 2021.

In addition to reconciling emissions at RECLAIM facilities, RTCs are also used by RTC holders to satisfy variance conditions and offset emissions for other projects. Three RTC trades of this type occurred during calendar year 2021. In the first case, a non-RECLAIM facility retired 1.2 tons of NOx RTCs to comply with a Supplemental Environmental Impact Report mandated Mitigation Monitoring Program. In the other two cases, a RECLAIM facility retired SOx RTCs to satisfy variance conditions: once for Compliance Year 2021, and another for Compliance Year 2022 for a total of 0.32 tons.

### **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

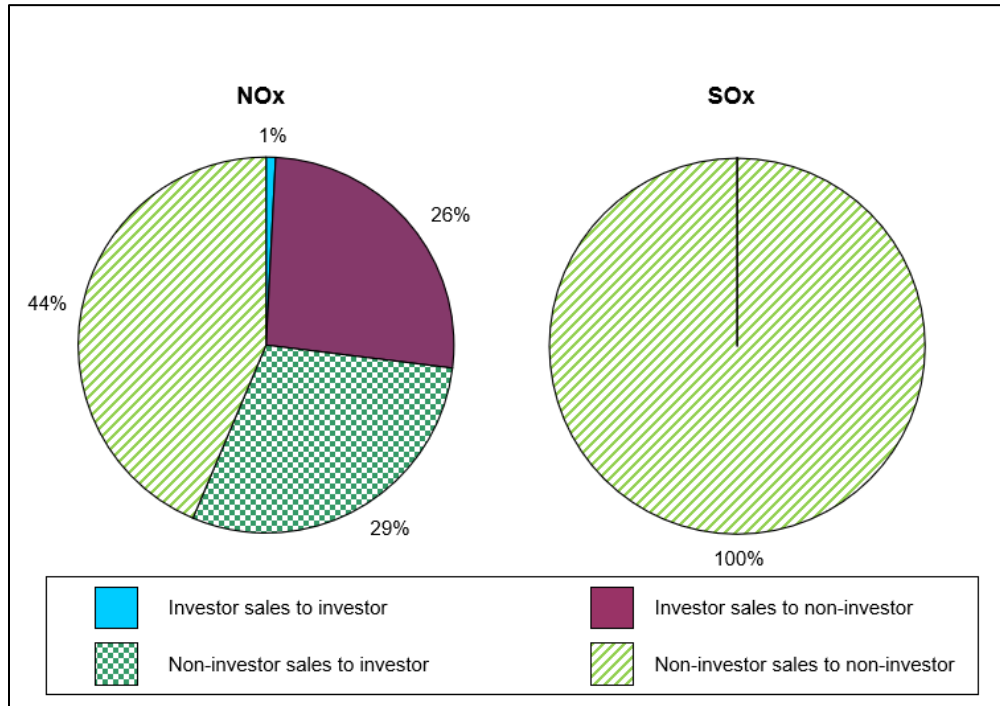
who hold RTCs other than RECLAIM facility permit holders and brokers. Brokers typically do not actually purchase RTCs, but only facilitate trades.

**Investor Participation**

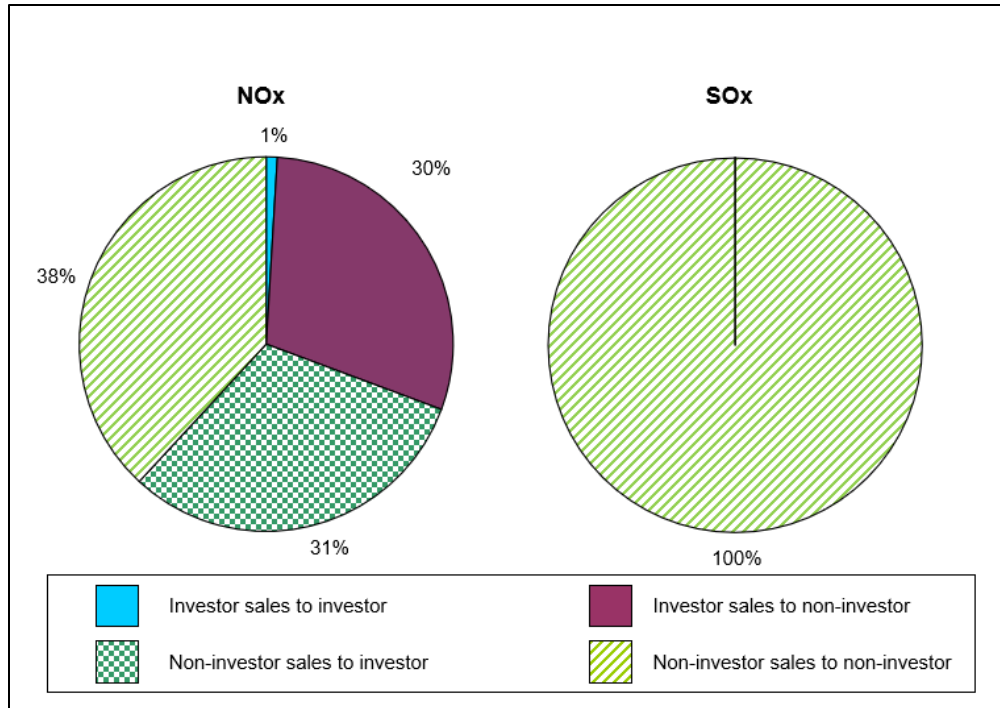
In 2021, investors were actively involved in 131 of the 184 discrete-year NOx RTC trades with price and none of the one discrete-year SOx RTC trades with price. Investors were involved in 10 of the 14 IYB NOx trades with price. This year, there were no IYB SOx trades with price.

Investors' involvement in discrete-year NOx and SOx trades registered with price in calendar year 2021 is illustrated in Figures 2-12 and 2-13. Figure 2-12 is based on total value of discrete-year NOx and SOx RTCs traded and shows that investors were involved in 56 percent and 0 percent, respectively, of the discrete-year NOx and SOx trades reported by value. Figure 2-13 is based on volume of discrete-year RTCs traded with price and shows that investors were involved in 62 percent and 0 percent of the discrete-year NOx and SOx trades by volume, respectively. Figures 2-14 and 2-15 provide similar data for IYB NOx and SOx trades. Investors were involved in 31 percent and zero percent of IYB NOx and SOx trades by value, and in 39 percent and zero percent of IYB NOx and SOx trades by volume, respectively.

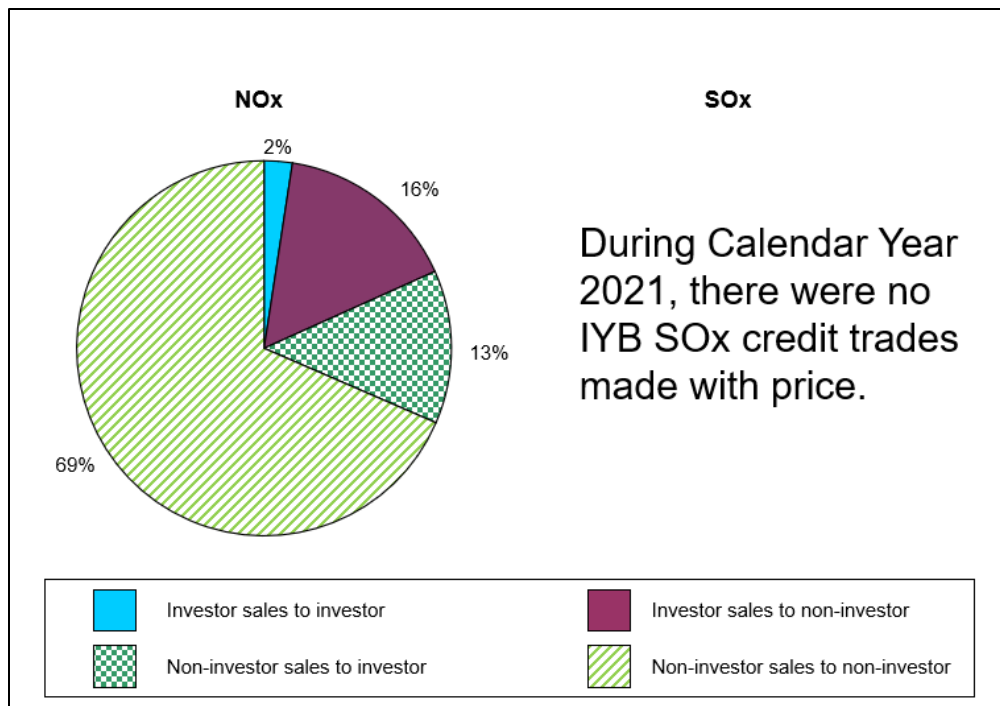
**Figure 2-12  
Calendar Year 2021 Investor-Involved Discrete-Year NOx and SOx Trades Based on Value Traded**



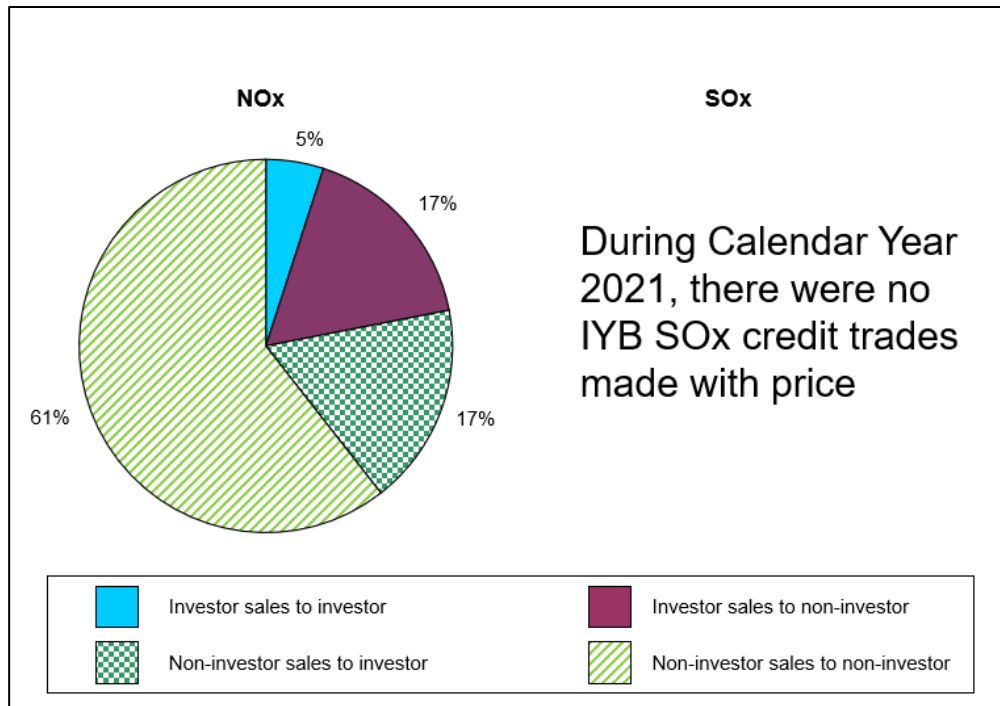
**Figure 2-13**  
**Calendar Year 2021 Investor-Involved Discrete-Year NOx and SOx Trades Based on Volume Traded with Price**



**Figure 2-14**  
**Calendar Year 2021 Investor-Involved IYB NOx and SOx Trades Based on Value Traded**



**Figure 2-15**  
**Calendar Year 2021 Investor-Involved IYB NOx and SOx Trades Based on Volume Traded with Price**



As of the end of calendar year 2021, investors' holding of IYB NOx RTCs went up to 2.0 percent when compared to the end of calendar year 2020 at 1.3 percent. Mutual fund investors are no longer holders of IYB NOx RTCs, down from highs of 3.3 percent at the end of calendar year 2011 and 1.4% at the end of calendar year 2014. Investors' holding of IYB SOx RTCs stayed consistent at 4.2 percent when compared to the end of calendar year 2020. 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. Four NOx only and two NOx/SOx RECLAIM facilities shut down during Compliance Year 2020. The NOx/SOx facility that is listed in Rule 2002 Table 8 sold all of its NOx and SOx IYB RTCs more than five years ago. The other NOx/SOx facility continues to hold 0.4 tons and 0.1 tons of NOx and SOx IYB RTCs, respectively, in its allocation account. One NOx only facility continues to hold 1.1 tons of NOx IYB RTCs. The other three NOx only facilities sold all NOx IYB RTCs prior to shutting down. One sold all NOx IYB RTCs more than ten years ago and had no NOx emissions in the last six years. Another sold 1.9 tons of NOx IYB RTCs three years ago. The last NOx only facility sold 0.6 tons of NOx IYB RTCs just prior to shutting down.

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 percent of their emissions. For Compliance Year 2020, the total RECLAIM NO<sub>x</sub> emissions were 5,506 tons, while the total NO<sub>x</sub> RTC allocation was 7,499 tons. This NO<sub>x</sub> RTC surplus of 1,993 tons (36% of allocation and 27% of emissions) is well above the 10 percent compliance margin reportedly held by RECLAIM facilities. If the future total NO<sub>x</sub> emissions stay constant, the difference between the NO<sub>x</sub> RTC allocation and NO<sub>x</sub> emissions would not decrease below 10 percent until Compliance Year 2022.

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 NO<sub>x</sub> RTCs if adequate emissions controls were not implemented in a timely manner. Despite the small percentage of NO<sub>x</sub> RTCs held by investors (2.0% at the end of calendar year 2021), their impact on RTC availability and prices can be significant because of their participation in a majority of the trades, which may allow them to be in a strong position to influence prices. Investor's percentage share remain unmoved even as the general price of RTCs begins to climb past the \$15,000 per ton threshold.

## CHAPTER 3 EMISSION REDUCTIONS ACHIEVED

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### Summary

*For Compliance Year 2020, aggregate NOx emissions were below total allocations by 27 percent and aggregate SOx emissions were below total allocations by 35 percent. No emissions associated with breakdowns were excluded from reconciliation with facility allocations in Compliance Year 2020. 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 2020. With respect to the Rule 2015 backstop provisions, Compliance Year 2020 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 percent (2,811 tons per year, or 7.7 tons per day) from all RECLAIM facilities by Compliance Year 2011, with the biggest single-year reduction of 11.7 percent in Compliance Year 2007. The 2015 amendments will reduce NOx allocations by 45.2 percent (4,380 tons per year, or 12.0 tons per day) by Compliance Year 2022. The reductions are phased-in from Compliance Year 2016 through Compliance Year 2022 with 6 tons per day of the NOx Allocation reduction occurring through Compliance Year 2020.

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 percent (2,081 tons per year, or 5.7 tons per day) overall reduction, with the reductions phased-in from Compliance Year 2013 through 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<sub>x</sub> 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<sub>x</sub> or SO<sub>x</sub> 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<sub>x</sub> emissions and the aggregate annual NO<sub>x</sub> RTC supply for Compliance Years 1994 through 2020. No facility audits for Compliance Years 1994 through 2018 were reopened during the past year, so the aggregate audited NO<sub>x</sub> and SO<sub>x</sub> emissions for these years are unchanged from the previous annual report. However, the Compliance Year 2019 audit of one NO<sub>x</sub> only facility was reopened with a resulting reduction in aggregate Compliance Year 2019 NO<sub>x</sub> emissions from 6,597 tons down to 6,458 tons. Programmatically, there were excess NO<sub>x</sub> RTCs remaining after accounting for audited NO<sub>x</sub> emissions for every compliance year since 1994, except for Compliance Year 2000 when NO<sub>x</sub> emissions exceeded the total allocations due to the California energy crisis. Aggregate NO<sub>x</sub> allocations for Compliance Year 2020 were reduced by 2,195 tons from Compliance Year 2015 levels due to the 2015 BARCT-related amendment of Rule 2002.

Annual NO<sub>x</sub> emissions remained within a narrow range (7,246 tons to 7,691 tons annually) between Compliance Years 2011 and 2017. A trend of reduced NO<sub>x</sub> emissions is seen for the past three compliance years. Compliance Year 2020 NO<sub>x</sub> emissions were more than 1700 tons below this range at 5,506 tons. Compliance Year 2020 NO<sub>x</sub> emissions were below total allocations by 27 percent.

**Table 3-1**  
**Annual NOx Emissions for Compliance Years 1994 through 2020**

| Compliance Year | Audited Annual NOx Emissions <sup>1</sup> (tons) | Audited Annual NOx Emissions Change from 1994 (%) | Total NOx RTCs <sup>2</sup> (tons) | Unused NOx RTCs (tons) | Unused NOx RTCs (%) |
|-----------------|--|---|------------------------------------|------------------------|---------------------|
| 1994            | 25,420   | 0%  | 40,187                             | 14,767                 | 37%                 |
| 1995            | 26,632   | 4.8%  | 36,484                             | 9,852                  | 27%                 |
| 1996            | 24,414   | -4.0%   | 32,742                             | 8,328                  | 25%                 |
| 1997            | 21,258   | -16%  | 28,657                             | 7,399                  | 26%                 |
| 1998            | 21,158   | -17%  | 24,651                             | 3,493                  | 14%                 |
| 1999            | 20,889   | -18%  | 20,968                             | 79                     | 0.38%               |
| 2000            | 19,148   | -25%  | 17,208                             | -1,940                 | -11%                |
| 2001            | 14,779   | -42%  | 15,617                             | 838                    | 5.4%                |
| 2002            | 11,201   | -56%  | 14,111                             | 2,910                  | 21%                 |
| 2003            | 10,342   | -59%  | 12,485                             | 2,143                  | 17%                 |
| 2004            | 10,134   | -60%  | 12,477                             | 2,343                  | 19%                 |
| 2005            | 9,642  | -62%  | 12,484                             | 2,842                  | 23%                 |
| 2006            | 9,152  | -64%  | 12,486                             | 3,334                  | 27%                 |
| 2007            | 8,796  | -65%  | 11,046                             | 2,250                  | 20%                 |
| 2008            | 8,349  | -67%  | 10,705                             | 2,356                  | 22%                 |
| 2009            | 7,306  | -71%  | 10,377                             | 3,071                  | 30%                 |
| 2010            | 7,121  | -72%  | 10,053                             | 2,932                  | 29%                 |
| 2011            | 7,302  | -71%  | 9,690                              | 2,388                  | 25%                 |
| 2012            | 7,691  | -70%  | 9,689                              | 1,998                  | 21%                 |
| 2013            | 7,326  | -71%  | 9,699                              | 2,373                  | 24%                 |
| 2014            | 7,447  | -71%  | 9,699                              | 2,252                  | 23%                 |
| 2015            | 7,246  | -71%  | 9,700                              | 2,454                  | 25%                 |
| 2016            | 7,328  | -71%  | 8,992                              | 1,664                  | 19%                 |
| 2017            | 7,246  | -71%  | 8,978                              | 1,732                  | 19%                 |
| 2018            | 6,740  | -73%  | 8,612                              | 1,872                  | 22%                 |
| 2019            | 6,458 <sup>3</sup>                               | -75%  | 8,243                              | 1,785                  | 22%                 |
| 2020            | 5,506  | -78%  | 7,499                              | 1,993                  | 27%                 |

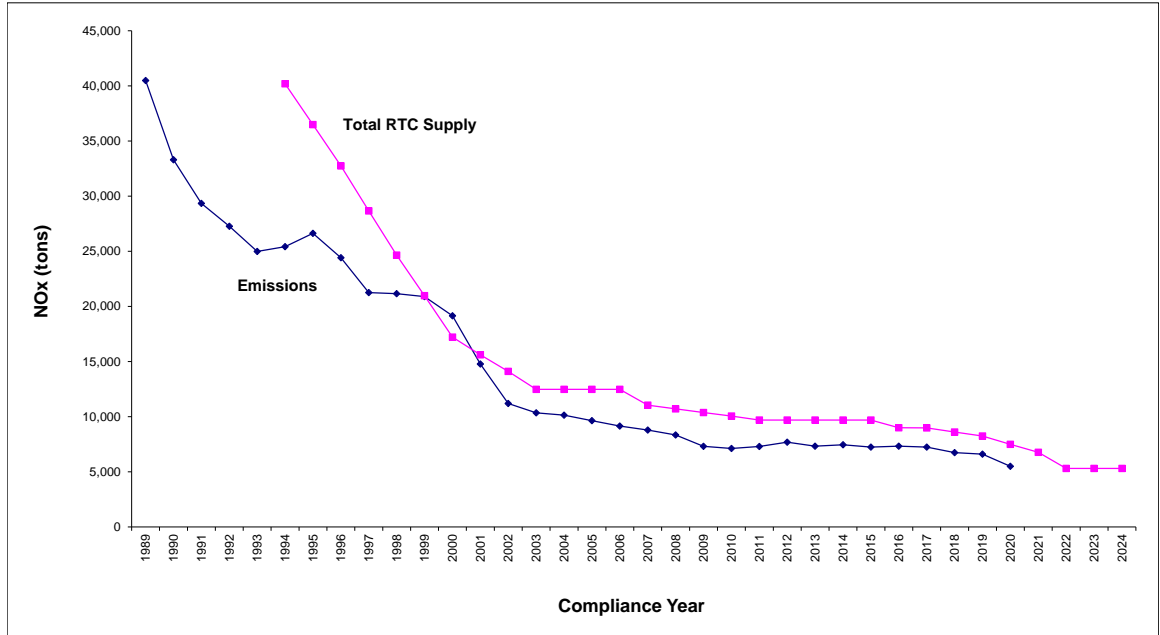
<sup>1</sup> The RECLAIM universe is divided into two cycles with compliance schedules staggered by six months. Compliance years for Cycle 1 facilities run from January 1 through December 31 and Cycle 2 compliance years are from July 1 through June 30.

<sup>2</sup> Total RTCs = Allocated RTCs + RTCs from ERC conversion.

<sup>3</sup> Audited annual NOx emissions including revised audited NOx emissions for one reopened audit.



**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 percent. Since then, SOx allocations were reduced by about 2,081 tons. On the other hand, annual SOx emissions steadily declined between Compliance Years 2007 and 2013, and remained within a narrow range between Compliance Year 2013 and 2018 (between 2,024 tons and 2,176 tons). With the large reduction in SOx allocations between Compliance Years 2013 and 2018, and the relatively flat SOx emissions during the same period, the amount of unused SOx RTCs was reduced to 14 percent for Compliance Year 2018. SOx emissions decreased significantly during Compliance Years 2019 and 2020, with Compliance year 2020 SOx emissions almost 600 tons less than the lowest annual emissions between Compliance Years 2013 through 2018. With this decrease in SOx emissions, the amount of unused RTCs increased to 35 percent. 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.

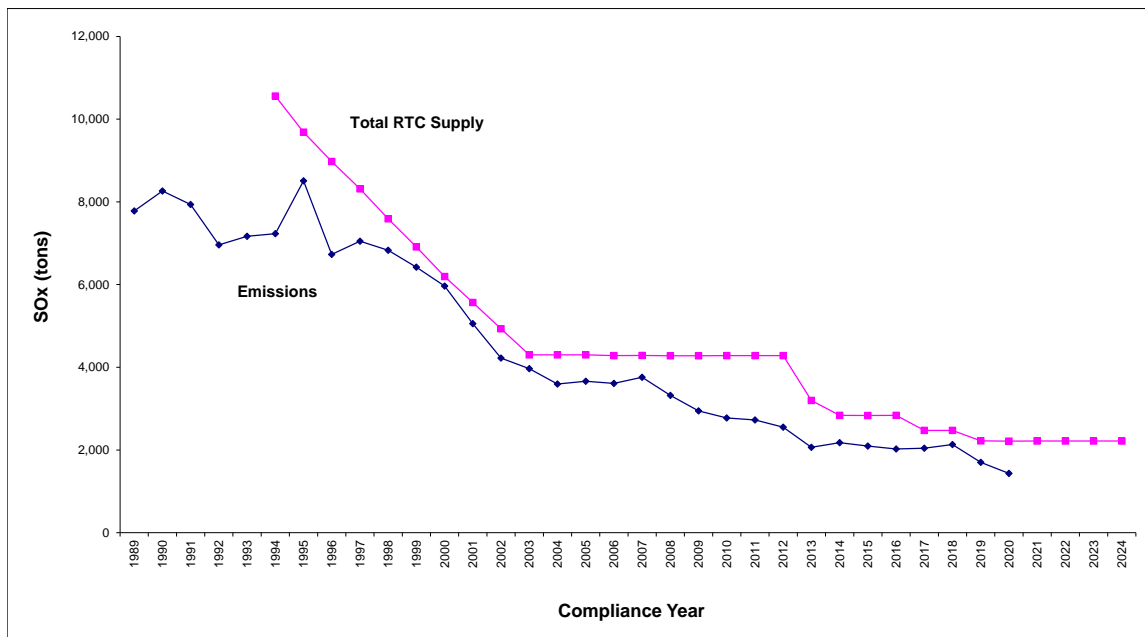
**Table 3-2**  
**Annual SOx Emissions for Compliance Years 1994 through 2020**

| Compliance Year | Audited Annual SOx Emissions <sup>1</sup> (tons) | Audited Annual SOx Emissions Change from 1994 (%) | Total SOx RTCs <sup>2</sup> (tons) | Unused SOx RTCs (tons) | Unused SOx RTCs (%) |
|-----------------|--|---|------------------------------------|------------------------|---------------------|
| 1994            | 7,230  | 0%  | 10,559                             | 3,329                  | 32%                 |
| 1995            | 8,508  | 18%   | 9,685                              | 1,177                  | 12%                 |
| 1996            | 6,731  | -6.9%   | 8,976                              | 2,245                  | 25%                 |
| 1997            | 7,048  | -2.5%   | 8,317                              | 1,269                  | 15%                 |
| 1998            | 6,829  | -5.5%   | 7,592                              | 763                    | 10%                 |
| 1999            | 6,420  | -11%  | 6,911                              | 491                    | 7.1%                |
| 2000            | 5,966  | -17%  | 6,194                              | 228                    | 3.7%                |
| 2001            | 5,056  | -30%  | 5,567                              | 511                    | 9.2%                |
| 2002            | 4,223  | -42%  | 4,932                              | 709                    | 14%                 |
| 2003            | 3,968  | -45%  | 4,299                              | 331                    | 7.7%                |
| 2004            | 3,597  | -50%  | 4,299                              | 702                    | 16%                 |
| 2005            | 3,663  | -49%  | 4,300                              | 637                    | 15%                 |
| 2006            | 3,610  | -50%  | 4,282                              | 672                    | 16%                 |
| 2007            | 3,759  | -48%  | 4,286                              | 527                    | 12%                 |
| 2008            | 3,319  | -54%  | 4,280                              | 961                    | 22%                 |
| 2009            | 2,946  | -59%  | 4,280                              | 1,334                  | 31%                 |
| 2010            | 2,775  | -62%  | 4,282                              | 1,507                  | 35%                 |
| 2011            | 2,727  | -62%  | 4,283                              | 1,556                  | 36%                 |
| 2012            | 2,552  | -65%  | 4,283                              | 1,731                  | 40%                 |
| 2013            | 2,066  | -71%  | 3,198                              | 1,132                  | 35%                 |
| 2014            | 2,176  | -70%  | 2,839                              | 663                    | 23%                 |
| 2015            | 2,096  | -71%  | 2,836                              | 740                    | 26%                 |
| 2016            | 2,024  | -72%  | 2,836                              | 812                    | 29%                 |
| 2017            | 2,043  | -72%  | 2,474                              | 431                    | 17%                 |
| 2018            | 2,134  | -70%  | 2,474                              | 340                    | 14%                 |
| 2019            | 1,701  | -76%  | 2,221                              | 520                    | 23%                 |
| 2020            | 1,436  | -80%  | 2,214                              | 778                    | 35%                 |

<sup>1</sup> The RECLAIM universe is divided into two cycles with compliance schedules staggered by six months. Compliance years for Cycle 1 facilities run from January 1 through December 31 and Cycle 2 compliance years are from July 1 through June 30.

<sup>2</sup> Total RTCs = Allocated RTCs + RTCs from ERC conversion.

**Figure 3-2**  
**SOx Emissions and Available RTCs**



### Comparison to Command-and-Control Rules

RECLAIM subsumed a number of command-and-control rules<sup>1</sup> and sought to achieve reductions equivalent to these subsumed rules that continue to apply to non-RECLAIM facilities. RECLAIM facilities were exempt from the subsumed rules’ requirements that apply to SOx or NOx emissions once the facilities comply with the applicable monitoring requirements of Rules 2011 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions or 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions, respectively. However, as part of the effort to transition<sup>2</sup> the RECLAIM program from a market incentive-based program to a command-and-control regulatory structure requiring BARCT level controls as soon as practicable, the 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 – Applicability that are adopted or amended on or after October 5, 2018. As subsumed NOx rules in Table 1 of Rule 2001 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”).

On December 4, 2020, the Board amended two rules: one rule subsumed by Regulation XIII, Rule 1302 – Definitions, and one rule not subsumed by

<sup>1</sup> See Tables 1 and 2 of Rule 2001.

<sup>2</sup> Pursuant to both the March 3, 2017 Board adopted resolution during the adoption of the 2016 AQMP, and California State Assembly Bill (AB) 617 approved in July 2017.

RECLAIM, Rule 2000 – General. These amendments were initiated as a response to USEPA’s granting of South Coast AQMD’s request to voluntarily reclassify the Coachella Valley from Severe-15 to Extreme nonattainment for the 1997 8-hour Ozone National Ambient Air Quality Standard (NAAQS), with a new attainment date of June 15, 2024. Due to the granting of the reclassification request on July 10, 2019, both Rule 1302 and Rule 2000 were amended to incorporate revisions required by the federal Clean Air Act to reduce the Major Polluting Facility and federal Major Modifications thresholds for VOC and NO<sub>x</sub>, which are ozone precursors. The federal Clean Air Act establishes lower thresholds for a Major Polluting Facility and Major Modification based on the attainment status of the air basin. A facility that is above the Major Polluting Facility and Major Modification thresholds for VOC or NO<sub>x</sub> would be subject to certain federal permitting requirements.

Amendments to Rule 1302 lowered the threshold for a Major Polluting Facility from 25 tons per year for a Severe-15 nonattainment area, to 10 tons per year for an Extreme nonattainment area for VOC or NO<sub>x</sub> emissions, and lowered the Major Modification threshold from 25 tons per year to 1 pound per day of VOC or NO<sub>x</sub> emissions. For Rule 2000, the definition of a Major Modification in the Coachella Valley was changed from 25 tons per year to one pound per day for NO<sub>x</sub> or VOC emissions. Other administrative changes were made to Rules 1302 and 2000 to remove outdated rule provisions, correct rule references, and to improve rule clarity. Since amendments to both subsumed Rule 1302 and Rule 2000, which was not subsumed by RECLAIM’s Rule 2001, were administrative changes to definitions subjecting certain facilities to federal permitting requirements and were applied equally to both RECLAIM sources and non-RECLAIM sources, they did not result in any disproportionate impacts.

Additionally, three other rules, not subsumed under RECLAIM Rule 2001, were amended or adopted by the Board during Compliance Year 2020: Rule 1111 – Reduction of NO<sub>x</sub> Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces amended September 4, 2020, Rule 1179.1 – Emission Reductions From Combustion Equipment at Publicly Owned Treatment Works Facilities, adopted October 2, 2020, and Rule 1150.3 – Emissions of Oxides of Nitrogen from Combustion Equipment at Landfills, adopted February, 5, 2021.

Amended Rule 1111 provided a 12-month extension, to September 30, 2021, for the mitigation fee alternate compliance option for weatherized furnaces, and the exemption for high altitude condensing and non-condensing furnace installations (furnaces installed at or above elevations of 4,200 feet above sea level). To provide additional compliance options for installations in high altitude areas, amended Rule 1111 allowed installations of dual fuel systems with noncompliant 40 ng/J NO<sub>x</sub> furnaces until September 30, 2022. Rule 1111 also required recordkeeping of sales and installations for manufacturers, distributors, and installers of 40 ng/J NO<sub>x</sub> furnaces for operation as propane-firing only, and dual fuel systems with noncompliant 40 ng/J NO<sub>x</sub> furnaces. Additional labeling and system design requirements were included to ensure proper operation of the dual fuel system with a noncompliant 40 ng/J NO<sub>x</sub> furnace by prioritizing heat pump operation and lockout of the switchover temperature settings at the point of manufacture with a required external temperature sensor installed with every system. Finally, modifications were made to the Clean Air Furnace Rebate program to increase funding and consumer rebates.

The last two rules not subsumed but adopted in Compliance Year 2020 were Rules 1179.1 and 1150.3. During the rulemaking process in 2018 for Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters and Rule 1146.1 – Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters, representatives from the Southern California Association of Publicly Owned Treatment Works highlighted topics unique to treating municipal wastewater such as the use of digester gas instead of natural gas in combustion equipment and financial constraints due to public funding, in addition to the fact that publicly owned treatment works (POTWs) provide an essential public service. In response, South Coast AQMD staff recommended that provisions for combustion equipment at POTWs and municipal solid waste (MSW) landfills be separated from existing source-specific rules, and consolidated into separate rules for combustion equipment at POTWs and MSW landfills.

Consequently, adopted Rule 1179.1 established NO<sub>x</sub> and CO emission limits for boilers, process heaters, and engines burning digester gas or those units capable of burning digester and natural gas, and VOC emission limits for engines at POTW facilities. Emission limits for these units are the same as those in Rules 1146, 1146.1, and Rule 1110.2 – Emissions from Gaseous - and Liquid-Fueled Engines for engines. Rule 1179.1 also included NO<sub>x</sub> and CO emission limits for small boilers and process heaters at or below 2 MMBtu/hour using digester gas, which were previously unregulated. Since turbines at POTWs were exempt from Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines, Rule 1179.1 established NO<sub>x</sub> and CO emission limits for turbines burning digester and natural gas, and units capable of burning digester and natural gas. Based on the BARCT analysis, turbines greater than or equal to 0.3 MW are required to meet a NO<sub>x</sub> emission limit of 18.8 ppm. Rule 1179.1 also established NO<sub>x</sub> and CO emission limits for digester gas and dual fuel turbines that are less than 0.3 MW. Other provisions in Rule 1179.1 included equipment-specific averaging times, startup and shutdown requirements, and monitoring, reporting and recordkeeping requirements.

Adopted Rule 1150.3 established NO<sub>x</sub> and CO emission limits for boilers, process heaters, and turbines at MSW landfills and landfill gas to energy facilities, which process landfill gas to generate electricity for sale. Rule 1150.3 consolidated requirements from existing source-specific rules and incorporated new requirements for turbines. Since turbines located at landfills were previously exempt from Rule 1134, Rule 1150.3 filled a regulatory gap by establishing emission limits. Based on a detailed BARCT analysis, Rule 1150.3 required landfill gas-fired boilers and process heaters meet a NO<sub>x</sub> emission limit of 9 ppmv and a CO emission limit of 400 ppmv, and landfill gas-fired turbines, rated greater than or equal to 0.3 MW, meet a NO<sub>x</sub> emission limit of 12.5 ppmv and a CO emission limit of 130 ppmv. Rule 1150.3 also established a NO<sub>x</sub> emission limit of 9 ppmv for landfill gas and dual fuel turbines rated less than 0.3 MW. Other provisions of Rule 1150.3 included equipment-specific averaging times, startup and shutdown requirements, source testing requirements, and monitoring, reporting and recordkeeping requirements.

Since Rules 1111, 1179.1, and 1150.3 were not subsumed under RECLAIM and contained no exemptions from their applicability to RECLAIM NO<sub>x</sub> or SO<sub>x</sub>

sources, the requirements of these amended or adopted 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 NO<sub>x</sub> and SO<sub>x</sub> sources under RECLAIM with NO<sub>x</sub> and SO<sub>x</sub> sources of non-RECLAIM facilities.

Consequently, during Compliance Year 2020, 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 NO<sub>x</sub> and SO<sub>x</sub> sources at RECLAIM and NO<sub>x</sub> and SO<sub>x</sub> sources at non-RECLAIM facilities.

## Program Amendments

On March 3, 2017, the Board adopted a resolution during the adoption of the 2016 AQMP that directed staff to modify Control Measure CMB-05 – Further NO<sub>x</sub> Reductions from RECLAIM Assessment to achieve an additional five tons per day NO<sub>x</sub> emission reductions as soon as feasible but no later than 2025, and to transition the RECLAIM program to a command-and-control regulatory structure requiring 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 NO<sub>x</sub> RECLAIM program. Rule 2001 – Applicability specifically exempts RECLAIM facilities from a number of existing command-and-control NO<sub>x</sub> 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 NO<sub>x</sub> 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 NO<sub>x</sub> equipment has explicit BARCT emission limits and an appropriate time frame to achieve compliance.

To initiate the transition of NO<sub>x</sub> sources out of RECLAIM, Rule 2001 – Applicability, and Rule 2002 – Allocations for Oxides of Nitrogen (NO<sub>x</sub>) and Oxides of Sulfur (SO<sub>x</sub>), were amended by the Board on January 5, 2018. Amended Rule 2001 precluded new or existing facilities from entering the NO<sub>x</sub> and SO<sub>x</sub> 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 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 NO<sub>x</sub>-emitting equipment. This initial determination notification serves as a preliminary notice to a facility for which all NO<sub>x</sub> sources

are covered by Landing Rules, and will be issued when South Coast AQMD staff determines every permitted NO<sub>x</sub> 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 NO<sub>x</sub>-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 NO<sub>x</sub> 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 NO<sub>x</sub> RECLAIM program because they had no facility NO<sub>x</sub> emissions, or had NO<sub>x</sub> 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 final 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 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 NO<sub>x</sub> or SO<sub>x</sub> emissions, respectively. However, in order to facilitate the transition process, the amendments to Rule 2001 specify that RECLAIM facilities are required to comply with the rules contained in Table 1 that are adopted or amended on or after October 5, 2018. Amended Rule 2002 provided an option for facilities that received an initial determination notification to stay in RECLAIM for a limited time, while complying with applicable command-and-control requirements. Additionally, amended Rule 2002 established a requirement that facilities which are issued a final determination to be transitioned out of the NO<sub>x</sub> RECLAIM program to provide emission reduction credits to offset any NO<sub>x</sub> emissions increases, calculated pursuant to Rule 1306 – Emission Calculations, notwithstanding the exemptions contained in Rule 1304 – Exemptions and the requirements contained in Rule 1309.1 – Priority Reserve, until New Source Review provisions governing NO<sub>x</sub> emission calculations and offsets are amended to address former RECLAIM sources. Finally, Rule 2002 removed the requirement to report IYB NO<sub>x</sub> RTC prices to the Board when the price falls below the minimum threshold.

Rule 2001 was again amended by the 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.

Finally, as mentioned in the “Comparison to Command-and-Control Rules” section of this chapter, another programmatic rule, Rule 2000 – General, was amended on December 4, 2020, for the transition in order to ensure consistency with the Clean Air Act and Regulation XIII’s Rule 1302. Revisions to Rule 2000 were incorporated to reduce federal Major Modifications thresholds for VOC and NOx emission in the Coachella Valley from 25 tons per year to one pound per day as required by the federal Clean Air Act.

### **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 is 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 NOx sources out of RECLAIM. The following 23 Landing Rules were amended or adopted by the Board to facilitate the transition:

- Rule 218 – Continuous Emission Monitoring,
- Rule 218.2 – Continuous Emission Monitoring System: General Provisions,
- Rule 218.3 – Continuous Emission Monitoring System: Performance Specifications,
- Rule 429 – Start-Up and Shutdown Exemption Provisions for Oxides of Nitrogen,
- Rule 429.1 – Start-Up and Shutdown Provisions at Petroleum Refineries and Related Operations,
- Rule 429.2 – Startup and Shutdown Exemption Provisions for Oxides of Nitrogen from Electricity Generating Facilities,



- Rule 1100 – Implementation Schedule for NOx Facilities,
- Rule 1109 – Emissions of Oxides of Nitrogen from Boilers and Process Heaters in Petroleum Refineries (rescinded),
- Rule 1109.1 – Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations,
- Rule 1110.2 – Emissions from Gaseous - and Liquid-Fueled Engines,
- Rule 1117 – Emissions from Container Glass Melting and Sodium Silicate Furnaces,
- 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 1147 – NOx Reductions from Miscellaneous Sources,
- Rule 1147.1 – NOx Reductions from Aggregate Dryers,
- Rule 2000 – General,
- Rule 2001 – Applicability,
- Rule 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx), and
- Rule 2005 – New Source Review for RECLAIM.

A summary of each Landing Rule is provided in Table 3-3. The status of the remaining Landing Rules to be amended or adopted are listed in Table 3-3 as either “In Progress” or “To Be Determined”. Further information regarding the specifics of each rule can be found at <http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-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, 218.2 and 218.3 | Continuous Emission Monitoring<br><br>Rule 218 – CEMS | Revises provisions for continuous emission monitoring systems for non-RECLAIM facilities and facilities exiting RECLAIM.<br>1. For Rule 218 facilities: <ul style="list-style-type: none"> <li>• Provides a phase-out provision to transition facilities subject to Rules 218, 218.1, and</li> </ul> |

| Rule(s)                     | Focus Area  | Description   |
|-----------------------------|---|---|
|                             | <p><i>Applicability:</i> Equipment that require CEMS at non-RECLAIM facilities</p> <p>Rule 218.2 – CEMS General Provisions</p> <p><i>Applicability:</i> Administrative requirements for CEMS, ACEMS, and SCEMS for owners or operators of a CEMS, ACEMS, or SCEMS at former RECLAIM and non-RECLAIM facilities</p> <p>Rule 218.3 – CEMS Performance Specifications</p> <p><i>Applicability:</i> Performance specifications on certification and quality assurance and quality control programs for owners or operators of a CEMS, ACEMS, or SCEMS at RECLAIM and non-RECLAIM facilities</p> | <p>2012 into the revised provisions for CEMS which are specified in Rules 218.2 and 218.3. <i>(Amended March 5, 2021)</i></p> <p>2. For Rule 218.2 facilities:</p> <ul style="list-style-type: none"> <li>• Provides implementation schedule for transition.</li> <li>• Provides CEMS administrative requirements and revises the provisions retained from Rule 218 with key modifications on the certification process for CEMS modification and the requirements for reporting.</li> <li>• Incorporates a new provision that would require CEMS to be in continuous operation, except during the defined CEMS maintenance and repair period, and allow CEMS to be shut down when the unit (emission source) goes offline for at least one week. <i>(Adopted March 5, 2021)</i></li> </ul> <p>3. For Rule 218.3 facilities:</p> <ul style="list-style-type: none"> <li>• Provides implementation schedule for transition.</li> <li>• Provides CEMS performance specifications and revises the provisions retained from Rule 218.1 with key modifications on               <ul style="list-style-type: none"> <li>➢ span range,</li> <li>➢ data acquisition and handling system,</li> <li>➢ relative accuracy test audit,</li> <li>➢ and calibration gas requirements.</li> </ul> </li> <li>• Incorporates a new provision to provide specifications on               <ul style="list-style-type: none"> <li>➢ the data handling method for data measured below 10 percent or above 95 percent of the upper span value,</li> <li>➢ emission data averaging method,</li> <li>➢ CEMS data availability requirements, and,</li> <li>➢ CEMS out-of-control period and alternative data acquisition. <i>(Adopted March 5, 2021)</i></li> </ul> </li> </ul> <p><i>[Estimated emission reductions: 0 tons of NOx per day.]</i></p> |
| <p>429, 429.1 and 429.2</p> | <p>Start-up and Shutdown Provisions of Oxides of Nitrogen from:</p> <p>Rule 429 - Start-Up and Shutdown Exemption Provisions for Oxides of Nitrogen</p>   | <p>Revises NOx emission provisions for start-up and shutdown events.</p> <p>Proposed amendments to Rule 429 will update startup and shutdown provisions for a variety of combustion equipment regulated under source-specific rules</p> <p><i>(In Progress – 2<sup>nd</sup> Qtr. 2022)</i></p>  |

| Rule(s) | Focus Area   | Description  |
|---------|--|--|
|         | <p>Rule 429.1 - Petroleum Refineries and Related Operations</p> <p><i>Applicability:</i><br/>Owner or operator of units at petroleum refineries and facilities with related operations to petroleum refineries</p> | <p>1. For 429.1 facilities:</p> <ul style="list-style-type: none"> <li>• Establishes exemption from Rule 1109.1 NOx and CO concentration limits during startup, shutdown, commissioning, and certain maintenance events</li> <li>• Provides limits for <ul style="list-style-type: none"> <li>➢ duration of time that an operator is exempt from NOx and CO concentration limits for startup and shutdowns, and</li> <li>➢ frequency of scheduled startups.</li> </ul> </li> <li>• Establishes requirements for <ul style="list-style-type: none"> <li>➢ units with NOx post-combustion control equipment,</li> <li>➢ catalyst maintenance,</li> <li>➢ notification and recordkeeping.</li> </ul> </li> <li>• Establishes exemptions for <ul style="list-style-type: none"> <li>➢ refractory dryout, catalyst regeneration activities, commissioning, water freeing, and when fuel is only used for the pilot light, and</li> <li>➢ units with existing permit conditions for units with a bypass to conduct maintenance.</li> </ul> </li> </ul> <p style="text-align: right;"><i>(Adopted November 5, 2021)</i></p> <p><i>[Estimated emission reductions: 0 tons of NOx per day.]</i></p> |
|         | <p>Rule 429.2 – Electricity Generating Facilities</p> <p><i>Applicability:</i><br/>Owner or operator of electrical generating units at electricity generating facilities subject to Rule 1135</p>                  | <p>2. For Rule 429.2 units for startup and shutdown events:</p> <ul style="list-style-type: none"> <li>• Establishes exemption for electric generating units from Rule 1135 NOx concentration limits for specific time durations.</li> <li>• Establishes two sets of startup and shutdown time duration limits for each equipment type based on the date of equipment installation.</li> <li>• Requires startup period to end once the electric generating unit reaches stable conditions, NOx post-combustion control equipment reaches minimum operating temperature, and all NOx post-combustion controls are fully deployed.</li> <li>• Limits the number of scheduled events to 12 per year for electric generating units not permitted to perform distillate fuel oil readiness testing and 64 events per year for electric generating units permitted to perform distillate fuel oil readiness testing.</li> <li>• Includes best management practices to minimize emissions during events.</li> </ul>   |

| Rule(s)                                  | Focus Area   | Description   |
|--|--|---|
|  |  | <ul style="list-style-type: none"> <li>• Establishes reporting and recordkeeping practices.</li> <li>• Establishes exemptions for electric generating units subject to the State Water Resources Control Board’s Once-Through-Cooling Policy (OTC Policy) from startup and shutdown duration limits, limits to number of scheduled startups, and installation of a temperature measuring device until December 31, 2029.<br/><i>(Adopted January 7, 2022)</i><br/><i>[Estimated emission reductions: 0 tons of NOx per day.]</i></li> </ul>   |
| 1100                                     | <p>Implementation Schedule for NOx Facilities</p> <p><i>Applicability:</i> Equipment specified in Rules 1146, 1146.1, and 1110.2</p>   | <p>Establishes implementation schedule for RECLAIM and prior RECLAIM sources to meet applicable provisions of Landing Rules:</p> <ul style="list-style-type: none"> <li>• Implementation schedule for equipment meeting applicability under Rules 1146 and 1146.1.<br/><i>(Adopted December 7, 2018)</i></li> <li>• Implementation schedule for equipment meeting applicability under Rule 1110.2.<br/><i>(Amended November 1, 2019)</i></li> <li>• Revises definition of “industry-specific category” to reflect the intent to exempt equipment at refineries from the NOx emission limits or permit submission deadlines specified in Rules 1100, 1110.2, 1146, and 1146, that will be regulated in an industry-specific rule for refineries and related industries under Proposed Rule 1109.1.<br/><i>(Amended January 10, 2020)</i></li> </ul> <p>This rule will be amended as necessary as a companion rule to a Landing Rule as it is amended or adopted.</p> |
| 1109<br><i>(rescinded)</i><br>and 1109.1 | <p>Refinery and Related Industries Equipment</p> <p><i>Applicability:</i> Boilers and process heaters emitting NOx at refineries.</p> <p>1109.1 – Petroleum Refineries and Related Operations</p> <p><i>Applicability:</i> Equipment emitting NOx at refineries and related operations (<i>i.e.</i>,</p> | <p>Establishes NOx emission limits to reflect BARCT for equipment located at a refinery.</p> <ol style="list-style-type: none"> <li>1. For Rule 1109 facilities: <ul style="list-style-type: none"> <li>• Rule 1109 rescinded upon adoption of Rule 1109.1.<br/><i>(Rule rescinded November 5, 2021)</i></li> </ul> </li> <li>1. For Rule 1109.1 facilities: <ul style="list-style-type: none"> <li>• Includes two alternative compliance plans to achieve the BARCT NOx concentration limits in Table 1 and Table 2 (B-Plan and B-Cap) of Rule 1109.1, and an alternative implementation schedule plan (I-Plan). The</li> </ul> </li> </ol>  |

| Rule(s) | Focus Area  | Description   |
|---------|---|---|
|         | asphalt plants, biofuel plants, hydrogen production plants, facilities that operate petroleum coke calciners, sulfuric acid plants, and sulfur recovery plants at petroleum refineries) | B-Plan, B-Cap, and I-Plan provide compliance flexibility while achieving the same NOx reductions that would occur if an operator were to directly meet the NOx limits in Table 1 and Table 2 of Rule 1109.1. <ul style="list-style-type: none"> <li>• Includes provisions for using alternative compliance plans, the approval process, and when an approved plan must be modified.</li> <li>• Includes interim NOx limits for units that would apply after the facility transitions out of RECLAIM and until the unit is in full compliance with Rule 1109.1 to ensure no backsliding of emissions per the federal Clean Air Act Section 110(l).</li> <li>• includes monitoring, recordkeeping, and reporting requirements and exemptions for low-use units and other units that are exempt from the rule.</li> </ul> <p style="text-align: right;"><i>(Adopted November 5, 2021)</i></p> <p><i>[Estimated emission reductions: 7.7 to 7.9 tons of NOx per day.]</i></p>   |
| 1110.2  | Emissions from Gaseous - and Liquid-Fueled Engines<br><br><i>Applicability:</i> All stationary and portable engines over 50 rated brake horsepower                                      | <ol style="list-style-type: none"> <li>1. Maintains existing BARCT levels for NOx, VOC, and CO emission limits, and allows:                             <ul style="list-style-type: none"> <li>• Interim alternate emission limits for compressor gas lean-burn engines,</li> <li>• Concentration based limits for linear generator technology, and</li> <li>• Interim VOC based emission limits for certain electricity generating engines.</li> </ul> </li> <li>2. Specifies emission averaging time.</li> <li>3. Includes additional monitoring requirements for engines at former RECLAIM facilities.</li> <li>4. Revises exemptions for:                             <ul style="list-style-type: none"> <li>• Diesel engines operated at remote radio transmission sites,</li> <li>• Tuning of an engine and/or associated emission control equipment,</li> <li>• Replacement of catalytic equipment as a major repair, and</li> <li>• Diesel engines powering cranes located on offshore platforms, provided specific criteria are met.</li> </ul> </li> </ol> <p style="text-align: right;"><i>(Amended November 1, 2019)</i></p> <p><i>[Estimated emission reductions, 0.29 tons of NOx per day.]</i></p> |
| 1117    | Emissions from Container Glass Melting and Sodium Silicate Furnaces   | <ol style="list-style-type: none"> <li>1. Updates NOx and SOx emission limits to reflect current BARCT for container glass melting and sodium silicate furnaces:</li> </ol>   |

| Rule(s) | Focus Area   | Description  |
|---------|--|--|
|         | <p><i>Applicability:</i> Container glass melting and sodium silicate furnaces</p>  | <ul style="list-style-type: none"> <li>• 0.75 lb. of NOx per ton of glass pulled on a rolling 30-day average for container glass melting furnaces,</li> <li>• 0.50 lb. of NOx per ton of product pulled on a rolling 30-day average for sodium silicate furnaces, as well as</li> <li>• 1.1 lbs. of SOx per ton of material pulled on a rolling 30-day average for both container glass melting and sodium silicate furnaces.</li> </ul> <ol style="list-style-type: none"> <li>2. Revises monitoring, reporting, and recordkeeping requirements.</li> <li>3. Includes provisions to reduce emissions for idling, startup, and shutdown of furnaces.</li> <li>4. Includes NOx emission limits for auxiliary combustion equipment associated with container glass melting operations:               <ul style="list-style-type: none"> <li>• 30 ppmvd NOx at 3% O2 or 0.036 lb. per MMBTU of heat input.</li> </ul> </li> </ol> <p style="text-align: right;"><i>(Amended June 5, 2020)</i></p> <p><i>[Estimated emission reductions, 0.57 tons of NOx per day, and 0 tons of SOx per day (since the rule does not impose a more stringent SOx limit than is already required to be achieved).]</i></p> |
| 1118.1  | <p>Control of Emissions from Non-Refinery Flares</p> <p><i>Applicability:</i> Flares located at landfills, wastewater treatment plants, oil and gas production facilities, organic liquid loading stations, tank farms, and other locations that are not a refinery</p>          | <ol style="list-style-type: none"> <li>1. Establishes NOx, VOC, and CO emission limits to reflect current BARCT for new, replaced, or relocated flares.</li> <li>2. Establishes industry-specific capacity thresholds for existing flares. Flares that exceed the applicable capacity threshold in two consecutive calendar years shall either be modified to comply with the established limit or implement plan to reduce the amount of gas flaring.</li> <li>3. Establishes requirements for source testing, monitoring, reporting, and recordkeeping.</li> <li>4. Provides exemptions for low-use and low-emitting flares.</li> </ol> <p style="text-align: right;"><i>(Adopted January 4, 2019)</i></p> <p><i>[Estimated emission reductions: 0.18 tons of NOx per day, and 0.014 tons of VOC per day.]</i></p>   |
| 1134    | <p>Emissions of Oxides of Nitrogen from Stationary Gas Turbines</p> <p><i>Applicability:</i> Stationary gas turbines, 0.3 MW and larger, except turbines located at electricity generating facilities, refineries or public owned treatment works, or fueled by landfill gas</p> | <ol style="list-style-type: none"> <li>1. Updates NOx and ammonia emission limits to reflect current BARCT, effective beginning January 1, 2024.</li> <li>2. Provides implementation timeframes to facilitate transition.               <ul style="list-style-type: none"> <li>• Alternative compliance date for compressor gas turbines, provided the facility demonstrates 25% or more NOx emission reductions beginning December 31, 2023.</li> <li>• Extension of up to 36 months to comply with ammonia emission limits, provided an ammonia continuous emissions monitoring</li> </ul> </li> </ol>   |

| Rule(s) | Focus Area  | Description  |
|---------|---|--|
|         |   | <p>system is installed and the turbine operates less than one thousand hours per year.</p> <ol style="list-style-type: none"> <li>3. Revises monitoring, reporting, and recordkeeping requirements.</li> <li>4. Provides exemptions for units that are shown to be not cost effective for retrofit or replacement such as: <ul style="list-style-type: none"> <li>• Low-use turbines, and</li> <li>• Turbines achieving emissions close to the established limit.</li> </ul> </li> </ol> <p style="text-align: right;"><i>(Amended April 5, 2019)</i></p> <p><i>[Estimated emission reductions: 2.8 tons of NOx per day.]</i></p>  |
| 1135    | <p>Emissions of Oxides of Nitrogen from Electricity Generating Facilities</p> <p><i>Applicability:</i> Electric generating units at electricity generating facilities</p> | <ol style="list-style-type: none"> <li>1. Updates emission limits to reflect current BARCT: <ul style="list-style-type: none"> <li>• NOx and ammonia emission limits for boilers and gas turbines, and</li> <li>• NOx, ammonia, carbon monoxide, volatile organic compounds, and particulate matter for internal combustion engines.</li> </ul> </li> <li>2. Revises monitoring, reporting, and recordkeeping requirements.</li> <li>3. Provides exemptions for units that are shown to be not cost effective for retrofit: <ul style="list-style-type: none"> <li>• Low-use units,</li> <li>• Units achieving emissions close to the established limits, and</li> <li>• Units required to be shut down in the near term.</li> </ul> </li> </ol> <p style="text-align: right;"><i>(Amended November 2, 2018)</i></p> <p><i>[Estimated emission reductions: 1.7 tons of NOx per day.]</i></p> <ol style="list-style-type: none"> <li>1. Removes ammonia emission limits,</li> <li>2. Removes startup and shutdown provisions addressed in Rule 429.2.</li> <li>3. For engines at Santa Catalina Island: <ul style="list-style-type: none"> <li>• Removes option allowing replacement of existing diesel engines on Santa Catalina Island with new diesel engines and establishes a two-step process to reduce NOx emissions from all electric generating units on the island as follows: <ul style="list-style-type: none"> <li>➤ meet an initial NOx emission cap of 50 tons per year in 2024, then lower the cap to 45 tons per year in 2025 (Represents replacing two or three diesel engines with Tier 4 Final engines); and</li> <li>➤ meet a final NOx emission cap of 13 tons per year beginning in 2026.</li> </ul> </li> </ul> </li> </ol> |

| Rule(s)                         | Focus Area  | Description   |
|---------------------------------|---|---|
|                                 |   | <ul style="list-style-type: none"> <li>• Requires new diesel engines to meet the BARCT emissions limits in Table 2.</li> <li>• Revises the NOx concentration averaging period for new diesel engines from one hour to three hours.</li> <li>• Prohibits installation of any new diesel engines on Santa Catalina Island on and after January 1, 2024.</li> </ul> <p>4. Adds Rule 218.2 monitoring, recordkeeping and reporting provisions.</p> <p>5. Allows backup units until July 1, 2026, to source test in lieu of complying with Rules 218.2 and 218.3.</p> <p>6. Allows a sunset date of December 31, 2029, for electric generating units subject to the State Water Resources Control Board's Once-Through-Cooling Policy to be exempt from Rule 1135 emission limits.</p> <p style="text-align: right;"><i>(Amended January 7, 2022)</i></p> <p><i>[Estimated emission reductions: 0 tons of NOx per day.]</i></p>  |
| <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><br/>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><br/>Boilers, process heaters, and steam generators that are greater than 2 MMBtu/hr or and less than 5 MMBtu/hr</p> | <p>1. For Rule 1146 and 1146.1 facilities:</p> <ul style="list-style-type: none"> <li>• Updates emission limits to reflect current BARCT. <ul style="list-style-type: none"> <li>➤ NOx and ammonia emission limits for boilers, steam generators, and heaters</li> </ul> </li> <li>• Specifies compliance schedule in Rule 1100.</li> </ul> <p>2. For Rule 1146.2 units:</p> <ul style="list-style-type: none"> <li>• Comply with the 30 ppm limit by December 31, 2023, if a technology assessment (to be completed by January 1, 2022) determines that the NOx emission limits specified in Rule 1146.2 still represent BARCT.</li> </ul> <p style="text-align: right;"><i>(Amended December 7, 2018)</i></p> <p><i>[Estimated emission reductions: 0.31 tons of NOx per day.]</i></p> <p>1. For Rule 1146 facilities:</p> <ul style="list-style-type: none"> <li>• Removes ammonia slip limit which is currently addressed under Regulation XIII.</li> </ul> <p style="text-align: right;"><i>(Amended December 4, 2020)</i></p> <p><i>[Estimated emission reductions: 0 tons of NOx per day.]</i></p> |



**ANNUAL RECLAIM AUDIT**

| Rule(s) | Focus Area   | Description  |
|---------|--|--|
|         | <p>Rule 1146.2 - Large Water Heaters and Small Boilers and Process Heaters</p> <p><i>Applicability:</i><br/>Boilers, process heaters, and steam generators that are greater than 400,000 Btu/hr and less than or equal to 2 MMBtu/hr</p>   |  |
| 1147    | <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 at non-RECLAIM, RECLAIM, and former RECLAIM facilities</p>   | <ol style="list-style-type: none"> <li>1. Moves NOx emissions associated with aggregate dryers to Rules 1147.1, and NOx emissions associated with metal melting and heating furnaces to Rule 1147.2.</li> <li>2. Establishes NOx emission limits to reflect current BARCT.</li> </ol> <p style="text-align: right;"><i>(In Progress – 2<sup>nd</sup> Qtr. 2022)</i></p>  |
| 1147.1  | <p>NOx Reductions from Aggregate Dryers</p> <p><i>Applicability:</i> Owners or operators of gaseous fuel-fired aggregate dryers with NOx emissions <math>\geq 1</math> lb. per day with rated heat input greater than 2MMBtu/hr at non-RECLAIM, RECLAIM, and former RECLAIM facilities</p> | <ol style="list-style-type: none"> <li>1. Establishes NOx emission limit of 30 ppm and CO emission limit of 1,000 ppm for gaseous fuel fired aggregate dryers and specifies implementation timeframes.</li> <li>2. Establishes interim NOx emission limits of: <ul style="list-style-type: none"> <li>• 40 ppm for non-RECLAIM facilities, and</li> <li>• 102 ppm for former RECLAIM facilities.</li> </ul> </li> <li>3. Provides periodic source testing based on equipment size: <ul style="list-style-type: none"> <li>• &lt; 10 MMBtu/hr – every 5 calendar years,</li> <li>• &lt; 40 and <math>\geq 10</math> MMBtu/hr– every 3 calendar years, and</li> <li>• <math>\geq 40</math> MMBtu/hr – every calendar year.</li> </ul> </li> <li>4. Allows for aggregate dryers rated <math>\geq 40</math> MMBtu/hr that have not operated for at least 6 consecutive months to conduct a source test no later than 90 days after date of resumed operation.</li> <li>5. Requires aggregate dryers at a non-RECLAIM or former RECLAIM facilities with an existing CEMS or equivalent to retain the system and comply with the requirements of Rules 218.2 and 218.3.</li> <li>6. Provides exemption for tunnel dryers subject to Rule 1147.</li> </ol> <p style="text-align: right;"><i>(Adopted August 6, 2021)</i></p> <p><i>[Estimated emission reductions: 0.04 tons of NOx per day.]</i></p> |
| 1147.2  | <p>NOx Reductions from Metal Melting and Heating Furnaces</p>  | <p>Moves metal melting, metal heat treating, metal heating, and metal forging furnace operations from Rule 1147 to Rule 1147.2 to establish NOx emission limits to reflect current BARCT.</p>  |

**ANNUAL RECLAIM AUDIT**

| Rule(s) | Focus Area   | Description  |
|---------|--|--|
|         | <i>Applicability:</i> Metal melting, metal heat treating, metal heating, and metal forging furnaces  | <i>(In Progress – 2<sup>nd</sup> Qtr. 2022)</i>  |
| 1153.1  | Emissions of Oxides of Nitrogen from Commercial Food Ovens<br><br><i>Applicability:</i> Commercial food ovens  | Updates NOx emission limits to reflect current BARCT.<br><br><i>(In Progress – 3<sup>rd</sup> Qtr. 2022)</i>   |
| 1159.1  | Control of NOx Emissions from Nitric Acid Processing Tanks<br><br><i>Applicability:</i> Nitric acid processing tanks   | Updates NOx emission limits to reflect current BARCT.<br><br><i>(In Progress – 4<sup>th</sup> Qtr. 2022)</i>   |
| 2000    | Definitions governing the RECLAIM program<br><br><i>Applicability:</i> Definition of terms found in Regulation XX - RECLAIM  | 1. For all RECLAIM sources: <ul style="list-style-type: none"> <li>• Reclassifies the definition of a Major Modification for VOC or NOx emissions in the Coachella Valley by changing the threshold for NOx or VOC emissions from 25 tons per year to one pound per day to ensure consistency with Reg. XIII’s Rule 1302 and the requirements of the Clean Air Act.</li> </ul> <i>(Amended December 4, 2020)</i>   |
| 2001    | Applicability of RECLAIM criteria to new and existing facilities<br><br><i>Applicability:</i> Establishes criteria for inclusion into RECLAIM and identifies provisions in current rules that do not apply to facilities operating under the RECLAIM program | 1. Prevents new NOx RECLAIM facility inclusions as of January 5, 2018.<br><i>(Amended January 5, 2018)</i><br>2. Allows facilities to opt-out of RECLAIM, if certain conditions are met.<br><i>(Amended October 5, 2018)</i><br>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.<br><i>(Amended July 12, 2019)</i>  |
| 2002    | Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx)<br><br><i>Applicability:</i> Facilities operating under the RECLAIM program  | 1. Establishes NOx RECLAIM facility exit notification requirements.<br>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.<br>3. Prohibits exited facilities from selling or transferring future compliance year RECLAIM Trading Credits.<br><i>(Amended January 5, 2018)</i><br>1. Provides option for facilities that received an initial determination notification to stay in RECLAIM for a limited time. |

| Rule(s) | Focus Area   | Description  |
|---------|--|--|
|         |  | <p>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.</p> <p style="text-align: right;"><i>(Amended October 5, 2018)</i></p>  |
| 2005    | <p>New Source Review for RECLAIM</p> <p><i>Applicability:</i> Facilities operating under the RECLAIM program</p> | <p>Allows for New Source Review provisions to address facilities that are transitioning from RECLAIM to command-and-control. Amendments to Regulation XIII may be needed to address New Source Review provisions for facilities that transition out of RECLAIM.</p> <p>1. Allows a RECLAIM facility replacing existing basic equipment that is combined with the installation or modification of air pollution control equipment to:</p> <ul style="list-style-type: none"> <li>• Comply with a command-and-control NOx emission limit for a Regulation XI rule (Rule 1109.1),</li> <li>• Apply the BACT requirement for a SOx emission increase under Rule 1303 – Requirements, instead of BACT under Rule 2005, and</li> <li>• Use the limited BACT exemption in Rule 1304 subdivision (f).</li> </ul> <p style="text-align: right;"><i>(Amended November 5, 2021)</i></p> |

Monthly working group meetings continue to be held, as necessary, to further discuss steps for transitioning the remaining RECLAIM facilities to a command-and-control structure, and to develop necessary rule amendments to implement BARCT for the exiting RECLAIM facilities. Since the RECLAIM universe includes many different industries, separate working groups have been formed to address and develop these different BARCT Landing Rules. Completion of the development efforts for the remaining Landing Rules is now targeted for the fourth quarter in 2022. 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 2019 found that no facilities requested to exclude breakdown emissions from being counted against their allocations. Thus, for Compliance Year 2020, no additional RTCs are required to offset breakdown emissions pursuant to Rule 2015(d)(3).

**Table 3-4  
Breakdown Emission Comparison for Compliance Year 2020**

| <b>Pollutant</b> | <b>Compliance Year 2020 Unused RTCs (tons)</b> | <b>Unmitigated Breakdown Emissions<sup>1</sup> (tons)</b> | <b>Remaining Compliance Year 2020 RTCs (tons)</b> |
|------------------|--|---|---|
| NOx              | 1,993  | 0   | 1,993   |
| SOx              | 778  | 0   | 778   |

<sup>1</sup> Data for unmitigated breakdown emissions (not counted against Allocation) as reported under APEP reports.

## **Impact of Changing Universe**

In general, changes to the universe of RECLAIM facilities have the potential to impact emissions and the supply and demand of RTCs, and, therefore, may impact RECLAIM emission reduction goals. Facilities exiting the RECLAIM program result in their emissions not being accounted and therefore diminish the

demand of RTCs while the facility operator may retain their RTCs<sup>3</sup>. On the other hand, facilities entering the program add to the accounting of emissions and increase the demand of RTCs while they may or may not be issued Allocations to account for their historical activities<sup>4</sup>. However, the Board amended Rule 2001 on January 5, 2018 to preclude any facility from entering the RECLAIM program and amended Rule 2001 on July 12, 2019 to remove the opt-out provision so that facilities cannot exit RECLAIM.

As discussed in Chapter 1, during Compliance Year 2020, no facilities were included or excluded from the NOx or SOx universes, and six facilities (four NOx only facilities and two NOx and SOx facilities) shut down. Compliance Year 2020 NOx and SOx audited emissions and initial Compliance Year 2020 allocations for facilities that were shut down during Compliance Year 2020 are summarized in Tables 3-5 and 3-6.

**Table 3-5  
NOx Emissions Impact from the Changes in Universe (Tons)**

| Category            | Compliance Year 2020 NOx Emissions (tons) | Initial Compliance Year 2020 NOx Allocations (tons) |
|---------------------|---|---|
| Shutdown Facilities | 2.2                                       | 4.2   |
| Excluded Facilities | Not applicable                            | Not applicable                                      |
| RECLAIM Universe    | 5,506                                     | 7,499   |

**Table 3-6  
SOx Emissions Impact from the Changes in Universe (Tons)**

| Category            | Compliance Year 2020 SOx Emissions (tons) | Initial Compliance Year 2020 SOx Allocations (tons) |
|---------------------|---|---|
| Shutdown Facilities | 0.3                                       | 1.5   |
| Excluded Facilities | Not applicable                            | Not applicable                                      |
| RECLAIM Universe    | 1,436                                     | 2,214   |

## 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 2020 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 2020.

<sup>3</sup> Rule 2002(i) as amended in October 2016, requires the reduction of the RTC holdings of a shutdown facility that is listed in Tables 7 or 8 of Rule 2002 by an amount equivalent to the emissions above the most stringent BARCT level (see discussion in Chapter 2).

<sup>4</sup> When an existing facility enters the program, it is issued RTC allocations based on its operational history pursuant to the methodology prescribed in Rule 2002.

## CHAPTER 4 NEW SOURCE REVIEW ACTIVITY

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### Summary

*The annual program audit assesses New Source Review (NSR) activity from RECLAIM facilities 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 2020, a total of three NO<sub>x</sub> RECLAIM facilities had NSR NO<sub>x</sub> emission increases, and no SO<sub>x</sub> RECLAIM facilities had an NSR SO<sub>x</sub> emission increase due to expansion or modification. Consistent with all prior compliance years, there were sufficient NO<sub>x</sub> and SO<sub>x</sub> RTCs available to allow for expansion, modification, and modernization by RECLAIM facilities.*

*RECLAIM is required to comply with federal NSR emissions offset requirements at a 1.2-to-1 offset ratio programmatically for NO<sub>x</sub> emission increases and a 1-to-1 offset ratio for SO<sub>x</sub> emission increases on a programmatic basis. In Compliance Year 2020, RECLAIM demonstrated federal equivalency with a programmatic NO<sub>x</sub> offset ratio of 365-to-1 based on the compliance year's total unused allocations and total NSR emission increases for NO<sub>x</sub>. There were no SO<sub>x</sub> NSR emission increases that resulted from starting operations of new or modified permitted sources during the compliance year. RECLAIM inherently complies with the federally-required 1-to-1 SO<sub>x</sub> offset ratio for any compliance year, provided aggregate SO<sub>x</sub> emissions under RECLAIM are lower than or equal to aggregate SO<sub>x</sub> allocations for that compliance year. As shown in Chapter 3 (Table 3-2 and Figure 3-2), there was a surplus of SO<sub>x</sub> RTCs during Compliance Year 2020. Therefore, RECLAIM more than complied with the federally-required SO<sub>x</sub> offset ratio and further quantification of the SO<sub>x</sub> offset ratio is unnecessary. Also, the NNI is satisfied by the program's 1-to-1 offset ratio. In addition, RECLAIM requires application of, at a minimum, California Best Available Control Technology (BACT), which is at least as stringent as federal Lowest Achievable Emission Rate (LAER) for major sources. The same BACT guidelines are used to determine BACT applicable to RECLAIM and non-RECLAIM facilities.*

### Background

Emissions increases from the construction of new or modified stationary sources in non-attainment areas are regulated by both federal NSR and state NNI requirements to ensure that progress toward attainment of ambient air quality standards is not hampered. RECLAIM is designed to comply with federal NSR

and state NNI requirements without hindering facilities' ability to expand or modify their operations<sup>1</sup>.

Title 42, United States Code §7511a, paragraph (e), requires major sources in extreme non-attainment areas to offset emission increases of extreme non-attainment pollutants and their precursors at a 1.5-to-1 ratio based on potential to emit. However, if all major sources in the extreme non-attainment area are required to implement federal BACT, a 1.2-to-1 offset ratio may be used. Federal BACT is comparable to California's BARCT. South Coast AQMD requires all major sources to employ federal BACT/California BARCT at a minimum and, therefore, is eligible for a 1.2-to-1 offset ratio for ozone precursors (*i.e.*, NO<sub>x</sub> and VOC).

The federal offset requirement for major SO<sub>2</sub> sources is at least a 1-to-1 ratio, which is lower than the aforementioned 1.2-to-1 ratio. Even though the Basin is in attainment with SO<sub>2</sub> standards, SO<sub>x</sub> is a precursor to PM<sub>2.5</sub>. The Basin is in Serious Non-attainment with the 2006 Federal 24-hour average standard and 2012 Federal annual standard for PM<sub>2.5</sub>. The applicable offset ratio for PM<sub>2.5</sub> is at least 1-to-1, thus, the applicable offset ratio for SO<sub>x</sub> is 1-to-1. Health and Safety Code §40920.5 requires "no net increase in emissions from new or modified stationary sources of nonattainment pollutants or their precursors" (*i.e.*, a 1-to-1 offset ratio on an actual emissions basis). All actual RECLAIM emissions are offset at a 1-to-1 ratio provided there is not a programmatic exceedance of aggregate allocations, thus satisfying the federal offset ratio for SO<sub>x</sub> and state NNI requirements for both SO<sub>x</sub> and NO<sub>x</sub>. Annual RTC allocations follow a programmatic reduction to reflect changes in federal BACT/California BARCT and thereby comply with federal and state offset requirements.

RECLAIM requires, at a minimum, California BACT for all new or modified sources with increases in hourly potential to emit of RECLAIM pollutants. South Coast AQMD uses the same BACT guidelines in applying BACT to both RECLAIM and non-RECLAIM facilities. Furthermore, BACT for major sources is at least as stringent as LAER (LAER is not applicable to minor facilities as defined in Rule 1302(t)). Thus, RECLAIM complies with both state and federal requirements regarding control technologies for new or modified sources. In addition to offset and BACT requirements, RECLAIM subjects RTC trades that are conducted to mitigate emissions increases over the sum of the facility's starting allocation and non-tradable/non-usable credits to trading zone restrictions to ensure net ambient air quality improvement within the sensitive zone established by Health and Safety Code §40410.5. Furthermore, facilities with actual RECLAIM emissions that exceed their initial allocation by 40 tons per year or more are required to analyze the potential impact of their emissions increases through air quality modeling.

Rule 2005 – New Source Review for RECLAIM requires RECLAIM facilities to provide (hold), prior to the start of operation, sufficient RTCs to offset the annual increase in potential emissions for the first year of operation at a 1-to-1 ratio. The

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<sup>1</sup> Federal NSR applies to federal major sources (sources with the potential to emit at least 10 tons of NO<sub>x</sub> or 70 tons of SO<sub>x</sub> per year for the South Coast Air Basin) and state NNI requirements apply to all NO<sub>x</sub> sources and to SO<sub>x</sub> sources with the potential to emit at least 15 tons per year in the South Coast Air Basin. RECLAIM's NSR provisions apply to all facilities in the program, including those not subject to federal NSR or state NNI. (Although the threshold for RECLAIM inclusions is four tons per year of NO<sub>x</sub> or SO<sub>x</sub> emissions, some RECLAIM facilities have actual emissions much less than 4 tons per year).

same rule also requires all new RECLAIM facilities<sup>2</sup> and all other RECLAIM facilities that increase their annual allocations above the level of their starting allocations plus non-tradable/non-usable credits to provide sufficient RTCs to offset the annual potential emissions increase from new or modified source(s) at a 1-to-1 ratio at the commencement of each compliance year after the start of operation of the new or modified source(s). Although RECLAIM allows a 1-to-1 offset ratio for emissions increases, RECLAIM complies with the federal 1.2-to-1 offset requirement for NOx on an aggregate basis as explained earlier. This annual program audit report assesses NSR permitting activities for Compliance Year 2020 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 2020 shows that RECLAIM facilities were able to expand and modify their operations while complying with NSR requirements. During Compliance Year 2020, a total of three NOx RECLAIM facilities (one in Cycle 1 and two in Cycle 2) were issued permits to operate, which resulted in a total of 5.475 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: 1,993 tons, SOx: 778 tons; see Chapter 3) in the RECLAIM universe available for use to offset emission increases at the appropriate offset ratios.

## NSR Compliance Demonstration

RECLAIM is designed to programmaticly comply with the federal NSR offset requirements. Meeting the NSR requirement (offset ratio of 1.2-to-1 for NOx and at least 1-to-1 for SOx) also demonstrates compliance with the state NNI requirements. Section 173 (c) of the federal Clean Air Act (CAA) states that only emissions reductions beyond the requirements of the CAA, such as federal Reasonably Available Control Technology (RACT), shall be considered creditable as emissions reductions for offset purposes. Since the initial allocations (total RTC supply in Compliance Year 1994) already met federal RACT requirements when the program was initially implemented, any emissions reductions beyond the initial allocations are available for NSR offset purposes until RACT becomes more stringent. The programmatic offset ratio calculations presented in the Annual RECLAIM Audit Reports for Compliance Years 1994 through 2004 relied upon aggregate Compliance Year 1994 allocations as representing RACT. However, staff recognizes that RACT may have become more stringent in the intervening years, so it may no longer be appropriate to calculate the programmatic offset ratio based upon aggregate 1994 allocations.

Aggregate allocations for each compliance year represent federal BACT, which is equivalent to local BARCT. Federal BACT is more stringent than federal RACT (*i.e.*, the best available control technology is more stringent than what is reasonably available), so staff started using current allocations (federal BACT) as

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<sup>2</sup> New facilities are facilities that received all South Coast AQMD Permits to Construct on or after October 15, 1993.



a surrogate for RACT as the basis for calculating programmatic NOx and SOx offset ratios in the annual program audit report for Compliance Year 2005 and is continuing to do so for NOx in this report. This is a more conservative (*i.e.*, more stringent) approach than using actual RACT and is much more conservative than using aggregate Compliance Year 1994 allocations. The advantage of this approach is that, as long as the calculated NOx offset ratio is at least 1.2-to-1, it provides certainty that RECLAIM has complied with federal and state offset requirements without the need to know exactly what RACT is for RECLAIM facilities. However, if this very conservative approach should ever fail to demonstrate that the aggregate NOx offset ratio for any year is at least 1.2-to-1, that will not necessarily mean RECLAIM has not actually complied with the federally required 1.2-to-1 NOx offset ratio. Rather it will indicate that further analysis is required to accurately identify RACT so that the actual offset ratio can be calculated, and a compliance determination made.

Provided aggregate RECLAIM emissions do not exceed aggregate allocations, all RECLAIM emissions are offset at a ratio of 1-to-1. This leaves all unused allocations available to provide offsets beyond the 1-to-1 ratio for NSR emission increases. Unused allocations are based on all Cycle 1 and Cycle 2 RTCs of a given compliance year and the aggregate RECLAIM emissions for the selected time period. The NSR emission increase is the sum of emission increases due to permit activities at all RECLAIM facilities during the same compliance year. The aggregate potential RECLAIM offset ratios are expressed by the following formula:

$$\text{Offset Ratio} = (1 + \frac{\text{compliance year's total unused allocations}}{\text{total NSR emission increases}}) \text{-to-1}$$

As stated in the paragraph under the title "NSR Activity", permits to operate issued to three RECLAIM facilities resulted in 5.475 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 2020), 1,993 tons of Compliance Year 2020 NOx RTCs remained unused. Therefore, the Compliance Year 2020 NOx programmatic offset ratio calculated from this methodology is 365-to-1 as shown below:

$$\begin{aligned} \text{NOx Offset Ratio} &= (1 + \frac{1,993 \text{ tons}}{5.475 \text{ tons}}) \text{-to-1} \\ &= 365\text{-to-1} \end{aligned}$$

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 365-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 Board to implement BARCT. The required offset ratio for SOx is 1-to-1. Since RECLAIM facilities are required to secure, at a minimum, adequate RTCs to cover their actual emissions, the SOx 1-to-1 offset ratio is met automatically provided there is no programmatic exceedance of aggregate SOx allocations for that compliance year. As identified in Table 3-2 (Annual SOx Emissions for Compliance Years 1994 through 2020), there were 778 tons of excess (unused) SOx RTCs for Compliance Year 2020. Since there were no SOx emission increases that resulted from starting operations of new or modified permitted sources during the compliance year, there is certainty that both the federally required SOx offset ratio and the California NNI requirement for SOx were satisfied.

BACT and modeling are also required for any RECLAIM facility that installs new equipment or modifies sources if the installation or modification results in an increase in emissions of RECLAIM pollutants. Furthermore, the RTC trading zone restrictions in Rule 2005 – New Source Review for RECLAIM, limit trades conducted to offset emission increases over the sum of the facility's starting allocation and non-tradable/non-usable credits to ensure net ambient air quality improvement within the sensitive zone, as required by state law.

The result of the review of NSR activity in Compliance Year 2020 shows that RECLAIM complies with both state NNI and federal NSR requirements. South Coast AQMD staff will continue to monitor NSR activity under RECLAIM to assure continued progress toward attainment of ambient air quality standards without hampering economic growth in the Basin.

## Modeling Requirements

Rule 2004, as amended in May 2001, requires RECLAIM facilities with actual NOx or SOx emissions exceeding their initial allocation in Compliance Year 1994 by 40 tons per year or more to conduct modeling to analyze the potential impact of the increased emissions. The modeling analysis is required to be submitted within 90 days of the end of the compliance year. For Compliance Year 2020, one RECLAIM facility was subject to the 40-ton modeling requirement for NOx emissions, and no facilities for SOx emissions.

This modeling is performed with an USEPA approved air dispersion model to assess the impact of a facility's NOx or SOx emission increase on compliance with all applicable state and federal ambient air quality standards (AAQS). Air dispersion modeling submitted by each facility is reviewed by staff and revised as necessary to comply with South Coast AQMD's air dispersion modeling procedures including use of appropriate meteorological data for the facility location. Per Rule 2004 (q)(3), the modeling submitted by a facility must include source parameters and emissions for every major source located at the facility. For comparison against applicable state and federal AAQS, the predicted modeling impacts due to a facility's NOx or SOx emission increases are added to the highest background NOx or SOx concentration measured at the nearest ambient air monitoring station during the previous three years. Modeling runs are performed with worst-case emissions data for averaging periods that coincide with the averaging period of each applicable AAQS (e.g., 1-hr, 24-hr, annual).

The one facility had initial NO<sub>x</sub> allocations in 1994 and exceeded their initial allocations by more than 40 tons in Compliance Year 2020. The facility submitted modeling that demonstrated that NO<sub>x</sub> emissions from their major sources during 2020 will not cause an exceedance of any state or federal NO<sub>2</sub> AAQS.

## CHAPTER 5 COMPLIANCE

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### Summary

*Based on South Coast AQMD Compliance Year 2020 audit results, 242 of the 259 (93%) NO<sub>x</sub> RECLAIM facilities complied with their NO<sub>x</sub> allocations, and 31 of the 31 SO<sub>x</sub> facilities (100%) complied with their SO<sub>x</sub> allocations based on South Coast AQMD audit results. So, 17 facilities exceeded their allocations (17 facilities exceeded their NO<sub>x</sub> allocations, and no facility exceeded its SO<sub>x</sub> allocation). The 17 facilities that exceeded their NO<sub>x</sub> allocations had aggregate NO<sub>x</sub> emissions of 64.3 tons and did not have adequate allocations to offset 16.3 tons (or 25.3%) of their combined emissions. The NO<sub>x</sub> exceedance amounts are relatively small compared to the overall NO<sub>x</sub> allocations for Compliance Year 2020 (0.22% of total NO<sub>x</sub> allocations). The exceedances from these facilities did not impact the overall RECLAIM emission reduction goals. The overall RECLAIM NO<sub>x</sub> and SO<sub>x</sub> emission reduction targets and goals were met for Compliance Year 2020 (i.e., aggregate emissions for all RECLAIM facilities were well below aggregate allocations). Pursuant to Rule 2010(b)(1)(A), all affected facilities had their respective exceedances deducted from their annual allocations for the compliance year subsequent to the date of South Coast AQMD determination that the facilities exceeded their Compliance Year 2020 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 subsequently included in the RECLAIM program, each RECLAIM facility is issued an annual allocation for each compliance year pursuant to the 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 2020, a total of 259 facility audits were completed. The audit process also 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 2020, 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 17 RECLAIM facilities failed to reconcile their emissions (17 facilities that exceeded their NO<sub>x</sub> Allocations and no facility that exceeded its SO<sub>x</sub> allocations). Eleven of these 17 facilities failed to acquire adequate RTCs to offset their reported emissions. The remaining six facilities exceeded allocations based on their audited emissions. The list of facilities that failed to reconcile their emissions during Compliance Year 2020 is provided in Appendix D.

Based on audit findings, 11 facilities were found to have under-reported their NO<sub>x</sub> emissions and didn't hold sufficient NO<sub>x</sub> RTCs to reconcile their audited emissions. Among the 11 facilities found to have under-reported their emissions, the reasons for the under-reporting include one or more of the following causes:

- data entry error,
- use of incorrect emission factor, brake horsepower (BHP), or operating time in emission calculation,
- failed to report emissions for all NO<sub>x</sub> sources, and
- failed to properly apply missing data procedures.

Overall, the Compliance Year 2020 allocation compliance rates for facilities are 93 percent (242 out of 259 facilities) for NO<sub>x</sub> RECLAIM and 100 percent (31 out of 31 facilities) for SO<sub>x</sub> RECLAIM<sup>1</sup>. For purposes of comparison, the allocation compliance rates for Compliance Year 2019 were 95 percent and 97 percent for NO<sub>x</sub> and SO<sub>x</sub> RECLAIM facilities, respectively. In Compliance Year 2020, the 17 facilities that had NO<sub>x</sub> emissions in excess of their individual NO<sub>x</sub> allocations had 64.3 tons of NO<sub>x</sub> emissions and didn't have adequate RTCs to cover 16.3 tons of those tons (or 25.3% of their total emissions). The NO<sub>x</sub> exceedance amounts are relatively small compared to the overall allocations for Compliance Year 2020 (0.22% of aggregate NO<sub>x</sub> allocations). Pursuant to Rule 2010(b)(1)(A), all affected facilities had their NO<sub>x</sub> Allocation exceedance deducted from their annual emissions allocations for the compliance year subsequent to South Coast AQMD's determination that the facilities exceeded their Compliance Year 2020 allocations.

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<sup>1</sup> Compliance rates for both NO<sub>x</sub> and SO<sub>x</sub> are based on 259 NO<sub>x</sub> and 31 SO<sub>x</sub> completed audits, respectively.

### Impact of Missing Data Procedures

MDP was designed to provide a method for determining emissions when an emission monitoring system does not yield valid emissions. For major sources, these occurrences may be caused by failure of the monitoring systems, the data acquisition and handling systems, or by lapses in the Continuous Emissions Monitoring System (CEMS) certification period. Major sources are also required to use MDP for determining emissions whenever daily emissions reports are not submitted by the applicable deadline. When comparing actual emissions with a facility's use of substituted MDP emissions, the range of MDP emissions can vary from "more representative" to being overstated to reflect a "worst case"<sup>2</sup> scenario. For instance, an MDP "worst case" scenario may occur for major sources that fail to have their CEMS certified in a timely manner, and therefore, have no valid CEMS data that can be used for substitution. In other cases, where prior CEMS data is available, MDP is applied in tiers depending on the duration of missing data periods and the historical availability of monitoring systems. As the duration of missing data periods gets shorter and the historical availability of monitoring systems gets higher, the substitute data yielded by MDP becomes more representative of actual emissions<sup>3</sup>.

In addition to MDP for major sources, RECLAIM rules also define MDP for large sources and process units. These procedures are applicable when a process monitoring device fails or when a facility operator fails to record fuel usage or other monitored data (e.g., hours of operation). The resulting MDP emissions reports are reasonably representative of the actual emissions because averaged or maximum emissions from previous operating periods may be used. However, for extended missing data periods (more than two months for large sources or four quarters or more for process units) or when emissions data for the preceding year are unavailable, large source and process unit MDP are also based on maximum operation or worst-case assumptions.

Based on APEP reports, 89 NO<sub>x</sub> facilities and 15 SO<sub>x</sub> facilities used MDP in reporting portions of their annual emissions during Compliance Year 2020. In terms of mass emissions, 3.3 percent of the total reported NO<sub>x</sub> emissions and 6.6 percent of the total reported SO<sub>x</sub> emissions in the APEP reports were calculated using MDP for Compliance Year 2020. Table 5-1 compares the impact of MDP on reported annual emissions for the last few compliance years to the second compliance year, 1995 (MDP was not fully implemented during Compliance Year 1994).

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<sup>2</sup> Based on uncontrolled emission factor at maximum rated capacity of the source and 24 hours per day operation.

<sup>3</sup> Based on averaged emissions during periods before and after the period for which data is not available.

**Table 5-1  
MDP Impact on Annual Emissions**

| Year | Percent of Reported Emissions Using Substitute Data* |                       |
|------|--|-----------------------|
|      | NOx  | SOx                   |
| 1995 | 23.0%<br>(65 ; 6,070)                                | 40.0%<br>(12 ; 3,403) |
| 2010 | 7.0%<br>(93 ; 488)                                   | 6.1%<br>(23 ; 168)    |
| 2011 | 6.2%<br>(94 ; 435)                                   | 12.4%<br>(19 ; 328)   |
| 2012 | 7.5%<br>(95 ; 560)                                   | 4.5%<br>(13 ; 114)    |
| 2013 | 3.9%<br>(107 ; 287)                                  | 5.6%<br>(15 ; 113)    |
| 2014 | 3.3%<br>(97 ; 247)                                   | 3.0%<br>(13 ; 66)     |
| 2015 | 6.9%<br>(98 ; 502)                                   | 10.9%<br>(14 ; 229)   |
| 2016 | 3.9%<br>(91 ; 288)                                   | 6.2%<br>(14 ; 125)    |
| 2017 | 3.8%<br>(92 ; 273)                                   | 6.3%<br>(15 ; 126)    |
| 2018 | 3.7%<br>(90 ; 252)                                   | 7.0%<br>(16 ; 150)    |
| 2019 | 5.4%<br>(93 ; 343)                                   | 9.5%<br>(16 ; 161)    |
| 2020 | 3.3%<br>(89 ; 184)                                   | 6.6%<br>(15 ; 93)     |

\* 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, 89 facilities reported NOx emissions using MDP in Compliance Year 2020. Even though the number of facilities is higher than in 1995, the percentage of emissions reported using MDP during Compliance Year 2020 is much lower than it was in 1995 (3% compared to 23%). Additionally, in



terms of quantity, NO<sub>x</sub> emissions determined by the use of MDP in Compliance Year 2020 were about 3 percent of those in Compliance Year 1995 (184 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 3 percent of reported NO<sub>x</sub> annual emissions were calculated using MDP in Compliance Year 2020. 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 3 percent 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 2020, a significant portion of NO<sub>x</sub> MDP emissions data (74%) and of SO<sub>x</sub> MDP emissions data (95%) were reported by refineries, which tend to operate near maximum capacity for 24 hours per day and seven days per week, except for scheduled shutdowns for maintenance and barring major breakdowns or other unforeseeable circumstances. Missing data emissions calculated using the lower tiers of MDP (*i.e.*, 1N Procedure or 30-day maximum value) for facilities such as refineries that have relatively constant operation near their maximum operation are generally reflective of actual emissions because peak values are close to average values for these operations.

## Emissions Monitoring

### Overview

The reproducibility of reported RECLAIM facility emissions (and the underlying calculations)—and thereby the enforceability of the RECLAIM program—is assured through a tiered hierarchy of MRR requirements. A facility's equipment falls into an MRR category based on the kind of equipment it is and on the level of emissions produced or potentially produced by the equipment. RECLAIM divides all NO<sub>x</sub> sources into major sources, large sources, process units, and equipment exempt from obtaining a written permit pursuant to Rule 219. All SO<sub>x</sub> sources are divided into major sources, process units, and equipment exempt from obtaining a written permit pursuant to Rule 219. Table 5-2 shows the monitoring requirements applicable to each of these categories.

**Table 5-2  
Monitoring Requirements for RECLAIM Sources**

| Source Category     | Major Sources (NOx and SOx)   | Large Sources (NOx only)                                  | Process Units and Rule 219 Equipment (NOx and SOx) |
|---------------------|---|---|--|
| Monitoring Method   | Continuous Emissions Monitoring System (CEMS) or Alternative CEMS (ACEMS) | Fuel Meter or Continuous Process Monitoring System (CPMS) | Fuel Meter, Timer, or CPMS                         |
| Reporting Frequency | Daily   | Monthly   | Quarterly  |

**Continuous Emissions Monitoring System (CEMS)**

**Requirements**

CEMS represent both the most accurate and the most reliable method of calculating emissions because they continuously monitor all of the parameters necessary to directly determine mass emissions of NOx and SOx. They are also the most costly method. These attributes make CEMS the most appropriate method for the largest emission-potential equipment in the RECLAIM universe, major sources.

Alternative Continuous Emissions Monitoring Systems (ACEMS) are alternatives to CEMS that are allowed under the RECLAIM regulation. These are devices that do not directly monitor NOx or SOx mass emissions; instead, they correlate multiple process parameters to arrive at mass emissions. To be approved for RECLAIM MRR purposes, ACEMS must be determined by South Coast AQMD to be equivalent to CEMS in relative accuracy, reliability, reproducibility, and timeliness.

For Compliance Year 2020, even though the number of major sources monitored by either CEMS or ACEMS represent 18 percent and 66 percent of all permitted RECLAIM NOx and SOx sources, respectively, reported emissions revealed that 78 percent of all RECLAIM NOx emissions and 97 percent 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 percent 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 percent for pollutant concentration, ±15 percent for stack flow rate, and ±20 percent 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 2020 and 2021 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 2020 and 2021 passing rates are calculated from RATA data submitted before January 10, 2021 and January 14, 2022, 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 2020<sup>1</sup>**

| Concentration |        |                 |        |                           |        | Stack Flow Rate  |        |                      |        | Mass Emissions |        |                  |        |
|---------------|--------|-----------------|--------|---------------------------|--------|------------------|--------|----------------------|--------|----------------|--------|------------------|--------|
| NOx           |        | SO <sub>2</sub> |        | Total <sup>2</sup> Sulfur |        | In-Stack Monitor |        | F-Factor Based Calc. |        | NOx            |        | SOx <sup>3</sup> |        |
| No.           | % Pass | No.             | % Pass | No.                       | % Pass | No.              | % Pass | No.                  | % Pass | No.            | % Pass | No.              | % Pass |
| 399           | 100    | 104             | 100    | 20                        | 100    | 73               | 100    | 383                  | 99.7   | 374            | 100    | 90               | 100    |

<sup>1</sup> The calculation of passing rates includes all RATAs submitted by January 10, 2021.

<sup>2</sup> Includes Cylinder Gas Audit (CGA) tests.

<sup>3</sup> Does not include SOx emissions calculated from total sulfur analyzers.

**Table 5-4  
Passing Rates Based on RATAs of Certified CEMS in 2021<sup>1</sup>**

| Concentration   |        |                 |        |                           |        | Stack Flow Rate  |        |                      |        | Mass Emissions  |        |                              |        |
|-----------------|--------|-----------------|--------|---------------------------|--------|------------------|--------|----------------------|--------|-----------------|--------|------------------------------|--------|
| NO <sub>x</sub> |        | SO <sub>2</sub> |        | Total <sup>2</sup> Sulfur |        | In-Stack Monitor |        | F-Factor Based Calc. |        | NO <sub>x</sub> |        | SO <sub>x</sub> <sup>3</sup> |        |
| No.             | % Pass | No.             | % Pass | No.                       | % Pass | No.              | % Pass | No.                  | % Pass | No.             | % Pass | No.                          | % Pass |
| 462             | 100    | 139             | 100    | 20                        | 100    | 42               | 100    | 471                  | 100    | 439             | 100    | 136                          | 100    |

<sup>1</sup> The calculation of passing includes all RATAs submitted by January 14, 2022.

<sup>2</sup> Includes Cylinder Gas Audit (CGA) tests.

<sup>3</sup> Does not include SO<sub>x</sub> emissions calculated from total sulfur analyzers.

As indicated in Tables 5-3 and 5-4, the passing rates for NO<sub>x</sub>/SO<sub>2</sub> concentration, stack flow rate, and mass emissions were at or near 100 percent. 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 2021, 98 percent of RATA results were submitted via EDR.

**Non-Major Source Monitoring, Reporting, and Recordkeeping**

Emissions quantified for large sources are primarily based on concentration limits or emission rates specified in the Facility Permit. Other variables used in the calculation of large source emissions are dependent on the specific process of the equipment, but generally include fuel usage, applicable dry F-factor, and the higher heating value of the fuel used, which are collectively used to calculate stack flow rate. RECLAIM requires large sources to be source tested within defined three-year windows in order to validate fuel meter accuracy and the equipment’s concentration limit or emission rate. Since emissions quantification is fuel-based, the monitoring equipment required to quantify emissions is a non-resettable fuel meter that must be corrected to standard temperature and pressure. Large source emission data must be submitted electronically on a monthly basis.

Process unit emission calculations are similar to those of large sources in that emissions are quantified using the fuel-based calculations for either a concentration limit or an emission factor specified in the Facility Permit. Similar to large sources, variables used in emission calculations for process units are dependent on the equipment’s specific process, but generally include fuel usage, applicable dry F-factor, and the higher heating value of the fuel used. Process units that are permitted with concentration limits are also required to be source-tested, but within specified five-year windows rather than three-year windows.

Emissions for equipment exempt from obtaining a written permit pursuant to Rule 219 are quantified using emission factors and fuel usage. No source testing is required for such exempt equipment. Since emissions calculations are fuel-based for both process units and exempt equipment, the monitoring equipment required to quantify emissions is a non-resettable fuel meter, corrected to standard temperature and pressure. Alternately, a timer may be used to record operational time. In such cases, fuel usage is determined based on maximum rated capacity of the source. Process units and exempt equipment must submit emission reports electronically on a quarterly basis.

## Emissions Reporting

### Requirements

RECLAIM uses electronic reporting technology to streamline reporting requirements for both facilities and South Coast AQMD, and to help automate compliance tracking. Under RECLAIM, facilities report their emissions electronically on a per device basis to South Coast AQMD's Central Station computer as follows:

- Major sources must use a Remote Terminal Unit (RTU) to telecommunicate emission data to South Coast AQMD's Central Station. The RTU collects data, performs calculations, generates the appropriate data files, and transmits the data to the Central Station. This entire process is required to be performed by the RTU on a daily basis without human intervention.
- Emission data for all equipment other than major sources may be transmitted via RTU or compiled manually and transmitted to the Central Station via modem. Alternatively, operators of non-major sources may use South Coast AQMD's internet-based application, Web Access To Electronic Reporting System (WATERS) to transmit emission data for non-major sources via internet connection. The data may be transmitted directly by the facility or through a third party.

### Compliance Status

The main concern for emission reporting is the timely submittal of accurate daily emissions reports from major sources. If daily reports are not submitted by the specified deadlines, RECLAIM rules may require that emissions from CEMS be ignored and the emissions be calculated using MDP. Daily emission reports are submitted by the RTU of the CEMS to South Coast AQMD's Central Station via telephone lines. Often communication errors between the two points are not readily detectable by facility operators. Undetected errors can cause facility operators to believe that daily reports were submitted when they were not received by the Central Station. In addition to providing operators a means to confirm the receipt of their reports, the WATERS application can also display electronic reports that were submitted to, and received by, the Central Station. This system helps reduce instances where MDP must be used for late or missing daily reports, because the operators can verify that the Central Station received their daily reports and can resubmit them if there were communication errors.

## Protocol Review

Even though review of MRR protocols was only required by Rule 2015(b)(1) for the first three compliance years of the RECLAIM program, staff continues to review the effectiveness of enforcement and MRR protocols. Based on such review, occasional revisions to the protocols may be needed to achieve improved measurement and enforcement of RECLAIM emission reductions, while minimizing administrative costs to RECLAIM facilities and South Coast AQMD.

Since the RECLAIM program was adopted, staff has produced rule interpretations and implementation guidance documents to clarify and resolve specific concerns about the protocols raised by RECLAIM participants or observed by South Coast AQMD staff. In situations where staff could not interpret existing rule requirements to adequately address the issues at hand, the protocols and/or rules have been amended.

## CHAPTER 6 REPORTED JOB IMPACTS

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### Summary

*This chapter compiles data as reported by RECLAIM facilities in their Annual Permit Emissions Program (APEP) reports. The analysis focuses exclusively on job impacts at RECLAIM facilities and determining 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 2020 employment survey data gathered from APEP reports, RECLAIM facilities reported a net loss of 3,687 jobs, representing 4.04 percent of their total employment. A comparison of reported job impacts between Cycle 1 and Cycle 2 facilities suggests that the coronavirus (COVID-19) global pandemic affected job losses at Cycle 1 facilities. No RECLAIM facility cited RECLAIM as a factor contributing to the addition of any jobs during Compliance Year 2020. No facility reported job losses due to RECLAIM, during Compliance Year 2020.*

### 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 2020 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 2020 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 2020.

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 2020 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 2020 APEP reports and follow-up contacts with facilities. A total of 118 facilities reported 5,559 job gains, while 144 facilities reported a total of 9,246 job losses. Net job losses were reported in all of the three categories: manufacturing (971), sales of products (27), and non-manufacturing (2,689). Table 6-1 shows a total net loss of 3,687 jobs, which represents a net decrease of 4.04 percent at RECLAIM facilities during Compliance Year 2020. A comparison of reported job impacts between Cycle 1 and Cycle 2 facilities during Compliance Year 2020 shows that Cycle 1 facilities (January 1, 2020 – December 31, 2020) reported an overall job loss of 7.96 percent while Cycle 2 facilities (July 1, 2020 – June 30, 2021) reported an overall job loss of 0.48 percent. This trend coincides with the novel coronavirus (COVID-19) global pandemic and its widely reported impact on employment as the reason for Cycle 1 job losses being greater than Cycle 2 losses. This trend in employment numbers is also suggested in the 2020 - 2021 employment data for the State of California.<sup>1</sup>

**Table 6-1**  
**Job Impacts at RECLAIM Facilities for Compliance Year 2020**

| Description                            | Manufacture   | Sales of Products | Non-Manufacture | Total*        |
|--|---------------|-------------------|-----------------|---------------|
| <b>Initial Jobs</b>                    | <b>37,928</b> | <b>483</b>        | <b>52,951</b>   | <b>91,362</b> |
| <b>Overall Job Gain</b>                | <b>2,509</b>  | <b>58</b>         | <b>2,992</b>    | <b>5,559</b>  |
| <b>Overall Job Loss</b>                | <b>3,480</b>  | <b>85</b>         | <b>5,681</b>    | <b>9,246</b>  |
| <b>Final Jobs</b>                      | <b>36,957</b> | <b>456</b>        | <b>50,262</b>   | <b>87,675</b> |
| <b>Net Job Change</b>                  | <b>-971</b>   | <b>-27</b>        | <b>-2,689</b>   | <b>-3,687</b> |
| <b>Percent (%) Job Change</b>          | <b>-2.56%</b> | <b>-5.59%</b>     | <b>-5.08%</b>   | <b>-4.04%</b> |
| <b>Facilities Reporting Job Gains</b>  | <b>77</b>     | <b>19</b>         | <b>72</b>       | <b>118</b>    |
| <b>Facilities Reporting Job Losses</b> | <b>110</b>    | <b>27</b>         | <b>81</b>       | <b>144</b>    |

\* 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 four of the six RECLAIM facilities that ceased operations in Compliance Year 2020, as listed in Appendix C, are included in Table 6-1. All six facilities that ceased operations cited economic reasons for their closures. Two of the facilities were replaced with real estate redevelopments, and three facilities cited financial concerns as their reasons for shutting down: one stated the cost of manufacturing was too high, one cited a declining demand for products, and one cited the depletion of raw materials. The last facility cited COVID-19 driven mandates as their reason for shutting down. According to their APEP reports, the shutdown of these six facilities led to a total loss of 137 jobs (129 manufacturing jobs, 0 sales jobs, and 8 non-manufacturing jobs).

<sup>1</sup> The 2020 California employment data is available from the State of California Employment Development Department's website at: <https://www.labormarketinfo.edd.ca.gov/geography/lmi-by-geography.html>.



No RECLAIM facilities attributed job gains or losses to RECLAIM for Compliance Year 2020.

The analysis in this report only considers job gains and losses at RECLAIM facilities. It should be noted that this analysis of socioeconomic impacts based on APEP reports and follow-up interviews is focused exclusively on changes in employment that occurred at RECLAIM facilities. The effect of the program on the local economy outside of RECLAIM facilities, including consulting and source testing jobs, is not considered.

It is not possible to compare the impact of the RECLAIM program on the job market *vis-à-vis* a scenario without RECLAIM. This is because factors other than RECLAIM (*e.g.*, the prevailing economic climate) also impact the job market. Furthermore, there is no way to directly compare job impacts attributed to RECLAIM to job impacts attributed to command-and-control rules that would have been adopted in RECLAIM's absence, because these command-and-control rules do not exist for these facilities. As mentioned previously, the effect of the RECLAIM program on the local economy outside of RECLAIM facilities (*e.g.*, generating jobs for consulting firms, source testing firms and CEMS vendors) is also not considered in this report.

## CHAPTER 7

### AIR QUALITY AND PUBLIC HEALTH IMPACTS

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#### Summary

*Audited RECLAIM emissions have been in an overall downward trend since the program's inception. Compliance Year 2020 NO<sub>x</sub> and SO<sub>x</sub> emissions decreased 15 percent and 16 percent, respectively, relative to Compliance Year 2019. Quarterly calendar year 2020 NO<sub>x</sub> emissions fluctuated within twelve percent of the mean NO<sub>x</sub> emissions for the year. Quarterly calendar year 2020 SO<sub>x</sub> emissions fluctuated within fifteen percent of the year's mean SO<sub>x</sub> emissions. There was no significant shift in seasonal emissions from the winter season to the summer season for either pollutant.*

*The California Clean Air Act (CCAA) required a 50 percent 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 2021, the per capita exposure to ozone (the average length of time each person is exposed) continued to be well below the target set for December 2000.*

*Air toxic health risk is primarily caused by emissions of certain volatile organic compounds (VOCs) and fine particulates, such as metals. RECLAIM facilities are subject to the same air toxic, VOC, and particulate matter regulations as other sources in the Basin. All sources are subject, where applicable, to the NSR rule for toxics (Rule 1401 and/or Rule 1401.1). In addition, new or modified sources with NO<sub>x</sub> or SO<sub>x</sub> emission increases are required to be equipped with BACT, which minimizes to the extent feasible the increase of NO<sub>x</sub> and SO<sub>x</sub> emissions. RECLAIM and non-RECLAIM facilities that emit toxic air contaminants are required to report those emissions to South Coast AQMD. Those emissions reports are used to identify candidates for the Air Toxics Hot Spots program (AB2588). This program requires emission inventories and, depending on the type and amount of emissions, facilities may be required to do public notice and/or prepare and implement a plan to reduce emissions. There is no evidence that RECLAIM has caused or allowed higher toxic risk in areas adjacent to RECLAIM facilities, than would occur under command-and-control, because RECLAIM facilities must comply with the same toxics rules as non-RECLAIM facilities.*

#### Background

RECLAIM is designed to achieve the same, or higher level of, air quality and public health benefits as would have been achieved from implementation of the control measures and command-and-control rules that RECLAIM subsumed. Therefore, as a part of each annual program audit, South Coast AQMD staff evaluates per capita exposure to air pollution, toxic risk reductions, emission trends, and seasonal fluctuations in emissions. South Coast AQMD staff also generates quarterly emissions maps depicting the geographic distribution of RECLAIM emissions. These maps are generated and posted quarterly on South

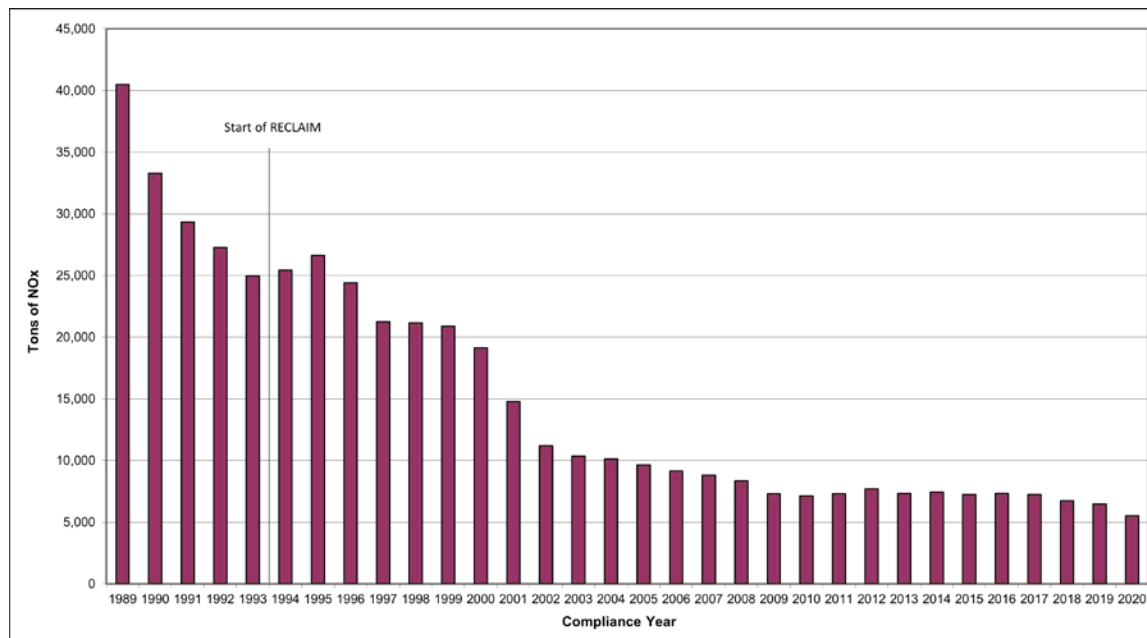
Coast AQMD's website<sup>1</sup>, and include all the quarterly emissions maps presented in previous annual program audit reports. This chapter addresses:

- Emission trends for RECLAIM facilities;
- Seasonal fluctuations in emissions;
- Per capita exposure to air pollution; and
- Toxics impacts.

### Emission Trends for RECLAIM Sources

Concerns were expressed during program development that RECLAIM might cause sources to increase their aggregate emissions during the early years of the program due to perceived over-allocation of emissions. As depicted in Figures 7-1 and 7-2, which show NOx and SOx emissions from RECLAIM sources since 1989, the analysis of emissions from RECLAIM sources indicates that overall, RECLAIM emissions have been in a downward trend since program inception, and the emission increases during early years of RECLAIM that were anticipated by some did not materialize.

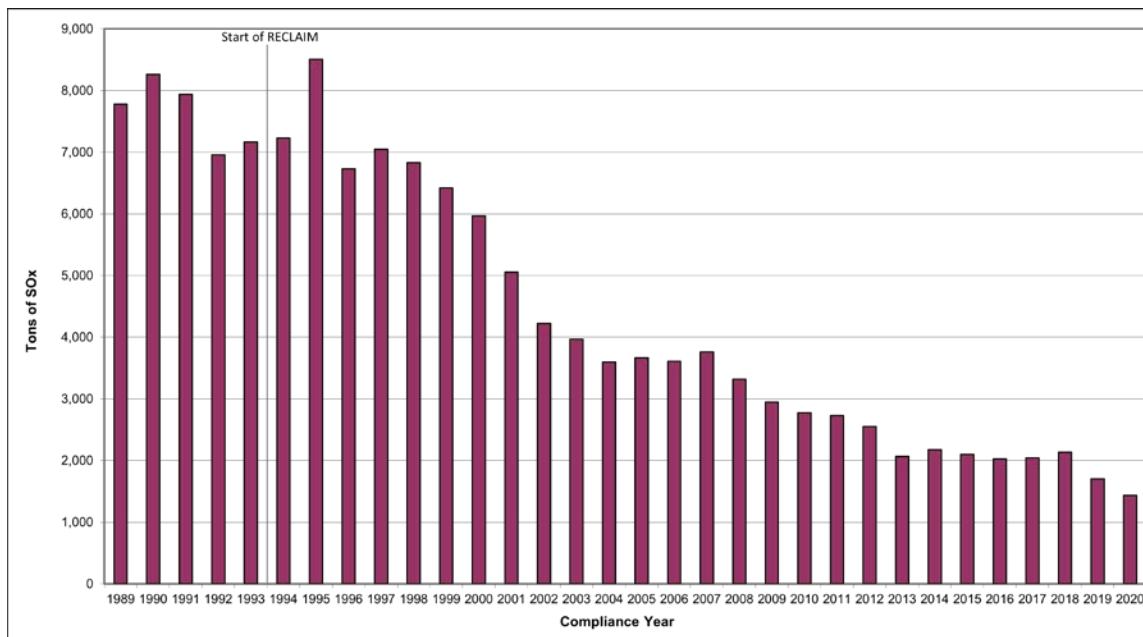
**Figure 7-1**  
**NOx Emission Trend for RECLAIM Sources**



Note: 1989-1993 emissions presented in this figure are the emissions from the facilities in the 1994 NOx universe.

<sup>1</sup> Quarterly emission maps from 1994 to present can be found at: <http://www.aqmd.gov/home/programs/business/about-reclaim/quarterly-emission-maps>.

**Figure 7-2**  
**SOx Emission Trend for RECLAIM Sources**



Note: 1989-1993 emissions presented in this figure are the emissions from the facilities in the 1994 SOx universe.

NOx emissions decreased every year from Compliance Year 1995 through Compliance Year 2010. The emissions for Compliance Year 2010 to Compliance Year 2018 fluctuated within a narrow range; all are within 7 percent of their average of 7,272 tons per year. The NOx emissions for Compliance Year 2019 were at a low of 6,458 tons per year, representing a 4 percent decrease from Compliance Year 2018. NOx emissions for Compliance Year 2020 fell even further to a record low of 5,506 tons per year, a further 15 percent reduction from Compliance Year 2019. Since Compliance Year 1995, annual SOx emissions have also followed a general downward trend. There were a few slight increases for a few Compliance Years when compared to each respective previous compliance year, but Compliance Year 2020 saw a large drop to a record low 1,436 tons per year, a 16 percent reduction compared to 1,701 tons per year in Compliance Year 2019. From 2013 to 2018, SOx emissions had been fluctuating within a narrow range (2,024 – 2,176 tons per year or  $< \pm 4$  percent 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 2020 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 2020 and compared them with quarterly audited emissions for prior years to assess if there had been such a shift in emissions. This analysis is reflected in Figures 7-3 through 7-6.<sup>2</sup>

Quarterly emissions data from the facilities in RECLAIM before they were in the program is not available. Therefore, a quantitative comparison of the seasonal variation of emissions from these facilities while operating under RECLAIM with their seasonal emissions variation prior to RECLAIM is not feasible. However, a qualitative comparison has been conducted, as follows:

- NO<sub>x</sub> emissions from RECLAIM facilities are dominated by refineries and power plants.
- SO<sub>x</sub> emissions from RECLAIM facilities are especially dominated by refineries.
- Prior to RECLAIM, refinery production was generally highest in the summer months because more people travel during summer, thus increasing demand for gasoline and other transportation fuels.
- Electricity generation prior to RECLAIM was generally highest in the summer months because of increased demand for electricity to drive air conditioning units.

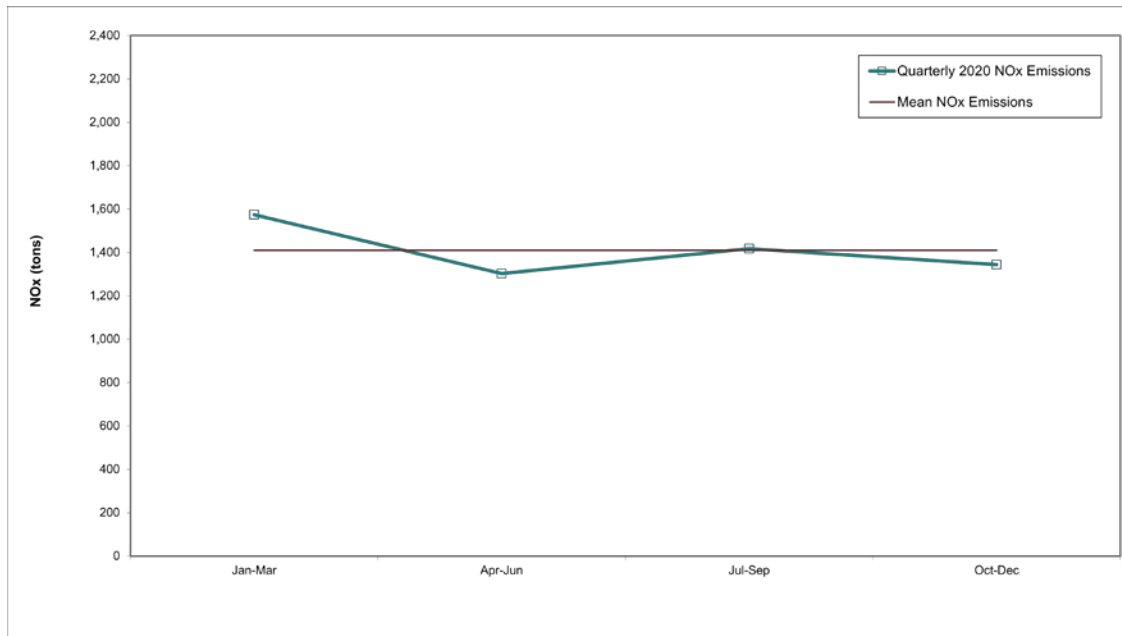
Historically, emissions from refineries (NO<sub>x</sub> and SO<sub>x</sub>) and from power plants (NO<sub>x</sub>) are typically higher in the summer months, which was the trend prior to implementation of RECLAIM for the reasons described above. Therefore, provided a year’s summer quarter RECLAIM emissions do not exceed that year’s quarterly average emissions by a substantial amount, it can be concluded that, for that year, RECLAIM has not resulted in a shift of emissions to the summer months relative to the pre-RECLAIM emission pattern.

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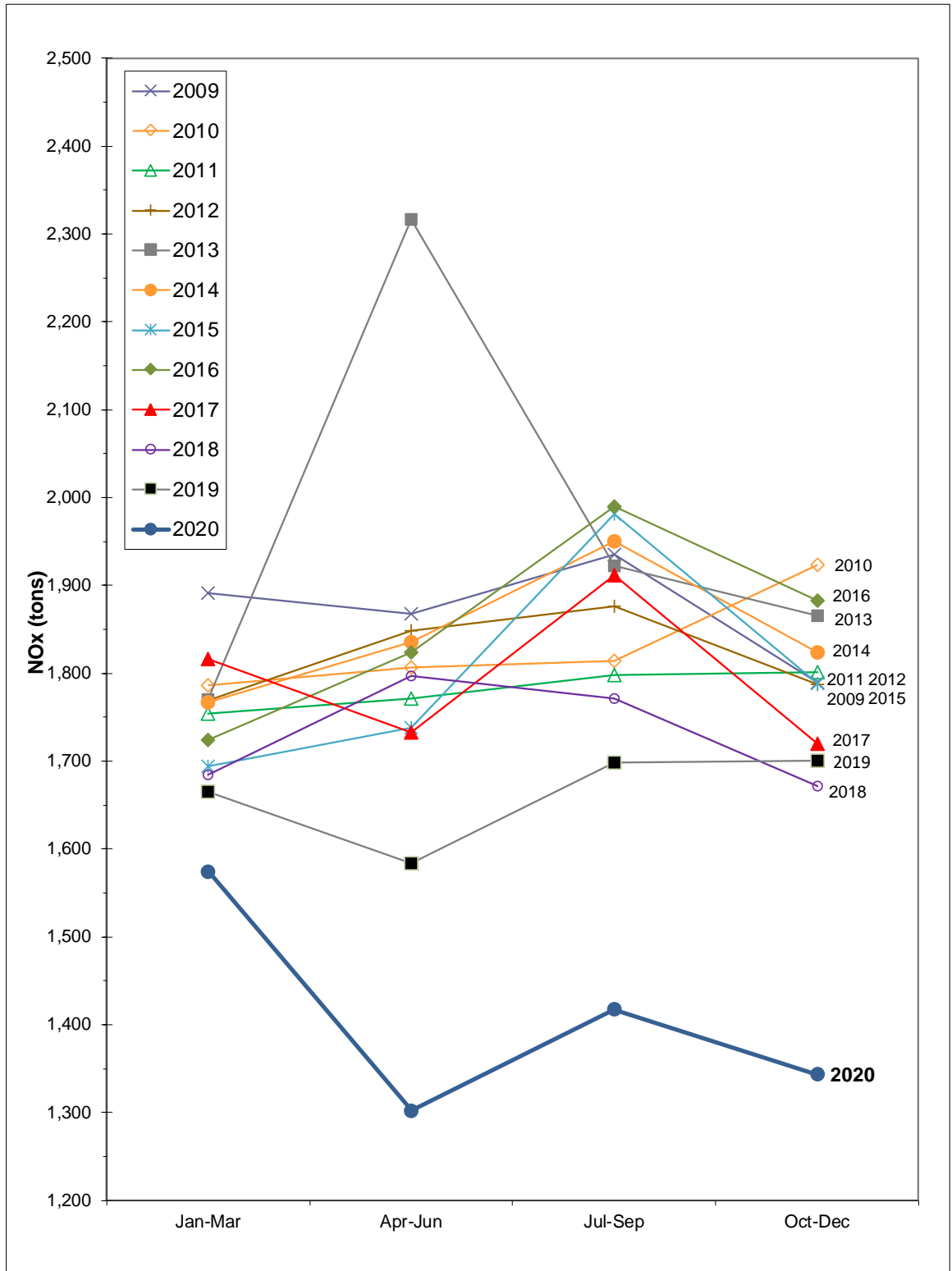
<sup>2</sup> Data used to generate these figures were derived from audited data. Similar figures for calendar years 1994 through 2007 in previous annual reports were generated from a combination of audited and reported data available at the time the reports were written.

Figure 7-3 shows the 2020 mean quarterly NOx emission level, which is the average of the aggregate audited emissions for each of the four quarters, and the 2020 audited quarterly emissions. Figure 7-4 compares the 2020 quarterly NOx emissions with the quarterly emissions from 2009 through 2019. During calendar year 2020, quarterly NOx emissions varied from eight percent below the mean in the second quarter (April through June) to about twelve percent above the mean in the first quarter (January through March). Figure 7-4 shows that the calendar year 2020 quarterly emissions profile is roughly consistent with previous years under RECLAIM, albeit with reduced NOx emissions. Emissions from NOx Major Sources, which accounts for more than 90 percent of all RECLAIM NOx emissions, dropped considerably during the second through fourth quarters of 2020, relative not only to the first quarter of 2020 but also relative to calendar year 2019, coincident with the COVID-19 global pandemic. Figures 7-3 and 7-4, along with the qualitative analysis performed above show that in calendar year 2020 there has not been a significant shift in NOx emissions from the winter months to the summer months.

**Figure 7-3**  
**Calendar Year 2020 NOx Quarterly Emissions**

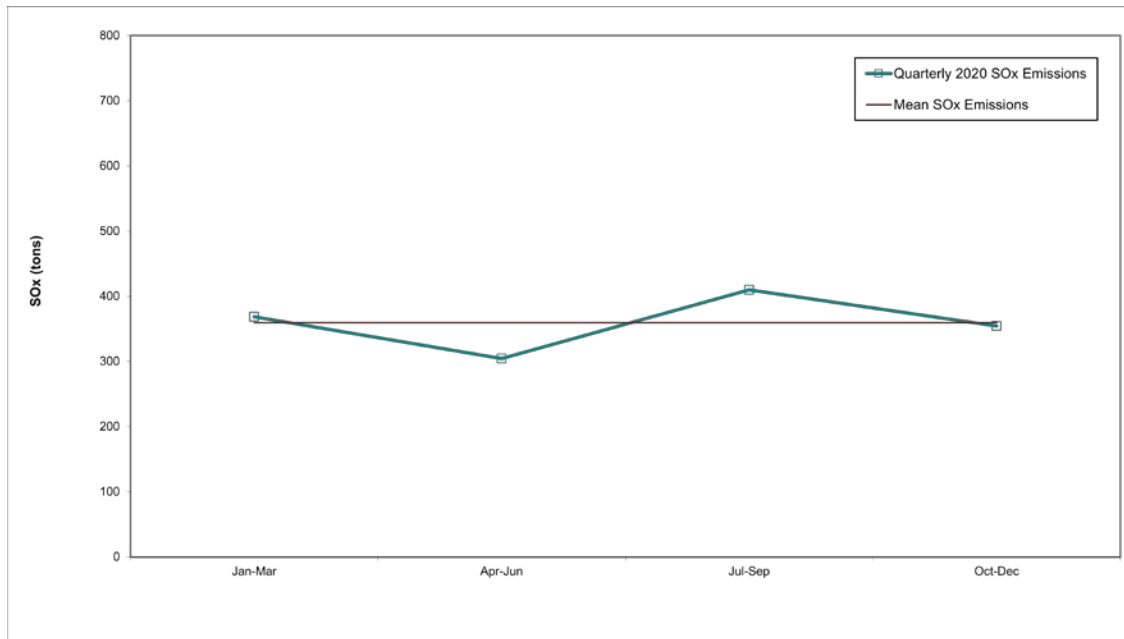


**Figure 7-4**  
**Quarterly NOx Emissions from Calendar Years 2009 through 2020**



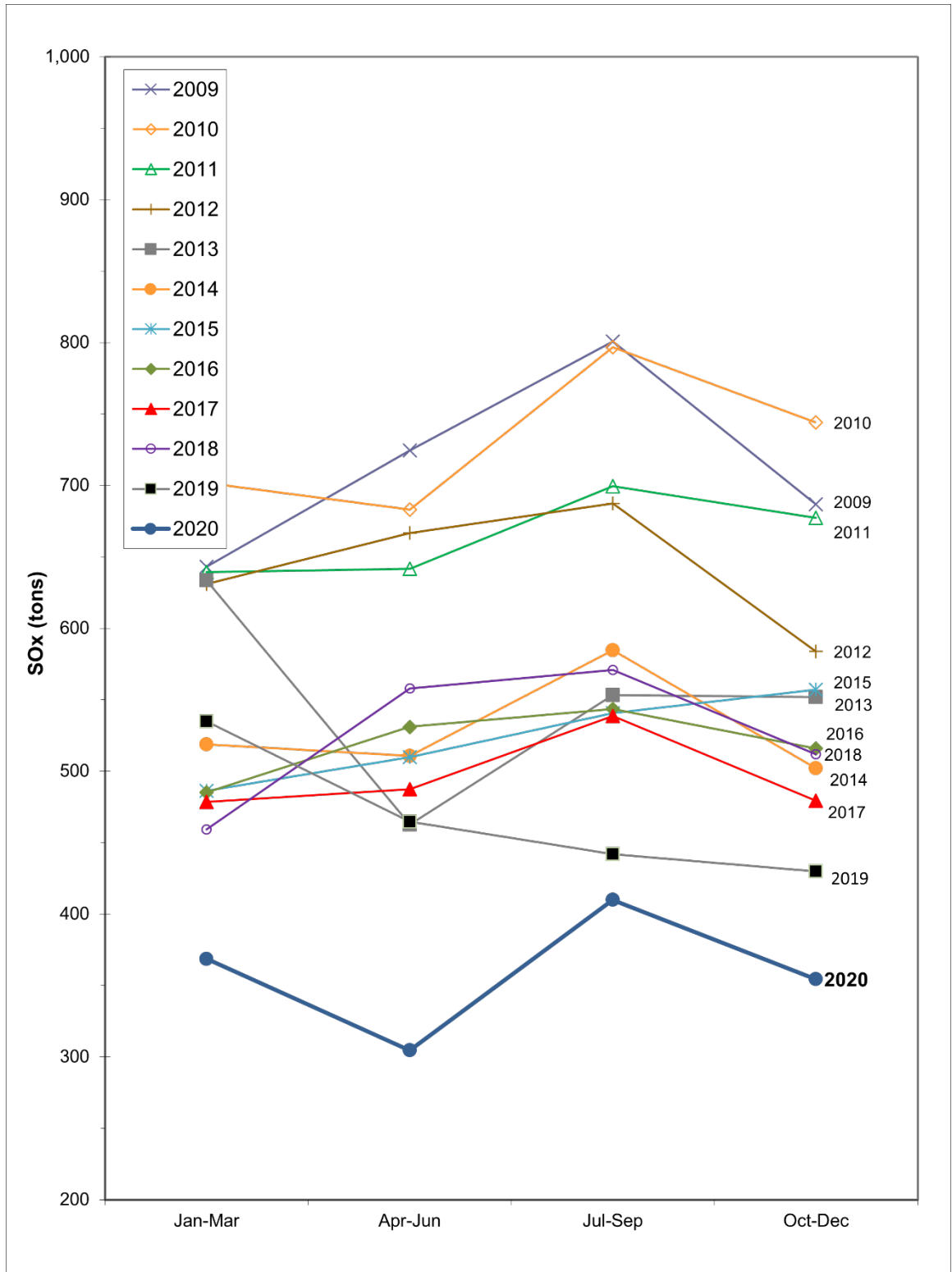
Similar to Figure 7-3 and 7-4 for NOx quarterly emissions, Figure 7-5 presents the 2020 mean quarterly SOx emissions and the 2020 audited quarterly emissions, while Figure 7-6 compares the 2020 quarterly SOx emissions with the quarterly emissions from 2009 through 2019. Figure 7-5 shows that quarterly SOx emissions during calendar year 2020 varied from fifteen percent below the mean in the second quarter (April through June) to about fourteen percent above the mean in the third quarter (July through September). Figure 7-6 shows that the calendar year 2020 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 2020 there was not a significant shift in SOx emissions from the winter months to the summer months.

**Figure 7-5**  
**Calendar Year 2020 SOx Quarterly Emissions**





**Figure 7-6**  
**Quarterly SOx Emissions from Calendar Years 2009 through 2020**



## 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 130 days and 135 days, respectively, in 2021. 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 2021 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 2021 decreased when compared to 2020.

**Table 7-1**  
**Summary of Ozone Data<sup>3</sup>**

| 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 | 120   | 154   | 128  | N/A   | 0.19   | 0.144  |
| 2002 | 116   | 147   | 132  | N/A   | 0.169  | 0.144  |
| 2003 | 125   | 153   | 133  | N/A   | 0.194  | 0.153  |
| 2004 | 105   | 152   | 114  | N/A   | 0.163  | 0.145  |
| 2005 | 99  | 138   | 116  | N/A   | 0.182  | 0.145  |
| 2006 | 102   | 130   | 114  | N/A   | 0.175  | 0.142  |
| 2007 | 96  | 127   | 108  | N/A   | 0.171  | 0.137  |
| 2008 | 102   | 140   | 119  | N/A   | 0.176  | 0.131  |
| 2009 | 102   | 131   | 113  | N/A   | 0.176  | 0.128  |
| 2010 | 79  | 124   | 102  | N/A   | 0.143  | 0.123  |
| 2011 | 90  | 125   | 106  | N/A   | 0.160  | 0.136  |
| 2012 | 97  | 140   | 111  | N/A   | 0.147  | 0.112  |
| 2013 | 68  | 119   | 87   | N/A   | 0.151  | 0.122  |
| 2014 | 74  | 131   | 92   | N/A   | 0.141  | 0.11   |
| 2015 | 71  | 115   | 81   | 113   | 0.144  | 0.127  |
| 2016 | 83  | 132   | 103  | 132   | 0.163  | 0.121  |
| 2017 | 109   | 148   | 121  | 145   | 0.158  | 0.136  |
| 2018 | 84  | 141   | 108  | 141   | 0.142  | 0.125  |
| 2019 | 82  | 129   | 101  | 126   | 0.137  | 0.117  |
| 2020 | 133   | 160   | 142  | 157   | 0.185  | 0.139  |
| 2021 | 91  | 135   | 113  | 130   | 0.148  | 0.12   |

The CCAA, which was enacted in 1988, established targets for reducing overall population exposure to severe non-attainment pollutants in the Basin—a 25 percent reduction by December 31, 1994, a 40 percent reduction by December 31, 1997, and a 50 percent reduction by December 31, 2000 relative to a calendar years' 1986-88 baseline. These targets are based on the average number of hours a person is exposed (“per capita exposure”<sup>4</sup>) to ozone

<sup>3</sup> The reported number of days exceeding each ozone standard and basin maximum concentrations for 2001 to 2020 statistics have been revised in accordance with updated rounding methodologies, consistent with the methodology used for ongoing Air Quality Management Plan (AQMP) development. 2021 exceedance statistics and maximum concentrations are based on preliminary data and are subject to change.

<sup>4</sup> SCAQMD staff divides the air basin into a grid of square cells and interpolates recorded ozone data from ambient air quality monitors to determine ozone levels experienced in each of these cells. The total person-hours in a county experiencing ozone higher than the state ozone standard is determined by summing over the whole county the products of the number of hours exceeding the state ozone standard per grid cell with the number of residents in the corresponding cell. The per capita ozone exposures are then calculated by dividing the sum of person-hours by the total population within a county. Similar calculations are used to determine the Basin-wide per capita exposure by summing and dividing over the whole Basin.

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 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 2020, the 2021 per capita exposures were significantly lower for all regions. For calendar year 2021, the actual per capita exposure for the Basin was 1.93 hours, which represents a 97.6 percent reduction from the 1986-88 baseline level.

**Table 7-2  
Per Capita Exposure to Ozone above the State One-Hour Standard of 0.09 ppm (hours)**

| Calendar Year                 | Basin | Los Angeles | Orange | Riverside | San Bernardino |
|-------------------------------|-------|-------------|--------|-----------|----------------|
| 1986-88 baseline <sup>1</sup> | 80.5  | 75.8        | 27.2   | 94.1      | 192.6          |
| 1994 actual                   | 37.6  | 26.5        | 9      | 71.1      | 124.9          |
| 1995 actual                   | 27.7  | 20          | 5.7    | 48.8      | 91.9           |
| 1996 actual                   | 20.3  | 13.2        | 4      | 42.8      | 70             |
| 1997 actual                   | 5.9   | 3           | 0.6    | 13.9      | 24.5           |
| 1998 actual                   | 12.1  | 7.9         | 3.1    | 25.2      | 40.2           |
| 2000 actual                   | 3.8   | 2.6         | 0.7    | 8.5       | 11.4           |
| 2001 actual                   | 1.73  | 0.88        | 0.15   | 6         | 5.68           |
| 2002 actual                   | 3.87  | 2.16        | 0.13   | 11.12     | 12.59          |
| 2003 actual                   | 10.92 | 6.3         | 0.88   | 20.98     | 40.21          |
| 2004 actual                   | 3.68  | 2.26        | 0.50   | 6.82      | 12.34          |
| 2005 actual                   | 3.11  | 1.43        | 0.03   | 6.06      | 12.54          |
| 2006 actual                   | 4.56  | 3.08        | 0.68   | 8.02      | 13.30          |
| 2007 actual                   | 2.90  | 1.50        | 0.35   | 4.65      | 10.53          |
| 2008 actual                   | 4.14  | 2.04        | 0.26   | 7.50      | 14.71          |
| 2009 actual                   | 2.87  | 1.54        | 0.08   | 3.88      | 10.54          |
| 2010 actual                   | 1.18  | 0.38        | 0.11   | 2.45      | 4.48           |
| 2011 actual                   | 2.10  | 0.85        | 0.02   | 3.46      | 8.13           |
| 2012 actual                   | 2.37  | 1.05        | 0.05   | 2.59      | 9.78           |
| 2013 actual                   | 1.31  | 0.52        | 0.07   | 1.61      | 5.50           |
| 2014 actual                   | 1.84  | 1.26        | 0.29   | 1.47      | 6.02           |
| 2015 actual                   | 1.96  | 0.76        | 0.10   | 2.14      | 8.47           |
| 2016 actual                   | 2.64  | 1.14        | 0.07   | 2.19      | 11.56          |
| 2017 actual                   | 4.94  | 2.90        | 0.14   | 4.01      | 18.78          |
| 2018 actual                   | 1.97  | 0.90        | 0.14   | 2.37      | 7.79           |
| 2019 actual                   | 2.07  | 0.94        | 0.22   | 1.88      | 8.57           |
| 2020 actual                   | 9.07  | 7.92        | 3.10   | 5.07      | 23.20          |
| 2021 actual                   | 1.93  | 0.40        | 0.04   | 2.15      | 9.64           |
| 1997 target <sup>2</sup>      | 48.3  | 45.5        | 16.3   | 56.5      | 115.6          |
| 2000 target <sup>3</sup>      | 40.2  | 37.9        | 13.6   | 47        | 96.3           |

<sup>1</sup> Average over three years, 1986 through 1988.

<sup>2</sup> 60% of the 1986-88 baseline exposures.

<sup>3</sup> 50% of the 1986-88 baseline exposures.

Table 7-2 shows that actual per capita exposures during all the years mentioned were well under the 1997 and 2000 target exposures limits. It should also be noted that air quality in the Basin is a complex function of meteorological conditions and an array of different emission sources, including mobile, area, RECLAIM stationary sources, and non-RECLAIM stationary sources. Therefore, the reduction of per capita exposure beyond the projected level is not necessarily wholly attributable to implementation of the RECLAIM program in lieu of the command-and-control regulations.

## Toxic Impacts

Based on a comprehensive toxic impact analysis performed during program development, it was concluded that RECLAIM would not result in any significant impacts on air toxic emissions. Nevertheless, to ensure that the implementation of RECLAIM does not result in adverse toxic impacts, each annual program audit is required to assess any increase in the public health exposure to air toxics potentially caused by RECLAIM.

One of the safeguards to ensure that the implementation of RECLAIM does not result in adverse air toxic health impacts is that RECLAIM sources are subject to the same air toxic statutes and regulations (*e.g.*, South Coast AQMD Regulation XIV, State AB 2588, State Air Toxics Control Measures, Federal National Emissions Standards for Hazardous Air Pollutants, etc.) as other sources in the Basin. Additionally, air toxic health risk is primarily caused by emissions of VOC 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<sub>x</sub> or SO<sub>x</sub> emission increases are also required to be equipped with BACT, which minimizes to the extent feasible NO<sub>x</sub> and SO<sub>x</sub> emissions, which are precursors to particulate matter.

There have been concerns raised that trading RTCs could allow for higher production at a RECLAIM facility, which may indirectly cause higher emissions of toxic air contaminants, and thereby make the health risk in the vicinity of the facility worse. Other South Coast AQMD rules and programs for toxic air contaminants apply to facilities regardless of them being in RECLAIM or under traditional command and control rules. Emission increases at permit units are subject to new source review. RECLAIM facilities must also comply with any applicable Regulation XIV rules for toxics. Permits generally include limiting throughput conditions for new source review or applicable source specific rules. AB2588 and Rule 1402 could also be triggered based on risk, which would require the facility to take appropriate risk reduction measures.

Under the AER program, facilities that emit either: 1) four tons per year or more of VOC, NO<sub>x</sub>, SO<sub>x</sub>, or PM, or 100 tons per year or more of CO; or 2) any one of 24 toxic air contaminants (TACs) and ozone depleting compounds (ODCs) emitted above specific thresholds (Rule 301 Table IV), are required to report their emissions annually to South Coast AQMD. Beginning with the FY 2000-01 reporting cycle, toxics emission reporting for the AB2588 Program was incorporated into South Coast AQMD's AER Program. The data collected in the AER program is used to determine which facilities will be required to take further

actions under the AB2588 Hot Spots Program.

Facilities in the AB2588 Program are required to submit a comprehensive toxics inventory, which is then prioritized using Board-approved procedures<sup>5</sup> into one of three categories: low, intermediate, or high priority. Facilities ranked with low priority are exempt from future reporting. Facilities ranked with intermediate 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 2020 Annual Report on the AB2588 Air Toxics "Hot Spots" program<sup>6</sup>, staff has reviewed and approved 354 HRAs as of the end calendar of year 2020. About 95 percent of the facilities have cancer risks below 10 in a million and 95 percent 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 62 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, 30 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 fifth version of MATES (*i.e.*, MATES V) was conducted over a one-year period from May 2018 to April 2019, and the final MATES V report was released in August 2021<sup>7</sup>. Monitoring conducted at that time indicated that the basin-wide population-weighted air toxics exposure was reduced by 54 percent since MATES IV (conducted from July 2012 to June 2013). The results of these recent MATES studies continue to show that the region-wide cumulative air toxic impacts on residents and workers in southern California have been declining. Therefore, staff has not found any evidence that would suggest that the substitution of NO<sub>x</sub> and SO<sub>x</sub> RECLAIM for the command-and-control rules and the measures RECLAIM subsumes caused a significant increase in public exposure to air toxic emissions relative to what would have happened if the RECLAIM program was not implemented.

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<sup>5</sup> The toxics prioritization procedures can be found at: <http://www.aqmd.gov/home/regulations/compliance/toxic-hot-spots-ab-2588>.

<sup>6</sup> The 2020 AB2588 Annual Report can be found at: [https://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab2588\\_annual\\_report\\_2020.pdf](https://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab2588_annual_report_2020.pdf).

<sup>7</sup> The Final MATES V Report can be found at: <http://www.aqmd.gov/docs/default-source/planning/mates-v/mates-v-final-report-9-24-21.pdf>.



## APPENDIX A

### RECLAIM UNIVERSE OF SOURCES

The RECLAIM universe of active sources as of the end of Compliance Year 2020 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     |
| 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     |
| 1073        | 1     | BORAL ROOFING LLC                        | NOx     |



**ANNUAL RECLAIM AUDIT**

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| Facility ID | Cycle | Facility Name                              | Program |
|-------------|-------|--|---------|
| 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     |
| 190051      | 2     | BRIDGE POINT LONG BEACH LLC                | NOx/SOx |
| 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     |
| 148896      | 2     | CALIFORNIA RESOURCES PRODUCTION CORP       | NOx     |
| 148897      | 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     |
| 141555      | 2     | CASTAIC CLAY PRODUCTS, LLC                 | NOx     |
| 14944       | 1     | CENTRAL WIRE, INC.                         | NOx/SOx |
| 148925      | 1     | CHERRY AEROSPACE                           | NOx     |
| 800030      | 2     | CHEVRON PRODUCTS CO.                       | NOx/SOx |
| 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     |
| 182561      | 1     | COLTON POWER, LP                           | NOx     |
| 182563      | 1     | COLTON POWER, LP                           | NOx     |
| 38440       | 2     | COOPER & BRAIN - BREA                      | NOx     |
| 126536      | 1     | CPP - POMONA                               | NOx     |
| 63180       | 1     | DARLING INGREDIENTS INC.                   | NOx     |

**ANNUAL RECLAIM AUDIT**

| Facility ID | Cycle | Facility Name                            | Program |
|-------------|-------|--|---------|
| 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     |
| 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 |
| 115663      | 1     | EL SEGUNDO ENERGY CENTER LLC             | NOx     |
| 186899      | 1     | ENERY HOLDINGS LLC/LGHTHP_6_ICEGEN       | 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, LLC                  | 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     |
| 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     |
| 800066      | 1     | HITCO CARBON COMPOSITES INC              | NOx     |
| 2912        | 2     | HOLLIDAY ROCK CO INC                     | NOx     |
| 800003      | 2     | HONEYWELL INTERNATIONAL INC              | NOx     |
| 187348      | 2     | HYDRO EXTRUSION USA, 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     |

**ANNUAL RECLAIM AUDIT**

| Facility ID | Cycle | Facility Name                            | Program |
|-------------|-------|--|---------|
| 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     |
| 192519      | 1     | LEGACY BY-PRODUCTS LLC                   | 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     |
| 800080      | 2     | LUNDAY-THAGARD CO DBA WORLD OIL REFINING | NOx/SOx |
| 14049       | 2     | MARUCHAN INC                             | NOx     |
| 3029        | 2     | MATCHMASTER DYEING & FINISHING INC       | NOx     |
| 182970      | 1     | MATRIX OIL CORP                          | NOx     |
| 2825        | 1     | MCP FOODS INC                            | NOx     |
| 176952      | 2     | MERCEDES-BENZ WEST COAST CAMPUS          | NOx     |
| 94872       | 2     | METAL CONTAINER CORP                     | NOx     |
| 800207      | 1     | METRO ST HOSP (EIS USE)                  | NOx     |
| 12372       | 1     | MISSION CLAY PRODUCTS                    | NOx     |
| 155877      | 1     | MOLSON COORS USA LLC                     | 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     |

**ANNUAL RECLAIM AUDIT**

| Facility ID | Cycle | Facility Name                            | Program |
|-------------|-------|--|---------|
| 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 |
| 800417      | 2     | PLAINS WEST COAST TERMINALS LLC          | NOx     |
| 11435       | 2     | PQ LLC                                   | NOx/SOx |
| 7416        | 1     | LINDE INC.                               | NOx     |
| 42630       | 1     | LINDE INC.                               | NOx     |
| 136         | 2     | PRESS FORGE CO                           | NOx     |
| 105903      | 1     | PRIME WHEEL                              | NOx     |
| 8547        | 1     | QUEMETCO INC                             | NOx/SOx |
| 19167       | 2     | R J. NOBLE COMPANY                       | NOx     |
| 20604       | 2     | RALPHS GROCERY CO                        | NOx     |
| 193132      | 1     | RAYTHEON COMPANY                         | NOx     |
| 193134      | 2     | RAYTHEON COMPANY                         | NOx     |
| 193153      | 2     | RAYTHEON COMPANY                         | NOx     |
| 20203       | 2     | RECONSERVE OF CALIFORNIA-LOS ANGELES INC | NOx     |
| 189040      | 1     | RED COLLAR PET FOODS, INC                | NOx     |
| 180410      | 2     | REICHHOLD LLC 2                          | 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     |
| 188635      | 1     | SFII FLYTE, LLC                          | NOx     |
| 800129      | 1     | SFPP, L.P.                               | NOx     |

**ANNUAL RECLAIM AUDIT**

| Facility ID | Cycle | Facility Name                            | Program |
|-------------|-------|--|---------|
| 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     |
| 191415      | 2     | SIERRA ALUMINUM, DIV OF SAMUEL, SON & CO | NOx     |
| 191420      | 2     | SIERRA ALUMINUM, DIV OF SAMUEL, SON & CO | 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     |
| 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     |

**ANNUAL RECLAIM AUDIT**

| Facility ID | Cycle | Facility Name                            | Program |
|-------------|-------|--|---------|
| 191386      | 2     | THE NEWARK GROUP, INC. DBA GREIF, 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     |
| 800149      | 2     | US BORAX INC                             | NOx     |
| 800150      | 1     | US GOVT, AF DEPT, MARCH AIR RESERVE BASE | NOx     |
| 800393      | 1     | VALERO WILMINGTON ASPHALT PLANT          | NOx     |
| 14502       | 2     | VERNON PUBLIC UTILITIES                  | NOx     |
| 14495       | 2     | VISTA METALS CORPORATION                 | NOx     |
| 191677      | 1     | VORTEQ PACIFIC                           | NOx     |
| 146536      | 1     | WALNUT CREEK ENERGY, LLC                 | NOx/SOx |
| 42775       | 1     | WEST NEWPORT OIL CO                      | NOx/SOx |
| 127299      | 2     | WILDFLOWER ENERGY LP/INDIGO GEN., LLC    | NOx     |
| 193318      | 2     | ZENITH ENERGY WEST COAST TERMINALS LLC   | NOx     |
| 193323      | 1     | ZENITH ENERGY WEST COAST TERMINALS LLC   | NOx     |
| 193329      | 1     | ZENITH ENERGY WEST COAST TERMINALS LLC   | NOx     |
| 193330      | 2     | ZENITH ENERGY WEST COAST TERMINALS LLC   | NOx     |

**APPENDIX B**  
**FACILITY INCLUSIONS**

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As discussed in Chapter 1, no facilities were added to the RECLAIM universe in Compliance Year 2020. As of January 5, 2018, inclusion of new facilities is not allowed pursuant to amendments to Rule 2001.

## APPENDIX C

### RECLAIM FACILITIES CEASING OPERATION OR EXCLUDED

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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 2020. 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         | 47771   |
| Facility Name       | DELEO CLAY TILE CO INC  |
| City and County     | Lake Elsinore, Riverside County   |
| SIC                 | 3251  |
| Pollutant(s)        | NOx   |
| 1994 Allocation     | 34,506 lbs.   |
| Reason for Shutdown | The facility had not produced clay tiles in many years and sold their remaining stock to the public. Their facility indicated that the cost of manufacturing, production, and raw materials was too high. |

|                     |  |
|---------------------|--|
| Facility ID         | 151899   |
| Facility Name       | CALIFORNIA RESOURCES PRODUCTION CORP   |
| City and County     | Newhall, Santa Clarita, Los Angeles County   |
| SIC                 | 1311   |
| Pollutant(s)        | NOx  |
| 1994 Allocation     | 110,785 lbs.   |
| Reason for Shutdown | The facility's equipment was removed and the facility sold to a holding company as a residential tract. The facility stated that the shutdown was to create new residential housing, as a more attractive utility of the land. |

|                     |   |
|---------------------|---|
| Facility ID         | 179137  |
| Facility Name       | QG PRINTING II LLC  |
| City and County     | Riverside, Riverside County   |
| SIC                 | 2752  |
| Pollutant(s)        | NOx   |
| 1994 Allocation     | 7,800 lbs.  |
| Reason for Shutdown | The facility stated a declining demand for products and a market downturn as the reason for shutdown. |



**ANNUAL RECLAIM AUDIT**

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Facility ID 183108  
Facility Name URBAN COMMONS LLC EVOLUTION HOSPITALITY  
City and County Long Beach, Los Angeles County  
SIC 7996  
Pollutant(s) NOx  
1994 Allocation 5,610 lbs.  
Reason for Shutdown This facility filed for bankruptcy after stating on their 2019 APEP that the facility was shut down due to COVID-19 driven mandates and business closure.

Facility ID 192551  
Facility Name GLC FULLERTON LLC  
City and County Fullerton, Orange County  
SIC 2621  
Pollutant(s) NOx, SOx  
1994 Allocation 45,546 lbs. NOx  
11,760 lbs. SOx  
Reason for Shutdown The facility's equipment and building were removed, the facility was sold, and a new building was being constructed. The facility stated real estate redevelopment as the reason for shutdown.

Facility ID 800181  
Facility Name CALIFORNIA PORTLAND CEMENT CO  
City and County Colton, San Bernardino County  
SIC 3241  
Pollutant(s) NOx, SOx  
1994 Allocation 4,748,896 lbs. NOx  
256,612 lbs. SOx  
Reason for Shutdown The facility reported that mineral resources were depleted beyond economical level, and the cost of South Coast AQMD regulations compared to other air districts was significantly higher.

## APPENDIX D FACILITIES THAT EXCEEDED THEIR ANNUAL ALLOCATION FOR COMPLIANCE YEAR 2020

The following is a list of facilities that did not have enough RTCs to cover their NOx emissions in Compliance Year 2020 based on the results of audits conducted by South Coast AQMD staff.

| Facility ID | Facility Name                             | Compliance Year | Pollutant |
|-------------|---|-----------------|-----------|
| 20203       | Reconserve of California-Los Angeles Inc. | 2020            | NOx       |
| 22607       | California Dairies, Inc                   | 2020            | NOx       |
| 63180       | Darling Ingredients Inc.                  | 2020            | NOx       |
| 124838      | Exide Technologies, LLC                   | 2020            | NOx       |
| 126536      | CPP - Pomona                              | 2020            | NOx       |
| 148236      | Air Liquide Large Industries U.S., LP     | 2020            | NOx       |
| 156741      | Harbor Cogeneration Co, LLC               | 2020            | NOx       |
| 157359      | Henkel Electronic Materials, LLC          | 2020            | NOx       |
| 179137      | QG Printing II LLC                        | 2020            | NOx       |
| 182561      | Colton Power, LP                          | 2020            | NOx       |
| 183415      | Ontario International Airport Authority   | 2020            | NOx       |
| 183832      | AST Textile Group, Inc.                   | 2020            | NOx       |
| 184958      | Broncs Inc. DBA West Coast Textiles       | 2020            | NOx       |
| 186899      | Enerly Holdings LLC/LGHThp_6_ICEGEN       | 2020            | NOx       |
| 188635      | SFII Flyte, LLC                           | 2020            | NOx       |
| 192551      | GLC Fullerton LLC                         | 2020            | NOx       |
| 800408      | Northrop Grumman Systems                  | 2020            | NOx       |

## **APPENDIX E**

### **REPORTED JOB IMPACTS ATTRIBUTED TO RECLAIM**

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Each year RECLAIM facility operators are asked to provide employment data in their APEP reports. The report asks company representatives to quantify job increases and/or decreases, and to report the positive and/or negative impacts of the RECLAIM program on employment at their facilities. This appendix is included in each Annual RECLAIM Audit Report to provide detailed information for facilities reporting that RECLAIM contributed to job gains or losses.

#### **Facilities with reported job gains or losses attributed to RECLAIM:**

No RECLAIM facilities reported job gains or losses attributed to RECLAIM for Compliance Year 2020.



# Annual RECLAIM Audit Report for 2020 Compliance Year

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South Coast Air Quality Management District  
Board Meeting

March 4, 2022

The logo graphic consists of several overlapping squares in yellow, red, and blue, with a thin black crosshair-like structure.

# RECLAIM

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## REgional CLean Air Incentives Market (RECLAIM) program:

- A cap and trade program adopted in October 1993
- Objective is to meet emission reduction requirements and enhance emission monitoring while providing additional flexibility to lower compliance costs
- Includes largest sources of NO<sub>x</sub> and SO<sub>x</sub> (greater than 4 tons/year)
- Establishes declining annual emissions caps for each facility
- Allows options to reduce emissions or buy RECLAIM Trading Credits (RTCs) to meet obligation to hold RTCs greater than or equal to actual emissions

Compliance Year (CompYr) 2020 is the 27<sup>th</sup> year of the program (started in 1994)



# RECLAIM Annual Audit

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- RECLAIM (Rule 2015) requires an annual audit of the program
- Annual RECLAIM Audit Report for Compliance Year 2020
  - Cycle 1: Jan 1, 2020 – Dec 31, 2020
  - Cycle 2: Jul 1, 2020 – Jun 30, 2021
- RECLAIM had 240 facilities at the end of CompYr 2020 (246 at end of CompYr 2019)



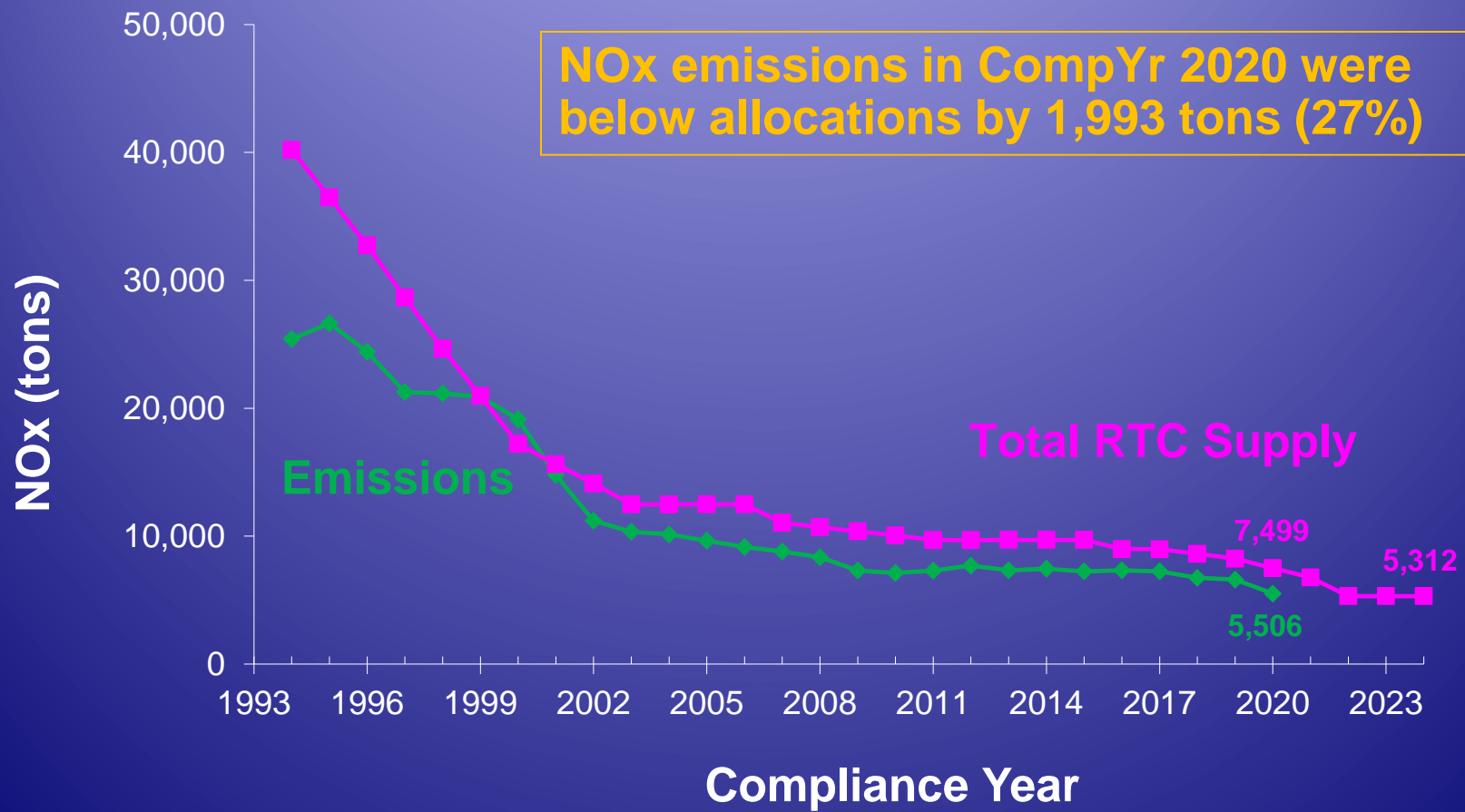
# 2020 Annual RECLAIM Audit Findings Compliance

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- RECLAIM met overall NO<sub>x</sub> and SO<sub>x</sub> emissions goals:
  - NO<sub>x</sub> emissions **27%** below allocations
  - SO<sub>x</sub> emissions **35%** below allocations
- Allocation Shave
  - January 2005: NO<sub>x</sub> Shave of 7.7 tons/day (tpd) implemented in 2007 – 2011
  - November 2010: SO<sub>x</sub> Shave of 5.7 tpd implemented in 2013 – 2019
  - December 2015: Additional NO<sub>x</sub> Shave of 12 tpd implemented in 2016 – 2022
  - Cumulative reduction of 6 tpd NO<sub>x</sub> allocations from CompYr 2016 through CompYr 2020

# RECLAIM

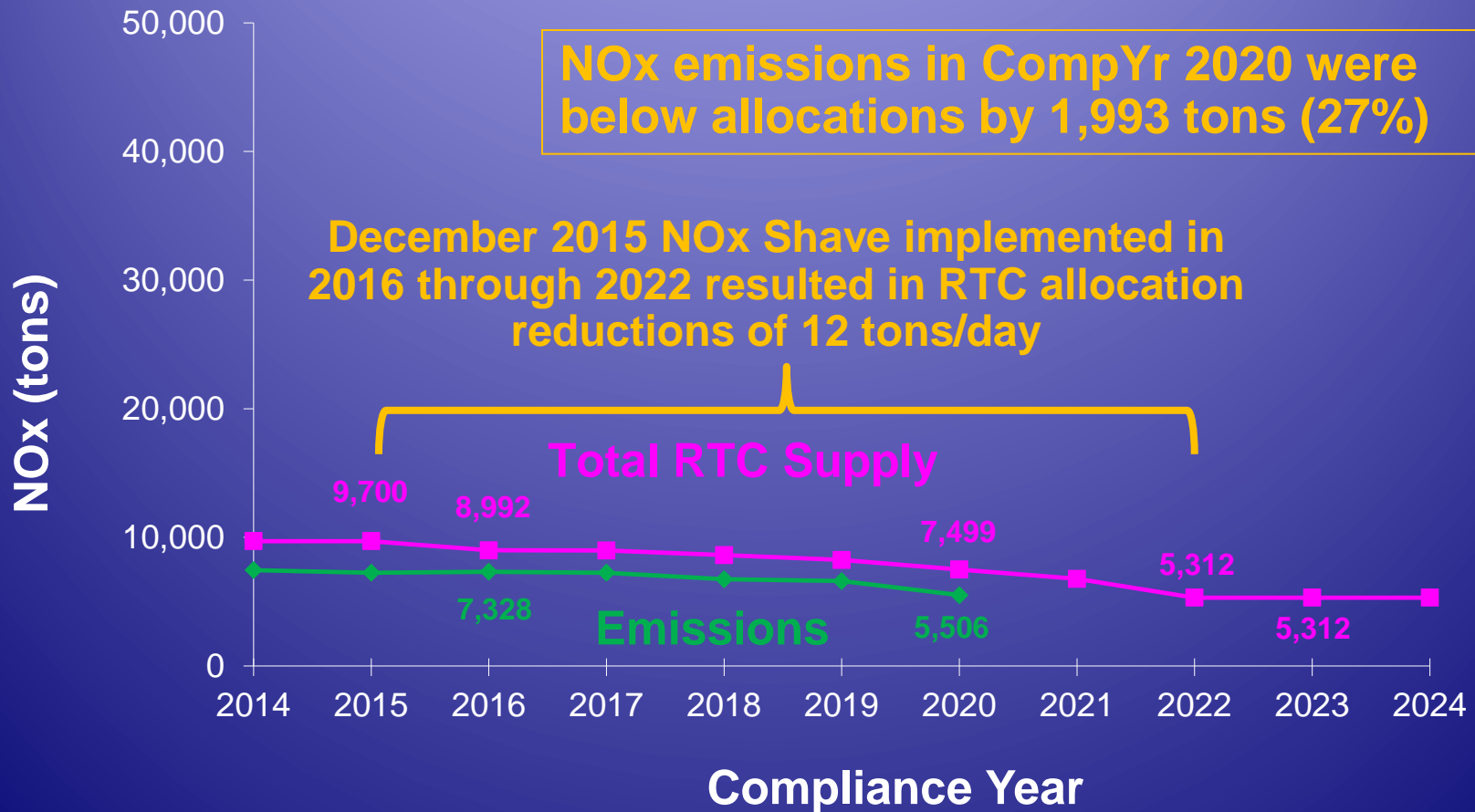
## NOx Emissions vs. Allocations Trends





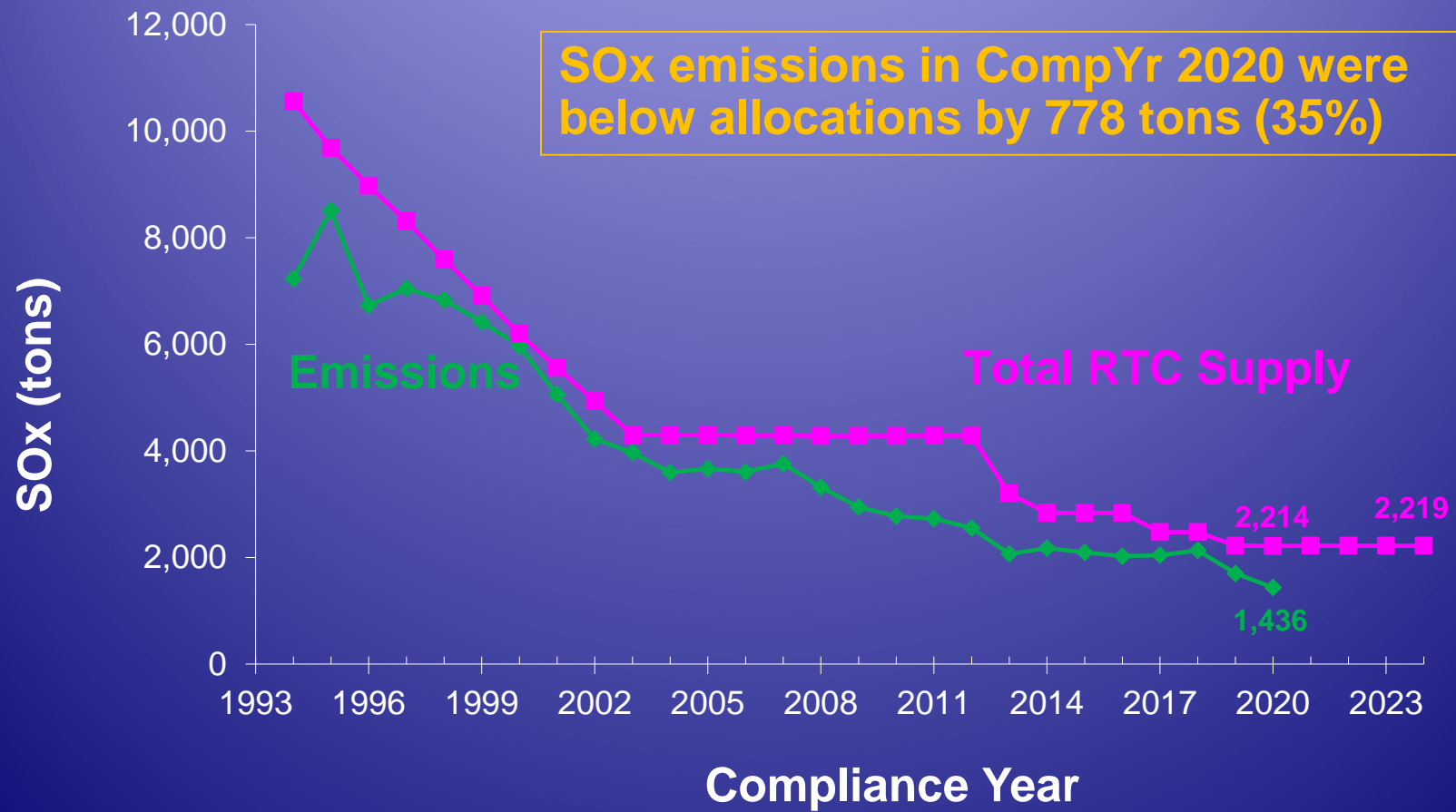
# RECLAIM

## NOx Emissions vs. Allocations Trends



# RECLAIM

## SOx Emissions vs. Allocations Trends





# 2020 Annual RECLAIM Audit Findings Compliance

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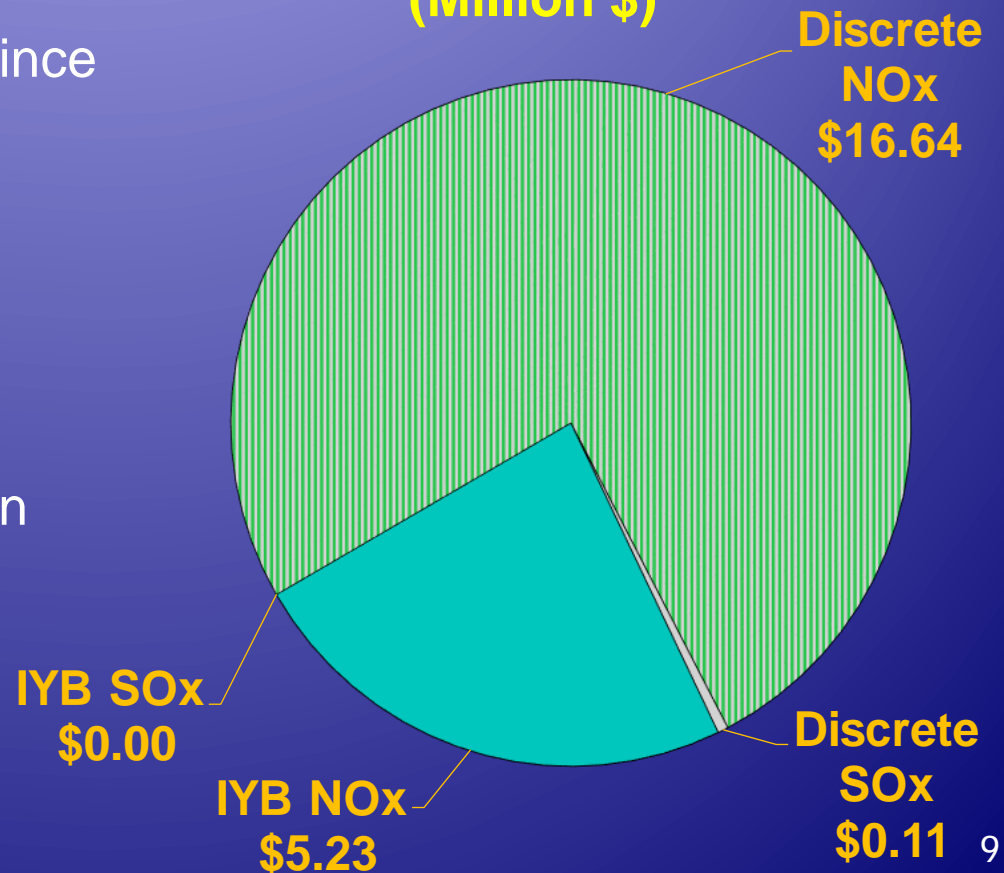
- High rate of facility compliance with RECLAIM allocations:
  - NO<sub>x</sub> Facilities – **93%**
  - SO<sub>x</sub> Facilities – **100%**
- Facilities exceeding their allocations
  - NO<sub>x</sub> – 17 facilities exceeded by 16.3 tons (0.22% of total allocations)
  - SO<sub>x</sub> – there were no SO<sub>x</sub> facilities exceeding their allocations

# 2020 Annual RECLAIM Audit Findings

## Credit Trading and Prices

- \$1.56 billion of RTCs traded since program inception
- RTCs are traded as either Discrete-Year or Infinite-Year Block (IYB)
- \$22.0 million of RTCs traded in Calendar Year (CaYr) 2021 (\$18.19 million in CaYr 2020)

Value Traded in CaYr 2021  
(Million \$)

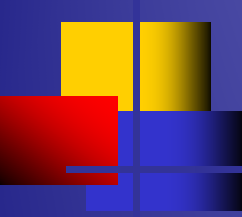


# 2020 Annual RECLAIM Audit Findings

## Average Discrete-Year NOx RTC Prices



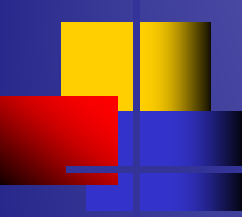
- Annual average prices in CaYr 2021:
  - Exceeded Rule 2015 threshold of \$15,000/ton
  - Did not exceed the Health and Safety Code threshold of \$49,737/ton\*



# 2020 Annual RECLAIM Audit Findings Exceeding Rule 2015 Backstop Threshold

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- Rule 2015 – if RTC price exceeds \$15,000/ton:
  - Submit to CARB and USEPA assessments of the compliance and enforcement aspects of the RECLAIM program
  - Do so within six months of Executive Officer determination
- Assessments to include:
  - Deterrent effect of Rule 2004
  - Rates of compliance with applicable emission caps
  - Rates of compliance with monitoring, recordkeeping, and reporting requirements



# 2020 Annual RECLAIM Audit Findings Exceeding Rule 2015 Backstop Threshold

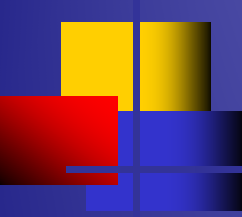
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- Assessments (cont.)
  - South Coast AQMD's ability to obtain appropriate penalties in cases of noncompliance
  - Whether the program provides appropriate incentives to comply
- Recommendation to the Board:
  - Deterrent effects of Rule 2004 be continued without change

OR

Amend Rule 2004, if the Board determines that revisions are appropriate



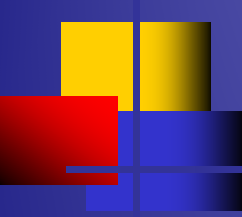


# 2020 Annual RECLAIM Audit Findings Exceeding Rule 2002 3-month & 12-month Rolling Average Thresholds

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- CompYr 2022 NO<sub>x</sub> RTCs exceeded Rule 2002 3-month and 12-month rolling average price thresholds
- CompYr 2022 NO<sub>x</sub> RTCs rolling average prices versus thresholds (\$/ton):
  - \$38,803 price vs. \$35,000 threshold - 3 mo. rolling average
  - \$33,085 price vs. \$22,500 threshold - 12 mo. rolling average
- Executive Officer to assess:
  - More rigorous control technology implementation
  - Emission reductions
  - Cost-effectiveness
  - Market analysis
  - Socioeconomic impacts





# 2020 Annual RECLAIM Audit Findings Exceeding Rule 2002 3-month & 12-month Rolling Average Thresholds

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- Notification made to Stationary Source Committee on January 21, 2022 that Executive Officer will:
  - Conduct an assessment of the RECLAIM Program
  - Report assessment results before July 1, 2022 to the Board
- Upon Board concurrence, the 4 tpd of Non-tradable/Non-usable NOX RTCs set aside as part of the remaining NOx shave for CompYr 2022 could be converted to Tradable/Usable NOx RTCs

# 2020 Annual RECLAIM Audit Findings

## Average Discrete-Year SOx RTC Prices



- Annual average prices in CaYr 2021 below program review thresholds:
  - \$15,000/ton [Rule 2015]
  - \$35,811\*/ton [Health and Safety Code]

# 2020 Annual RECLAIM Audit Findings Average IYB RTC Prices



- 2021 IYB RTC average prices remain below program review thresholds [Health and Safety Code]

■ NOx = \$746,056/ton\*

■ SOx = \$537,160/ton\*

# 2020 Annual RECLAIM Audit Findings

## Investor Participation during CalYr 2021

- Investors are RTC holders that are not RECLAIM operators
- Investor participation remains active in CalYr 2021 trades.

| RTC Type | Value |             | Volume |             |
|----------|-------|-------------|--------|-------------|
|          | NOx   | SOx         | NOx    | SOx         |
| Discrete | 56%   | 0%          | 62%    | 0%          |
| IYB      | 31%   | None Traded | 39%    | None Traded |

- Investors' holdings at the end of CalYr 2021
  - 2.0% of IYB NOx RTCs (up from 1.3% in CalYr 2020)
  - 4.2% of IYB SOx RTCs (same as 4.2% in CalYr 2020)



# 2020 Annual RECLAIM Audit Findings

## RECLAIM Transition

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- 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 2022, the Board amended and/or adopted 23 “Landing Rules” to implement BARCT



## 2020 Annual RECLAIM Audit Findings

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- RECLAIM facilities overall employment loss of about 4% (net loss of 3,687 jobs)
- Met federal NSR offset ratios
- No significant shift in seasonal emissions
- No evidence of increased health risk due to RECLAIM





# 2020 Annual RECLAIM Audit Findings Summary/Recommendations

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## Summary:

- Programmatic compliance achieved (NO<sub>x</sub> and SO<sub>x</sub> emissions were 27% and 35% below allocations, respectively)
- Individual facility compliance rate remained high (93% & 100% for NO<sub>x</sub> and SO<sub>x</sub>, respectively, based on 100% of facilities audited)
- Annual average discrete-year NO<sub>x</sub> prices for CompYr 2021 and 2022 RTC's traded in CalYr 2021 exceeded the \$15,000 per ton Rule 2015 backstop threshold
- RTC prices stayed below program review thresholds
- RECLAIM met all other requirements

## Recommendation:

Approve the Annual RECLAIM Audit Report for 2020 Compliance Year