



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

BOARD OF DIRECTORS
MOBILE SOURCE COMMITTEE

COMMITTEE MEMBERS

DAVID CANEPA – CHAIR
MARGARET ABE-KOGA
DAVID HUDSON
DOUG KIM
KAREN MITCHOFF
ROD SINKS

PAULINE RUSSO CUTTER – VICE CHAIR
SCOTT HAGGERTY
TYRONE JUE
LIZ KNISS
KATIE RICE

THURSDAY
OCTOBER 24, 2019
9:30 A.M.

1ST FLOOR BOARD ROOM
375 BEALE STREET
SAN FRANCISCO, CA 94105

AGENDA

1. CALL TO ORDER - ROLL CALL

PLEDGE OF ALLEGIANCE

PUBLIC MEETING PROCEDURE

The Committee Chair shall call the meeting to order and the Clerk of the Boards shall take roll of the Committee members. The Committee Chair shall lead the Pledge of Allegiance.

This meeting will be webcast. To see the webcast, please visit www.baaqmd.gov/bodagendas at the time of the meeting. Closed captioning may contain errors and omissions, and are not certified for their content or form.

Public Comment on Agenda Items *The public may comment on each item on the agenda as the item is taken up. Public Comment Cards for items on the agenda must be submitted in person to the Clerk of the Boards at the location of the meeting and prior to the Board taking up the particular item. Where an item was moved from the Consent Calendar to an Action item, no speaker who has already spoken on that item will be entitled to speak to that item again.*

2. **PUBLIC COMMENT ON NON-AGENDA MATTERS**

Public Comment on Non-Agenda Items, Pursuant to Government Code Section 54954.3

For the first round of public comment on non-agenda matters at the beginning of the agenda, ten persons selected by a drawing by the Clerk of the Boards from among the Public Comment Cards indicating they wish to speak on matters not on the agenda for the meeting will have two minutes each to address the Board on matters not on the agenda. For this first round of public comments on non-agenda matters, all Public Comment Cards must be submitted in person to the Clerk of the Board at the location of the meeting and prior to commencement of the meeting.

Staff/Phone (415) 749-

3. **APPROVAL OF THE MINUTES OF SEPTEMBER 26, 2019**

Clerk of the Boards/5073

The Committee will consider approving the attached draft minutes of the Mobile Source Committee meeting of September 26, 2019.

4. **PROJECTS AND CONTRACTS WITH PROPOSED GRANT AWARDS OVER \$100,000**

K. Schkolnick/5070

kschkolnick@baaqmd.gov

The Committee will consider recommending Board of Directors approval of Carl Moyer Program (CMP) and Transportation Fund for Clean Air (TFCA) projects requesting grant funding in excess of \$100,000 and authorization for the Executive Officer/APCO to execute grant agreements for the recommended projects.

5. **PROPOSED UPDATES TO THE TRANSPORTATION FUND FOR CLEAN AIR (TFCA) COUNTY PROGRAM MANAGER FUND POLICIES FOR FISCAL YEAR ENDING (FYE) 2021**

K. Schkolnick/5070

kschkolnick@baaqmd.gov

The Committee will consider recommending Board of Directors approval of the proposed Fiscal Year Ending (FYE) 2021 Transportation Fund for Clean Air (TFCA) County Program Manager Fund policies.

6. **DIESEL FREE BY '33: UPDATE ON ZERO-EMISSION MEDIUM- AND HEAVY-DUTY MOBILE SOURCE TECHNOLOGIES**

K. Schkolnick/5070

kschkolnick@baaqmd.gov

The Committee will receive an informational update on the availability and development of zero-emission medium- and heavy-duty vehicles and equipment.

7. **PUBLIC COMMENT ON NON-AGENDA MATTERS**

Speakers who did not have the opportunity to address the Committee in the first round of comments on non-agenda matters will be allowed two minutes each to address the Committee on non-agenda matters.

8. **COMMITTEE MEMBER COMMENTS**

Any member of the Committee, or its staff, on his or her own initiative or in response to questions posed by the public, may: ask a question for clarification, make a brief announcement or report on his or her own activities, provide a reference to staff regarding factual information, request staff to report back at a subsequent meeting concerning any matter or take action to direct staff to place a matter of business on a future agenda. (Gov't Code § 54954.2)

9. **TIME AND PLACE OF NEXT MEETING**

Wednesday, December 18, 2019, Bay Area Air Quality Management District Office, 375 Beale Street, San Francisco, California 94105 at 9:30 a.m.

10. **ADJOURNMENT**

The Committee meeting shall be adjourned by the Committee Chair.

CONTACT:

MANAGER, EXECUTIVE OPERATIONS
375 BEALE STREET, SAN FRANCISCO, CA 94105
vjohnson@baaqmd.gov

(415) 749-4941
FAX: (415) 928-8560
BAAQMD homepage:
www.baaqmd.gov

- To submit written comments on an agenda item in advance of the meeting. Please note that all correspondence must be addressed to the “Members of the Mobile Source Committee” and received at least 24 hours prior, excluding weekends and holidays, in order to be presented at that Committee meeting. Any correspondence received after that time will be presented to the Committee at the following meeting.
- To request, in advance of the meeting, to be placed on the list to testify on an agenda item.
- Any writing relating to an open session item on this Agenda that is distributed to all, or a majority of all, members of the body to which this Agenda relates shall be made available at the District’s offices at 375 Beale Street, Suite 600, San Francisco, CA 94105, at the time such writing is made available to all, or a majority of all, members of that body.

Accessibility and Non-Discrimination Policy

The Bay Area Air Quality Management District (Air District) does not discriminate on the basis of race, national origin, ethnic group identification, ancestry, religion, age, sex, sexual orientation, gender identity, gender expression, color, genetic information, medical condition, or mental or physical disability, or any other attribute or belief protected by law.

It is the Air District’s policy to provide fair and equal access to the benefits of a program or activity administered by Air District. The Air District will not tolerate discrimination against any person(s) seeking to participate in, or receive the benefits of, any program or activity offered or conducted by the Air District. Members of the public who believe they or others were unlawfully denied full and equal access to an Air District program or activity may file a discrimination complaint under this policy. This non-discrimination policy also applies to other people or entities affiliated with Air District, including contractors or grantees that the Air District utilizes to provide benefits and services to members of the public.

Auxiliary aids and services including, for example, qualified interpreters and/or listening devices, to individuals who are deaf or hard of hearing, and to other individuals as necessary to ensure effective communication or an equal opportunity to participate fully in the benefits, activities, programs and services will be provided by the Air District in a timely manner and in such a way as to protect the privacy and independence of the individual. Please contact the Non-Discrimination Coordinator identified below at least three days in advance of a meeting so that arrangements can be made accordingly.

If you believe discrimination has occurred with respect to an Air District program or activity, you may contact the Non-Discrimination Coordinator identified below or visit our website at www.baaqmd.gov/accessibility to learn how and where to file a complaint of discrimination.

Questions regarding this Policy should be directed to the Air District’s Non-Discrimination Coordinator, Rex Sanders, at (415) 749-4951 or by email at rsanders@baaqmd.gov

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

375 BEALE STREET, SAN FRANCISCO, CA 94105

FOR QUESTIONS PLEASE CALL (415) 749-4941

EXECUTIVE OFFICE:

MONTHLY CALENDAR OF AIR DISTRICT ANTICIPATED MEETINGS

OCTOBER 2019

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
Board of Directors Executive Committee - CANCELLED	Wednesday	16	9:30 a.m.	1 st Floor Board Room
Board of Directors Personnel Committee	Wednesday	16	9:30 a.m.	1 st Floor Board Room
Board of Directors Budget & Finance Committee - CANCELLED	Wednesday	23	9:30 a.m.	1 st Floor, Yerba Buena Room #109
Board of Directors Mobile Source Committee	Thursday	24	9:30 a.m.	1 st Floor Board Room
Advisory Council Meeting	Monday	28	9:00 a.m.	1 st Floor Board Room
Board of Directors Community & Public Health Committee	Wednesday	30	9:30 a.m.	1 st Floor Board Room

NOVEMBER 2019

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
Board of Directors Legislative Committee - CANCELLED AND RESCHEDULED TO MONDAY, NOVEMBER 25, 2019	Monday	4	9:30 a.m.	1 st Floor Board Room
Board of Directors Nominating Committee - CANCELLED AND RESCHEDULED TO WEDNESDAY, NOVEMBER 20, 2019	Wednesday	6	9:00 a.m.	1 st Floor Board Room
Board of Directors Regular Meeting - CANCELLED	Wednesday	6	9:30 a.m.	1 st Floor Board Room
Board of Directors Executive Committee	Wednesday	6	9:30 a.m.	1 st Floor Board Room
Board of Directors Stationary Source Committee - CANCELLED AND RESCHEDULED TO MONDAY, DECEMBER 16, 2019	Monday	18	9:30 a.m.	1 st Floor Board Room
Board of Directors Nominating Committee	Wednesday	20	9:00 a.m.	1 st Floor Board Room
Board of Directors Regular Meeting	Wednesday	20	9:30 a.m.	1 st Floor Board Room
Board of Directors Climate Protection Committee - CANCELLED	Thursday	21	9:30 a.m.	1 st Floor Board Room
Board of Directors Budget & Finance Committee	Monday	25	9:30 a.m.	1 st Floor Board Room
Board of Directors Legislative Committee	Monday	25	10:45 a.m.	1 st Floor Board Room
Board of Directors Mobile Source Committee - CANCELLED	Thursday	28	9:30 a.m.	1 st Floor Board Room

DECEMBER 2019

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
Board of Directors Stationary Source Committee	Monday	16	9:30 a.m.	1 st Floor Board Room
ET – 10/10/2019 – 4:15 p.m.				G/Board/Executive Office/Moncal

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Memorandum

To: Chairperson David Canepa and Members
of the Mobile Source Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: October 10, 2019

Re: Approval of the Minutes of September 26, 2019

RECOMMENDED ACTION

Approve the attached draft minutes of the Mobile Source Committee (Committee) meeting of September 26, 2019.

DISCUSSION

Attached for your review and approval are the draft minutes of the Committee meeting of September 26, 2019.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Marcy Hiratzka
Reviewed by: Vanessa Johnson

Attachment 3A: Draft Minutes of the Committee Meeting of September 26, 2019

AGENDA: 3A – ATTACHMENT

Draft Minutes – Mobile Source Committee Meeting of September 26, 2019

Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, California 94105
(415) 749-5073

DRAFT MINUTES

Summary of Board of Directors
Mobile Source Committee Meeting
Thursday, September 26, 2019

1. CALL TO ORDER – ROLL CALL

Mobile Source Committee (Committee) Chairperson, David Canepa, called the meeting to order at 9:33 a.m.

Present: Chairperson David Canepa; and Directors Scott Haggerty, David Hudson, Liz Kniss, Karen Mitchoff, Katie Rice, and Rod Sinks.

Absent: Vice Chair Pauline Russo Cutter; Directors Margaret Abe-Koga, Tyrone Jue, and Doug Kim.

Also Present: None.

2. PUBLIC COMMENT ON NON-AGENDA ITEMS, PURSUANT TO GOVERNMENT CODE SECTION 54954.3

No requests received.

3. APPROVAL OF THE MINUTES OF JULY 25, 2019

Public Comments

No requests received.

Committee Comments

None.

Committee Action

Director Hudson made a motion, seconded by Director Mitchoff, to **approve** the Minutes of July 25, 2019; and the motion carried by the following vote of the Committee:

AYES: Canepa, Haggerty, Hudson, Mitchoff, Rice, Sinks.
NOES: None.
ABSTAIN: None.
ABSENT: Abe-Koga, Cutter, Jue, Kim, Kniss.

4. PROJECTS AND CONTRACTS WITH PROPOSED GRANT AWARDS OVER \$100,000

Karen Schkolnick, Strategic Incentives Division Director, introduced Yu Zhang Liu, Staff Specialist, who gave the staff presentation *Projects and Contracts with Proposed Grant Awards Over \$100,000*, including: overview; Carl Moyer Program (CMP) and Mobile Source Incentive Fund (MSIF); Community Health Protection Grant Program (CHP); CMP, MSIF, CHP project recommendations over \$100,000; Transportation Fund for Clean Air (TFCA); Reformulated Gasoline Settlement Fund; status of incentive funding awarded since July 2019 by funding source; funds recommended and awarded since July 2019 by project category and county; status of solicitations; and recommended actions.

NOTED PRESENT: Director Kniss was noted present at 9:36 a.m.

Public Comments

No requests received.

Committee Comments

The Committee and staff discussed how TFCA funds may be applied to eligible projects under the Air District’s Charge! Program; ways in which the Air District is preparing for enhanced outreach of its Diesel Free by ’33 initiative; and the proposed amendment to the Fiscal Year Ending (FYE) 2020 TFCA Regional Fund Policies clarifying the vehicle weight classification requirement by 1) decreasing the maximum gross vehicle weight rating (GVWR) in Policy #23(b) (Light-and Medium- Duty Zero- and Partial-Zero-Emissions Vehicles for Fleets) from 14,000 lbs. to 8,500 lbs.; and 2) decreasing the minimum GVWR in Policy #24(a) (Heavy-Duty Zero- and Partial-Zero-Emissions Vehicles) from greater than 14,000 lbs. to greater than 8,500 lbs.

Committee Action

Director Hudson made a motion, seconded by Director Mitchoff, to recommend that the Board **approve** staff recommendations; and the motion carried by the following vote of the Committee:

AYES: Canepa, Haggerty, Hudson, Kniss, Mitchoff, Rice, Sinks.
NOES: None.
ABSTAIN: None.
ABSENT: Abe-Koga, Cutter, Jue, Kim.

5. PROPOSED CHARGE! PROGRAM GRANT AWARDS OVER \$100,000

Derrick Tang, Acting Technology Implementation Officer, introduced Mark Tang, Staff Specialist, who gave the staff presentation *Charge! Program Projects and Contracts with Proposed Grant Awards Over \$100,000*, including: agenda; Charge! program – grants for businesses and local governments; Charge! overview 2019; PowerFlex Systems, LLC proposed project; electric vehicle (EV)go Services, Inc. proposed project; existing publicly-accessible charging stations; TFCA Charge! funding distribution by facility type; maximum awards for future cycles; and recommended actions.

Public Comments

No requests received.

Committee Comments

The Committee and staff discussed the difference in EV charging speeds between a DC fast charger and a level 2 charger, and whether the resulting charges are comparable; whether charging infrastructure at private workplaces is underutilized after work hours, and potential challenges to making such infrastructure publicly-available; whether a Bay Area map of publicly-accessible charging locations can be found on the Air District’s website, and the suggestion that this data be given to smartphone driving application companies; the suggestion that the Air District discontinue funding for level 1 chargers and only fund level 2 and DC fast chargers, and the disadvantages of doing this; the importance of providing the appropriate charging products to areas based on location and building type; whether level 2 chargers installed at multi-family dwellings will be sufficient; the request that greenhouse gas (GHG) reduction be reported in future PowerFlex Systems, LLC and EVgo Services, Inc. project updates; an incident in Contra Costa County in which an entity who wanted to use Volkswagen Environmental Mitigation Trust grant funds to install a charging station was met with challenges from the city, and a request for the Air District’s intervention; the need for charging stations at airport parking lots and for employees at all workplaces; the request to upgrade the EV chargers at the Bay Area Metro Center (375 Beale Street, San Francisco) to DC fast chargers; whether older, used EVs will (over time) be DC fast charger-compatible, and adapter options; multi-port charging capabilities; 2016 California Green Building Standards Code § 4.106.4 (EV Charging For New Construction); and methods for charging electric bicycles.

Committee Action

Director Hudson made a motion, seconded by Director Mitchoff, to recommend that the Board **approve** TFCA projects for the Charge! Program in excess of \$100,000 and an update to the FYE 2020 Charge! Program funding criteria; and the motion carried by the following vote of the Committee:

AYES:	Canepa, Haggerty, Hudson, Kniss, Mitchoff, Rice, Sinks.
NOES:	None.
ABSTAIN:	None.
ABSENT:	Abe-Koga, Cutter, Jue, Kim.

6. UPDATE ON VOLKSWAGEN ENVIRONMENTAL MITIGATION TRUST GRANT PROGRAM

Ms. Schkolnick introduced Amy Dao, Senior Staff Specialist, who gave the staff presentation *Update on Volkswagen Environmental Mitigation Trust Grant Program*, including: overview; background on Volkswagen Environmental Mitigation Trust; Beneficiary Mitigation Plan; project funding and categories; zero-emission transit, school, and shuttle buses; zero-emission Class 8 freight and port drayage trucks; combustion freight and marine; zero-emission freight and marine; light-duty zero-emission infrastructure; tentative schedule; update on Air District administration and background on competitive solicitations; and recommended action.

Public Comments

No requests received.

Committee Comments

The Committee and staff discussed the request for quarterly reports of both proposed and awarded projects.

Committee Action

Director Sinks made a motion, seconded by Director Rice, to recommend that the Board **authorize** the Executive Officer/Air Pollution Control Officer to enter into agreements with eligible applicants for all projects funded by the Volkswagen Environmental Mitigation Trust and receive an informational update on this program; and the motion carried by the following vote of the Committee:

AYES: Canepa, Haggerty, Hudson, Kniss, Mitchoff, Rice, Sinks.
NOES: None.
ABSTAIN: None.
ABSENT: Abe-Koga, Cutter, Jue, Kim.

7. UPDATE ON PROPOSED SAFER AFFORDABLE FUEL-EFFICIENT (SAFE) VEHICLES RULE

Brian Bunker, Air District Legal Counsel, gave the staff presentation *Update on National Highway Traffic Safety Administration / Environmental Protection Agency (EPA) Proposed Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule*, including: outline; context; overview of the proposal; comparing standards; California waiver; Air District impacts and action; latest Trump Administrative action; and next steps.

Public Comments

No requests received.

Committee Comments

The Committee and staff discussed the difference between the current and proposed Average of Original Equipment Manufacturer’s Estimated GHG standards; the surmised motivation for the Trump Administration’s actions; the estimated duration of legal proceedings (joined lawsuit by multiple states); the legality of the US EPA’s intent to curtail federal transportation funding from California, as was conveyed to California on September 24, 2019; the request that grant funds be made available to EV manufacturers; potential economic impacts of the revocation of the California waiver; the likelihood that a stay will be granted; the request for periodic updates on this issue to the Committee; and the importance of the Air District clearly conveying its intention to support the Obama Era standards to vehicle manufacturers and the public as soon as possible.

Committee Action

None; receive and file.

8. PUBLIC COMMENT ON NON-AGENDA MATTERS

No requests received.

9. COMMITTEE MEMBER COMMENTS

Director Rice thanked the Air District for attending Drive Clean Marin’s “EV Experience Event” on September 21, 2019, and promoting the Air District’s Clean Cars for All program. She said that she would tell the Transportation Authority of Marin about the program and emphasize the lease option to her constituents.

Director Hudson requested that Air District staff attend the following events, which happen to be on the North American West Coast:

- “ACE 2020 Gateway to Innovation” Air & Waste Management Association’s 113th Annual Conference and Exhibition, San Francisco, CA, June 29 - July 2, 2020
- “EVS33” 33rd International Electric Vehicle Symposium and Exposition, Portland, OR, June 14-17, 2020
- 2020 American Public Transportation Association Exposition, Anaheim, CA, October 12 -14, 2020

10. TIME AND PLACE OF NEXT MEETING

Thursday, October 24, 2019, Bay Area Air Quality Management District Office, 375 Beale Street, San Francisco, California 94105 at 9:30 a.m.

11. ADJOURNMENT

The meeting adjourned at 11:18 a.m.

Marcy Hiratzka
Clerk of the Boards

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Memorandum

To: Chairperson David Canepa and Members
of the Mobile Source Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: October 10, 2019

Re: Projects and Contracts with Proposed Grant Awards Over \$100,000

RECOMMENDED ACTION

Recommend Board of Directors:

1. Approve recommended projects with proposed grant awards over \$100,000 as shown in Attachment 1;
2. Authorize the Executive Officer/APCO to enter into all necessary agreements with applicants for the recommended projects.

BACKGROUND

The Bay Area Air Quality Management District (Air District) has participated in the Carl Moyer Program (CMP), in cooperation with the California Air Resources Board (CARB), since the program began in Fiscal Year Ending (FYE) 1999. The CMP provides grants to public and private entities to reduce emissions of oxides of nitrogen (NOx), reactive organic gases (ROG), and particulate matter (PM) from existing heavy-duty engines by either replacing or retrofitting them. Eligible heavy-duty diesel engine applications include on-road trucks and buses, off-road equipment, marine vessels, locomotives, and stationary agricultural pump engines.

Assembly Bill (AB) 923 (Firebaugh), enacted in 2004 (codified as Health and Safety Code (HSC) Section 44225), authorized local air districts to increase their motor vehicle registration surcharge up to an additional \$2 per vehicle. The revenues from the additional \$2 surcharge are deposited in the Air District's Mobile Source Incentive Fund (MSIF). AB 923 stipulates that air districts may use the revenues generated by the additional \$2 surcharge for projects eligible under the CMP. On February 6, 2019, the Board of Directors (Board) authorized Air District participation in Year 21 of the CMP, and authorized the Executive Officer/APCO to execute Grant Agreements and amendments for projects funded with CMP funds or MSIF revenues, with individual grant award amounts up to \$100,000.

In 2017, AB 617 directed CARB, in conjunction with local air districts, to establish the Community Air Protection Program. AB 617 provides a new community-focused action framework to improve air quality and reduce exposure to criteria air pollutants and toxic air contaminants in communities

most impacted by air pollution. In advance of the development of the Community Air Protection Program, the Governor and legislature established an early action component to AB 617 to use existing incentive programs to get immediate emission reductions in the communities most affected by air pollution. AB 134 (2017) appropriated \$50 million from the Greenhouse Gas Reduction Fund (GGRF) to reduce mobile source emissions, including criteria pollutants, toxic air contaminants, and greenhouse gases in those communities within the Bay Area. Senate Bill (SB) 856 (2018) continued support for these project types and appropriated \$245 million from the GGRF statewide, of which \$40 million was awarded to the Air District for Bay Area emission reduction projects. These funds will be used to implement projects under the Community Health Protection Grant Program (CHP), and optionally on-road truck replacements under the Proposition 1B Goods Movement Emission Reduction Program. On April 3, 2019, the Board authorized the Air District to accept, obligate, and expend SB 856 grant funding.

In 1991, the California State Legislature authorized the Air District to impose a \$4 surcharge on motor vehicles registered within the nine-county Bay Area to fund projects that reduce on-road motor vehicle emissions within the Air District's jurisdiction. The statutory authority for the Transportation Fund for Clean Air (TFCA) and requirements of the program are set forth in the HSC Sections 44241 and 44242. Sixty percent of TFCA funds are awarded by the Air District to eligible projects and programs implemented directly by the Air District (e.g., Spare the Air, electric vehicle charging station program) and to a program referred to as the TFCA Regional Fund. Each year, the Board allocates funding and adopts policies and evaluation criteria that govern the expenditure of TFCA Regional Fund monies. The remaining 40% of TFCA funds are pass-through funds to the designated County Program Manager (CPM) in each of the nine counties within the Air District's jurisdiction.

On April 3, 2019, the Board authorized funding allocations for use of the 60% of the TFCA revenue in Fiscal Year Ending (FYE) 2020, cost-effectiveness limits for Air District-sponsored FYE 2020 programs, and the Executive Officer/APCO to execute grant agreements and amendments for TFCA-revenue funded projects with individual grant award amounts up to \$100,000. On June 5, 2019, the Board adopted policies and evaluation criteria for the FYE 2020 TFCA Regional Fund program.

Projects with grant award amounts over \$100,000 are brought to the Mobile Source Committee for consideration on at least a quarterly basis. Staff reviews and evaluates grant applications based upon the respective governing policies and guidelines established by CARB, the Board, and other funding agencies.

DISCUSSION

Carl Moyer Program and Community Health Protection Grant Program:

For the CMP Year 21 cycle, the Air District had more than \$11 million available for eligible CMP and school bus projects from a combination of MSIF and CMP funds. The Air District started accepting project applications for the CMP Year 21 funding cycle on June 17, 2019, and applications are accepted and evaluated on a first-come, first-served basis.

As of October 3, 2019, the Air District had received 79 project applications. Of the applications that have been evaluated between September 5, 2019 and October 3, 2019, 11 eligible projects have proposed individual grant awards over \$100,000. These projects will replace six pieces of off-road agricultural equipment, nine pieces of off-road equipment, six marine engines, and 18 school buses. These projects will reduce over 28 tons of NOx, ROG, and PM per year. Staff recommends the allocation of \$9,643,718 for these projects from a combination of CMP funds and MSIF revenues. Attachment 1, Table 1, provides additional information on these projects.

Attachment 2 lists all of the eligible projects that have been received by the Air District as of October 3, 2019, including information about the equipment category, award amounts, estimated emissions reductions, and county location. Approximately 83% of the funds have been awarded to projects that reduce emissions in highly impacted Bay Area communities. Attachment 4, Figures 4 and 5, summarize the cumulative allocation of CMP, MSIF, and CHP funding since 2009 (more than \$291 million awarded to 1,232 projects).

Transportation Fund for Clean Air Program:

In FYE 2020, the Air District had approximately \$32 million in TFCA monies for eligible projects. The Air District opened the FYE 2020 Vehicle Trip Reduction Program and started accepting applications on August 9, 2019.

As of October 3, 2019, the Air District had received 18 project applications. In addition, staff continued to evaluate project applications received through the Air District's FYE 2019 *Charge!* program. Of the applications that were evaluated between September 5, 2019 and October 3, 2019, staff is proposing grant awards of over \$100,000 for seven eligible TFCA projects. These projects will:

- Install and operate 15 Level 2 and one DC Fast electric vehicle charging stations;
- Support one on-demand shuttle project pilot and two existing shuttle services (11 routes);
- Construct 0.2 miles of class I bikeway; and
- Install 80 electronic bicycle lockers and one bike station with 270 new secure bicycle parking spaces.

These projects will reduce over 11 tons of NOx, ROG, and PM per year. Staff recommends the allocation of \$2,416,000 for these projects. Attachment 1, Table 1, provides additional information on these projects.

Attachment 3, Table 1, lists all eligible TFCA projects that were evaluated and awarded between July 1, 2019 and October 3, 2019, including information about the equipment category, award amounts, estimated emissions reductions, and county location. Approximately 40% of the funds have been awarded to projects that reduce emissions in highly impacted Bay Area communities.

BUDGET CONSIDERATION / FINANCIAL IMPACT

None. The Air District distributes CMP, MSIF, CHP, and TFCA funding to project sponsors on a reimbursement basis. Funding for administrative costs is provided by each funding source.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Anthony Fournier and Hannah Cha
Reviewed by: Karen Schkolnick, Chengfeng Wang, and Ken Mak

- Attachment 1: Projects with grant awards greater than \$100,000
- Attachment 2: CMP/MSIF, FARMER and Community Health Protection Grant Program approved projects
- Attachment 3: TFCA approved and eligible projects
- Attachment 4: Summary of funding awarded between 7/1/19 and 10/3/19

AGENDA 4 - ATTACHMENT 1

Table 1 - Carl Moyer Program/ Mobile Source Incentive Fund, FARMER, and Community Health Protection Grant Program projects with grant awards greater than \$100k (Evaluated between 9/5/19 and 10/3/19)

Project #	Applicant name	Equipment Category	Project Description	Proposed contract award	Total project cost	Emission Reductions (Tons per year)			County
						NOx	ROG	PM	
21MOY19	Nissen Vineyard Services, Inc.	Ag/ off-road	Replacement of 3 pieces of diesel off-road agricultural equipment	\$ 127,400	\$ 159,276	0.487	0.088	0.066	Napa
21MOY59	Concrush, Inc.	Off-road	Replacement of 1 diesel off-road construction loader	\$ 167,500	\$ 363,254	0.696	0.065	0.037	Solano
21MOY64	Achadinha Cheese, Inc.	Ag/ off-road	Replacement of 1 piece of diesel off-road agricultural equipment	\$ 170,250	\$ 212,849	1.546	0.171	0.097	Sonoma
21MOY73	Robert Giacomini Dairy, Inc.	Off-road	Replacement of 2 pieces of diesel off-road agricultural equipment	\$ 153,695	\$ 200,599	0.276	0.040	0.023	Marin
21MOY60	Bass Tub Fishing	Marine	Replacement of two diesel main engines	\$ 276,000	\$ 348,347	0.489	0.000	0.026	Contra Costa
21MOY71	Foss Maritime	Marine	Replacement of two diesel main engines	\$ 3,814,000	\$ 4,488,140	15.352	1.518	0.504	Contra Costa
21SBP77	Mt. Diablo Unified School District	School bus	Replacement of 16 diesel school buses with electric buses and infrastructure	\$ 3,478,697	\$ 5,622,988	1.040	0.075	0.005	Contra Costa
20MOY103	Westar Marine Services	Marine	Replacement of two diesel main engines	\$ 130,000	\$ 522,314	0.221	-0.007	0.014	San Francisco
21MOY61	Amazon Recycling and Disposal, Inc.	Off-road	Replacement of 6 pieces of diesel off-road equipment	\$ 811,875	\$ 959,511	3.679	0.584	0.369	Alameda
20SBP23	Sonoma Valley Unified School District	School bus	Replacement of two diesel buses with electric buses and infrastructure Increase of ~\$12k from 3/6/19 approval	\$ 373,861	\$ 813,861	0.131	0.009	0.001	Sonoma
21MOY65	Simoni & Massoni Farms, LLC	Ag/ off-road	Replacement of 2 pieces of diesel off-road agricultural equipment	\$ 140,440	\$ 175,550	0.695	0.103	0.064	Contra Costa
11 Projects				\$ 9,643,718	\$ 13,866,689	24.612	2.646	1.206	

Table 2 - Transportation Fund for Clean Air projects
with grant awards greater than \$100k (Evaluated between 9/5/19 and 10/3/19)

Project #	Applicant name	Project Category	Project Description	Proposed contract award	Total project cost	Emission Reductions (Tons per year)			County
						NO _x	ROG	PM	
19EV076	Milpitas - District 1 Associates, LLC	LD Infrastructure	Install and operate 15 single-port Level 2 (high) and 1 DC Fast charging stations at 1 multi-dwelling unit facility in Milpitas	\$ 123,000	\$ 277,799	0.029	0.043	0.001	Santa Clara
20R06	Presidio Trust	Trip Reduction	PresidiGo Downtown Shuttle	\$ 120,000	\$ 580,220	0.130	0.210	0.430	San Francisco
20R10	Peninsula Corridor Joint Powers Board	Trip Reduction	Caltrain Shuttle Program	\$ 485,000	\$ 2,963,000	1.890	2.280	5.290	Multi-County
20R13	Santa Clara Valley Transportation Authority (VTA)	Trip Reduction	Cupertino On-Demand Shuttle Pilot Program	\$ 423,000	\$ 1,204,519	0.122	0.134	0.308	Santa Clara
20R09	City of San Ramon	Bicycle Facilities	Install 0.2 miles of Class I bikeway in San Ramon	\$ 390,000	\$ 15,326,070	0.012	0.018	0.041	Contra Costa
20R17	Peninsula Corridor Joint Powers Board	Bicycle Facilities	Install and maintain 80 bicycle electronic lockers in Belmont, Redwood City, Mountain View, Lawrence, and San Jose	\$ 200,000	\$ 280,000	0.030	0.040	0.080	San Mateo and Santa Clara
20R19	San Francisco Bay Area Rapid Transit District	Bicycle Facilities	Construct and maintain a bike station with 270 new secure bike parking spaces in Oakland	\$ 675,000	\$ 3,217,231	0.070	0.100	0.240	Alameda
7 Projects				\$ 2,416,000	\$ 23,848,839	2.284	2.825	6.390	

AGENDA 4 - ATTACHMENT 2

*CMP/MSIF, FARMER and Community Health Protection Grant Program approved projects
(between 7/3/19 and 10/3/19)*

Project #	Equipment category	Project type	# of engines	Proposed contract award	Applicant name	Emission Reductions (Tons per year)			Board approval date	County
						NOx	ROG	PM		
20MOY230	Ag/ off-road	Equipment replacement	1	\$ 16,965.00	Cornerstone Certified Vineyard	0.024	0.019	0.006	APCO	Sonoma
20MOY235	Ag/ off-road	Equipment replacement	1	\$ 46,690.00	Goldridge Pinot, LLC dba Emeritus Vineyards	0.170	0.026	0.019	APCO	Sonoma
20MOY241	Ag/ off-road	Equipment replacement	3	\$ 129,500.00	Linda Pierce Wedemeyer Exemption Trust	0.217	0.039	0.021	10/2/2019	Solano
21MOY9	On-road	Equipment replacement	1	\$ 60,000.00	Prime Tank Lines, LLC	0.802	0.060	0.005	APCO	Contra Costa
20MOY248	On-road	Equipment replacement	1	\$ 40,000.00	Amritpal Tindh (Truck owner/operator)	0.604	0.052	0.000	APCO	Alameda
21MOY1	On-road	Equipment replacement	1	\$ 40,000.00	Freight 99 Express Inc. (Truck owner/operator)	0.280	0.024	0.000	APCO	Alameda
20MOY86	On-road	Equipment replacement	1	\$ 25,000.00	Sears Keith (Truck owner/ operator)	0.195	0.016	0.000	APCO	Sacramento
20MOY150	On-road	Equipment replacement	1	\$ 40,000.00	Sukhjeet Singh Cheema (Truck owner/ operator)	0.667	0.057	0.000	APCO	San Joaquin
21SBP2	School bus	Equipment replacement	1	\$ 178,500.00	Campbell Union School District	0.064	0.005	0.000	10/2/2019	Santa Clara
20MOY227	On-road	Equipment replacement	1	\$ 30,000.00	JSK Trucking (Truck owner/ operator)	0.193	0.016	0.000	APCO	San Joaquin
20MOY239a	On-road	Equipment replacement	1	\$ 30,000.00	DNA Trucking, Inc.	0.252	0.021	0.000	APCO	Solano
20MOY239b	On-road	Equipment replacement	1	\$ 20,000.00	DNA Trucking, Inc.	0.203	0.017	0.000	APCO	Solano
20MOY245a	On-road	Equipment replacement	1	\$ 60,000.00	Jorge Quintero DBA QDS Transportation	1.271	0.097	0.008	APCO	Alameda
20MOY245b	On-road	Equipment replacement	1	\$ 60,000.00	QDS Transportation	0.817	0.061	0.005	APCO	Alameda
20MOY245c	On-road	Equipment replacement	1	\$ 60,000.00	Ignacio Quintero (Truck owner/ operator)	0.900	0.068	0.005	APCO	Alameda
20MOY82	On-road	Equipment replacement	1	\$ 35,000.00	Surinder Atwal (Truck owner/ operator)	0.258	0.022	0.000	APCO	Sacramento

AGENDA 4 - ATTACHMENT 2

Project #	Equipment category	Project type	# of engines	Proposed contract award	Applicant name	Emission Reductions (Tons per year)			Board approval date	County
						NOx	ROG	PM		
20MOY232	On-road	Equipment replacement	1	\$ 40,000.00	Mahmoud Rastegar DBA: Prosper Dedicates Lines	0.452	0.039	0.000	APCO	Placer
20MOY218	On-road	Infrastructure	1	\$ 13,717.00	Penske Truck Leasing Co., L.P.	0.000	0.000	0.000	APCO	Alameda/ San Francisco
21MOY28	Ag/ off-road	Equipment replacement	1	\$ 63,850.00	Bains Farms, LLC	0.082	0.014	0.010	APCO	Solano
21MOY17	Ag/ off-road	Equipment replacement	1	\$ 43,350.00	Sweet Lane Nursery and Vineyards, Inc.	0.041	0.009	0.008	APCO	Sonoma
21MOY23	Ag/ off-road	Equipment replacement	2	\$ 86,100.00	Trefethen Farming, LLC	0.178	0.043	0.034	APCO	Napa
20MOY250	Marine	Engine replacement	4	\$ 1,288,000.00	Amnav Maritime Corporation (Vessel: Patricia Ann)	8.609	0.270	0.476	10/2/2019	Alameda
21MOY31	Ag/ off-road	Equipment replacement	1	\$ 185,400.00	Gerald & Kristy Spaletta (Dairy)	0.566	0.074	0.052	10/2/2019	Sonoma
21MOY25	On-road	Equipment replacement	1	\$ 49,500.00	J and A Trucking, Inc.	1.350	0.202	0.010	APCO	Alameda
21MOY21	Ag/ off-road	Equipment replacement	4	\$ 249,600.00	Renteria Vineyard Management, LLC	0.790	0.121	0.089	10/2/2019	Napa
21MOY41	Ag/ off-road	Equipment replacement	2	\$ 81,750.00	Geoffrey Allen (Nursery)	0.105	0.030	0.012	APCO	San Mateo
21MOY30	Ag/ off-road	Equipment replacement	2	\$ 67,100.00	Jaswant S. Bains (Farmer)	0.289	0.044	0.025	APCO	Solano
21MOY33	Off-road	Equipment replacement	2	\$ 355,500.00	S.E.G Trucking	1.044	0.074	0.052	10/2/2019	Contra Costa
21MO12	On-road	Equipment replacement	1	\$ 40,000.00	Oscar Transport/ Oscar Rivera (Truck owner/ operator)	0.501	0.036	0.000	APCO	Alameda
21MOY34	Ag/ off-road	Equipment replacement	2	\$ 456,200.00	Custom Tractor Service	2.260	0.211	0.115	10/2/2019	Sonoma
21MOY14	Ag/ off-road	Equipment replacement	5	\$ 198,850.00	Bayview Vineyards Corp.	0.826	0.164	0.090	10/2/2019	Napa
21MOY47	Ag/ off-road	Equipment replacement	1	\$ 151,000.00	DeBernardi Dairy, Inc.	0.438	0.040	0.022	10/2/2019	Sonoma
21MOY51	Marine	Engine replacement	4	\$ 2,916,000.00	Crowley Marine Services	43.259	4.409	1.420	10/2/2019	Alameda

AGENDA 4 - ATTACHMENT 2

Project #	Equipment category	Project type	# of engines	Proposed contract award	Applicant name	Emission Reductions (Tons per year)			Board approval date	County
						NOx	ROG	PM		
21MOY36	Off-road	Equipment replacement	1	\$ 74,000.00	John Benward Co.	0.564	0.028	0.021	APCO	Sonoma
20MOY217	Off-road	Portable equipment replacement	1	\$ 863,500.00	Oakland Pallet Co., Inc.	2.577	0.215	0.076	10/2/2019	Alameda
20SBP246	School bus	Equipment replacement	2	\$ 179,020.00	Newark Unified School District	0.037	0.002	0.000	10/2/2019	Alameda
21MOY46	Off-road	Equipment replacement	6	\$ 772,500.00	Bigge Crane and Rigging Company	4.210	0.435	0.254	10/2/2019	Alameda
21MOY37	On-road	Equipment replacement	1	\$ 30,000.00	Joginder Singh (Truck owner/ operator)	0.392	0.033	0.000	APCO	Alameda
21MOY19	Ag/ off-road	Equipment replacement	3	\$ 127,400.00	Nissen Vineyard Services, Inc.	0.487	0.088	0.066	TBD	Napa
21MOY56	Ag/ off-road	Equipment replacement	1	\$ 21,550.00	Groth Vineyards and Winery, LLC	0.047	0.038	0.010	APCO	Napa
21MOY54	Ag/ off-road	Equipment replacement	1	\$ 31,100.00	Siebert Vineyards	0.079	0.012	0.007	APCO	Sonoma
21MOY53	Ag/ off-road	Equipment replacement	1	\$ 63,150.00	St. Supery, Inc.	0.159	0.025	0.019	APCO	Napa
21MOY59	Off-road	Equipment replacement	1	\$ 167,500.00	Concrush, Inc.	0.696	0.065	0.037	TBD	Solano
21MOY64	Ag/ off-road	Equipment replacement	1	\$ 170,250.00	Achadinha Cheese, Inc.	1.546	0.171	0.097	TBD	Sonoma
21MOY50	On-road	Equipment replacement	1	\$ 35,000.00	Bal transport, Inc.	0.464	0.033	0.000	APCO	Alameda
21MOY73	Ag/ off-road	Equipment replacement	2	\$ 153,695.00	Robert Giacomini Dairy, Inc.	0.276	0.040	0.023	TBD	Marin
21MOY60	Marine	Engine replacement	2	\$ 276,000.00	Bass Tub Fishing	0.489	0.000	0.026	TBD	Contra Costa
21MOY71	Marine	Engine replacement	2	\$ 3,814,000.00	Foss Maritime	15.352	1.518	0.504	TBD	Contra Costa
21SBP77	School bus	Equipment replacement	16	\$ 3,478,697.00	Mt. Diablo Unified School District	1.040	0.075	0.005	TBD	Contra Costa
20MOY103	Marine	Engine replacement	2	\$ 130,000.00	Westar Marine Services	0.221	-0.007	0.014	TBD	San Francisco

AGENDA 4 - ATTACHMENT 2

Project #	Equipment category	Project type	# of engines	Proposed contract award	Applicant name	Emission Reductions (Tons per year)			Board approval date	County
						NOx	ROG	PM		
21MOY61	Off-road	Equipment replacement	6	\$ 811,875.00	Amazon Recycling and Disposal, Inc.	3.679	0.584	0.369	TBD	Alameda
20SBP23	School bus	Equipment replacement	2	\$ 373,861.00	Sonoma Valley Unified School District - Increase of ~\$12k from 3/6/19 approval	0.131	0.009	0.001	TBD	Sonoma
21MOY65	Ag/ off-road	Equipment replacement	2	\$ 140,440.00	Simoni & Massoni Farms, LLC	0.695	0.103	0.064	TBD	Contra Costa
53 Projects			107	\$ 18,871,110.00		100.848	9.848	4.076		

AGENDA 4 - ATTACHMENT 3

Table 1 - Summary of all TFCA approved and eligible projects (evaluated between 7/1/19 and 10/3/19)

Project #	Project Category	Project Description	Award Amount	Applicant Name	Emission Reductions (Tons per year)			Board/APCO Approval Date	CARE Area	County
					NO _x	ROG	PM			
19EV017	LD Infrastructure	Install and operate 2 single-port Level 2 (high) charging stations with a 17.28 kW solar array at a Destination facility in Richmond	\$12,000	AHAH LLC	0.003	0.004	0.000	7/2/19	Yes	Contra Costa
19EV023	LD Infrastructure	Install and operate 3 dual-port Level 2 (high) charging stations at a MUD facility in San Mateo	\$24,000	Mode Residences, LLC	0.006	0.008	0.000	7/31/19	No	San Mateo
19EV034	LD Infrastructure	Install and operate 2 single-port Level 2 (high) and 24 dual-port Level 2 (high) charging stations at 1 workplace facility in Milpitas	\$78,000	View, Inc.	0.036	0.053	0.001	8/20/19	No	Santa Clara
19EV057	LD Infrastructure	Install and operate 8 single-port Level 2 (high) and 28 dual-port Level 2 (high) charging stations at 3 workplace facilities in Atherton and Redwood City	\$99,000	Redwood City School District	0.046	0.068	0.001	8/30/19	No	San Mateo
19EV065	LD Infrastructure	Install and operate 606 single-port Level 2 (high) and 6 DC Fast charging stations at 18 Multi-dwelling unit and workplace facilities in San Francisco, San Jose, Walnut Creek, Palo Alto, Sunnyvale, Belmont, Oakland, and Livermore	\$2,500,000	PowerFlex Systems, LLC	0.881	1.309	0.026	10/2/19	Yes	Multi-County
19EV077	LD Infrastructure	Install and operate 40 DC Fast charging stations at 9 Transportation Corridor facilities in San Francisco, Daly City, Millbrae, Newark, Cupertino, Castro Valley, and Emeryville	\$1,000,000	Evgo Services, LLC	0.336	0.499	0.010	10/2/19	Yes	Multi-County
19EV076	LD Infrastructure	Install and operate 15 single-port Level 2 (high) and 1 DC Fast charging stations at 1 multi-dwelling unit facility in Milpitas	\$123,000	Milpitas - District 1 Associates, LLC	0.029	0.043	0.001	Pending	No	Santa Clara
20R26	On-road Trucks & Buses	Purchase and operate one battery-electric shuttle	\$13,500	California State University - Maritime Academy	0.005	0.003	0.001	10/2/19	Yes	Solano
20R02	LD Vehicles	Vehicle Buy Back Program	\$150,000	BAAQMD	N/A	N/A	N/A	NA	No	Regional
20R01	Trip Reduction	Enhanced Mobile Source & Commuter Benefits Enforcement	\$80,230	BAAQMD	N/A	N/A	N/A	NA	No	Regional
20R03	Trip Reduction	Spare The Air/Intermittent Control Programs	\$2,185,138	BAAQMD	N/A	N/A	N/A	NA	No	Regional
20R06	Trip Reduction	PresidiGo Downtown Shuttle	\$120,000	Presidio Trust	0.130	0.210	0.430	Pending	Yes	San Francisco
20R08	Trip Reduction	Pleasanton Connector Shuttles	\$80,000	San Joaquin Regional Rail Commission	0.200	0.290	0.770	Pending	Yes	Alameda
20R10	Trip Reduction	Caltrain Shuttle Program	\$485,000	Peninsula Corridor Joint Powers Board	1.890	2.280	5.290	Pending	No	Regional
20R13	Trip Reduction	Cupertino On-Demand Shuttle Pilot Program	\$423,000	Santa Clara Valley Transportation Authority (VTA)	0.122	0.134	0.308	Pending	No	Santa Clara
20R09	Bicycle Facilities	Install 0.2 miles of Class I bikeway in San Ramon	\$390,000	City of San Ramon	0.012	0.018	0.041	Pending	Yes	Contra Costa
20R17	Bicycle Facilities	Install and maintain 80 bicycle electronic lockers in Belmont, Redwood City, Mountain View, Lawrence, and San Jose.	\$200,000	Peninsula Corridor Joint Powers Board	0.030	0.040	0.080	Pending	Yes	Regional
20R19	Bicycle Facilities	Construct and maintain a bike station with 270 new secure bike parking spaces in Oakland	\$675,000	San Francisco Bay Area Rapid Transit District	0.070	0.100	0.240	Pending	Yes	Alameda

18 Projects

\$8,637,868

3.795

5.059

7.199

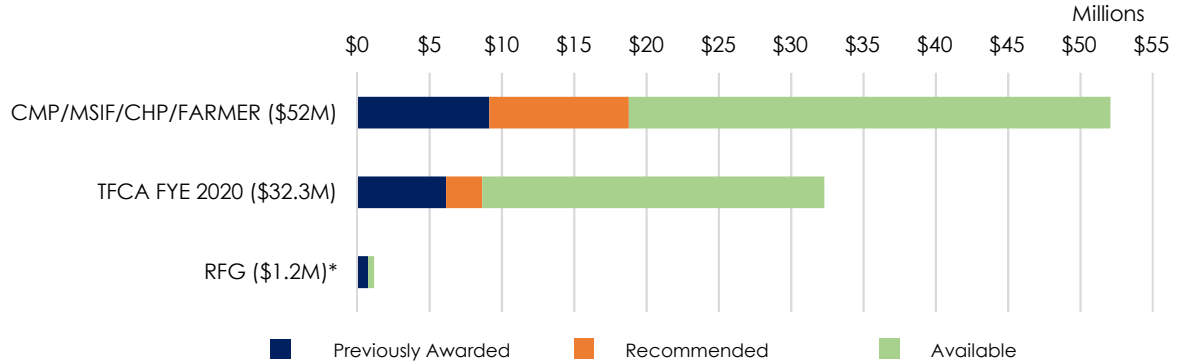
AGENDA 4 - ATTACHMENT 4

Figures 1-3 shown below summarize funding awarded between 7/1/19 and 10/3/19 from funding sources including:

- Carl Moyer Program (CMP)
- Community Health Protection Program (CHP)
- Funding Agricultural Replacement Measures for Emission Reductions (FARMER)
- Mobile Source Incentive Fund (MSIF)
- Transportation Fund for Clean Air (TFCA)
- Reformulated Gasoline Settlement Fund (RFG)

Figure 1. Status of FYE 2020 funding by source

includes funds awarded, recommended for award, and available



* Includes funding awarded in FYE 2019

Figure 2. Funding awarded in FYE 2020 by county:

includes funds awarded & recommended for award

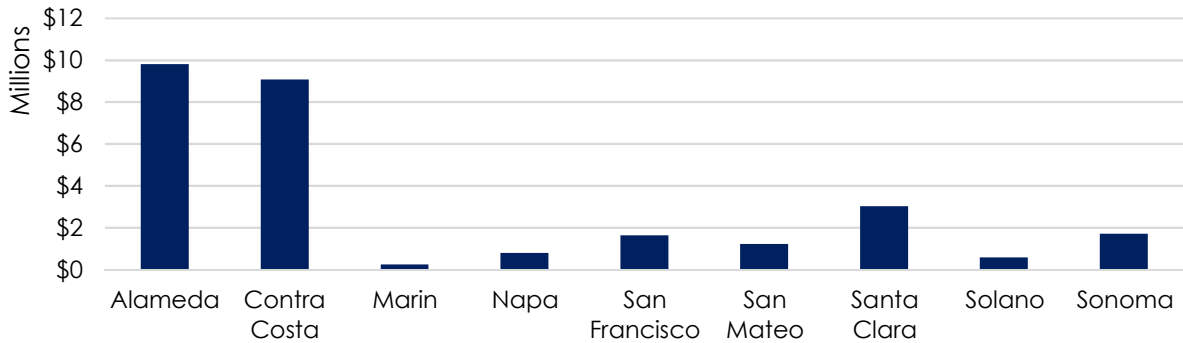
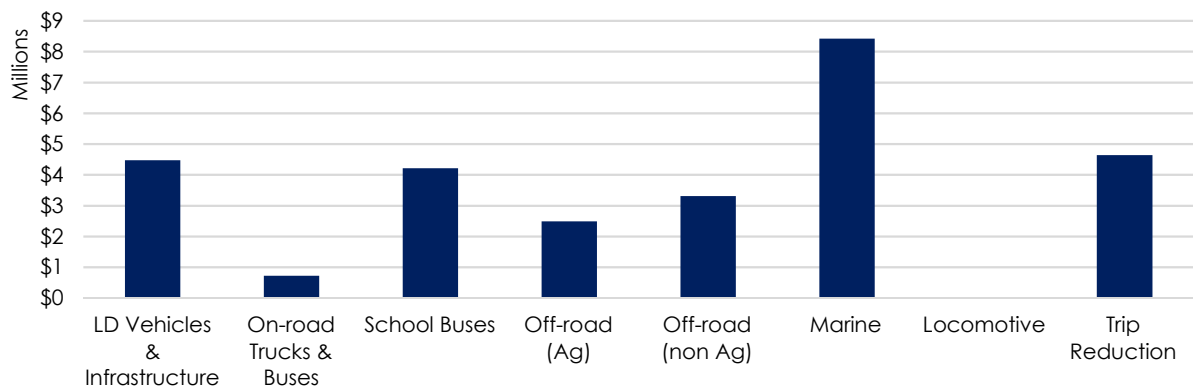


Figure 3. Funding awarded in FYE 2020 by project category

includes funds awarded & recommended for award



AGENDA 4 - ATTACHMENT 4

Figure 4. CMP/MSIF/CHP/FARMER funding awarded since 2009 by county

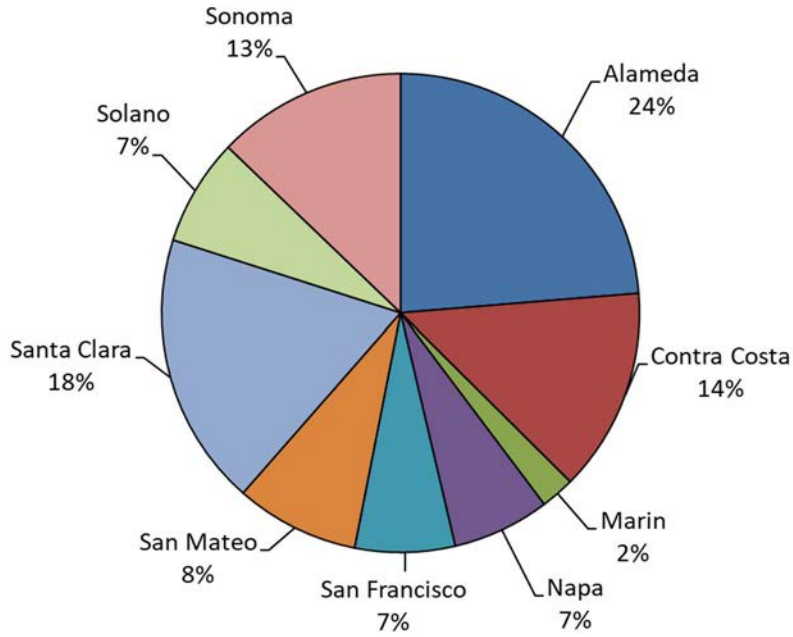
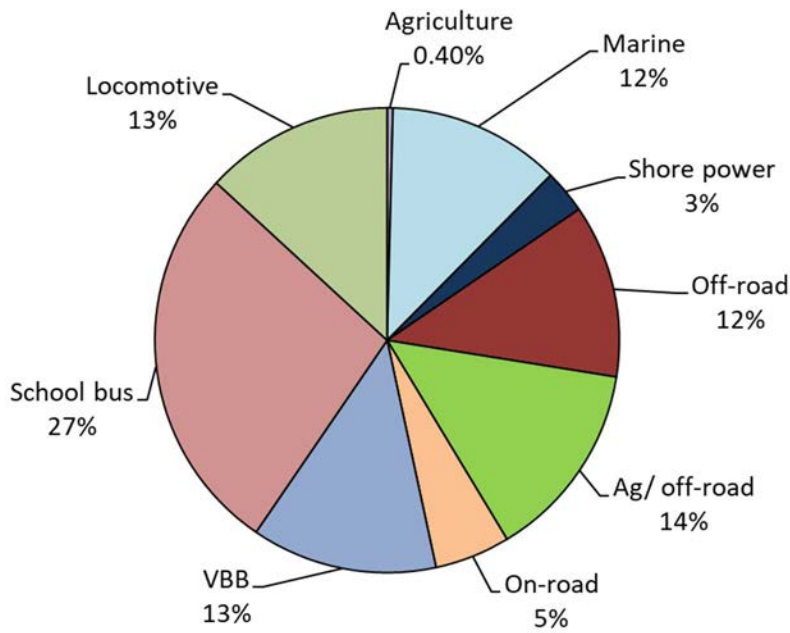


Figure 5. CMP/MSIF/CHP/FARMER funding awarded since 2009 by category



BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Memorandum

To: Chairperson David Canepa and Members
of the Mobile Source Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: October 10, 2019

Re: Proposed Updates to the Transportation Fund for Clean Air (TFCA) County Program
Manager Fund Policies for Fiscal Year Ending (FYE) 2021

RECOMMENDED ACTION

Recommend Board of Directors approve the proposed updates to the Transportation Fund for Clean Air (TFCA) County Program Manager Fund Policies for Fiscal Year Ending (FYE) 2021.

BACKGROUND

In 1991, the California State Legislature authorized the Bay Area Air Quality Management District (Air District) to impose a \$4 surcharge on motor vehicles registered within the Air District jurisdiction to fund projects that reduce on-road motor vehicle emissions. This surcharge is used to fund eligible projects through the Air District's Transportation Fund for Clean Air (TFCA) program. The statutory authority for the TFCA and requirements of the program are set forth in California Health and Safety Code (HSC) Sections 44241 and 44242.

Sixty percent of TFCA funds are awarded by the Air District to eligible projects and programs implemented directly by the Air District (e.g., Spare the Air, electric vehicle charging station program) and to a program referred to as the TFCA Regional Fund. The remaining 40% of TFCA Funds are passed-through to the County Program Manager (CPM) Fund, based on each county's proportionate share of vehicle registration fees paid, and awarded by the nine designated agencies within the Air District's jurisdiction. Each year, the Air District Board of Directors (Board) adopts proposed updates to the TFCA CPM Fund Policies to maximize emissions reductions and public health benefits.

DISCUSSION

The annual update process for the TFCA CPM Policies for Fiscal Year Ending (FYE) 2021 began early this year. This process involved Air District staff reviewing the current year policies, developing a draft to re-align the CPM policies with recent updates made to the TFCA Regional Fund Policies, and incorporating feedback and comments received during the past year from the CPMs. On February 20, 2019, Air District staff issued a proposed draft to the CPMs for public comment. The Air District held five meetings, on January 16, April 17, May 8, August 12, and September 24 of 2019, with CPM representatives, to discuss the proposed policy updates, and followed up by phone with CPMs on specific questions and issues related to the proposed updates.

Written comments were submitted by three of the nine CPMs.

The following are the key proposed updates to the TFCA CPM Policies for FYE 2021:

- Increase of cost-effectiveness limit in Policy #2 ***TFCA Cost-Effectiveness*** for ***Alternative Fuel Light-Duty Vehicles*** and ***Alternative Fuel Heavy-Duty Vehicles and Buses*** projects.
- Clarification of the cost-effectiveness limit for ***Bicycle Projects*** in Policy #2 ***TFCA Cost-Effectiveness***.
- Adjustment of the gross vehicle weight rating (GVWR) limit specified in Policies #22 and #24 to reclassify vehicles with GVWR between 8,501 lbs. and 14,000 lbs., allowing these vehicles to be funded as ***Alternative Fuel Heavy-Duty Vehicles and Buses***.
- Revision to eligible vehicles under Policy #25 ***On-Road Goods Movement Truck and Bus Replacements***, to clarify that the policy's intention is to support diesel-to-diesel replacement of highly polluting on-road trucks that are not currently able to transition to zero-emissions technology.
- Minor text revisions to provide clarification on existing policies.

Attachment A contains the proposed CPM Policies for FYE 2021. Attachment B shows the proposed updates in redline. Attachment C contains a listing of the written comments received and the responses from Air District staff.

BUDGET CONSIDERATION / FINANCIAL IMPACT

None. The recommended policy updates have no impact on the Air District's budget.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Betty Kwan and Linda Hui
Reviewed by: Karen Schkolnick and Chengfeng Wang

Attachment 5A: Proposed TFCA CPM Fund Policies for FYE 2021 (clean version)
Attachment 5B: Proposed TFCA CPM Fund Policies for FYE 2021 (redlined version of Board approved TFCA CPM Fund Policies for FYE 2020)
Attachment 5C: Comments Received from CPMs on the Draft Proposed Updates to TFCA CPM Fund Policies for FYE 2021 and Air District Staff's Responses

**Agenda #5 – Attachment A:
Proposed TFCA County Program Manager Fund Policies for FYE 2021**

The following Policies apply to the Bay Area Air Quality Management District’s (Air District) Transportation Fund for Clean Air (TFCA) County Program Manager Fund for fiscal year ending (FYE) 2021.

BASIC ELIGIBILITY

- 1. Reduction of Emissions:** Only projects that result in the reduction of motor vehicle emissions within the Air District’s jurisdiction are eligible.

Projects must conform to the provisions of the California Health and Safety Code (HSC) sections 44220 et seq. and these Air District Board of Directors adopted TFCA County Program Manager Fund Policies.

Projects must achieve surplus emission reductions, i.e., reductions that are beyond what is required through regulations, ordinances, contracts, and other legally binding obligations at the time of the execution of a grant agreement between the County Program Manager and the grantee. Projects must also achieve surplus emission reductions at the time of an amendment to a grant agreement if the amendment modifies the project scope or extends the project completion deadline.

- 2. TFCA Cost-Effectiveness:** Projects must not exceed the maximum cost-effectiveness (C-E) limit specified in Table 1. Cost-effectiveness (\$/weighted ton) is the ratio of TFCA funds awarded to the sum of surplus emissions reduced, during a project’s operational period, of reactive organic gases (ROG), nitrogen oxides (NOx), and weighted PM10 (particulate matter 10 microns in diameter and smaller). All TFCA-generated funds (e.g., reprogrammed TFCA funds) that are awarded or applied to a project must be included in the evaluation. For projects that involve more than one independent component (e.g., more than one vehicle purchased, more than one shuttle route), each component must achieve this cost-effectiveness requirement.

County Program Manager administrative costs are excluded from the calculation of a project’s TFCA cost-effectiveness.

Table 1: Maximum Cost-Effectiveness for TFCA County Program Manager Fund Projects

Policy No.	Project Category	Maximum C-E (\$/weighted ton)
22	Alternative Fuel Light-Duty Vehicles	500,000
23	Reserved	Reserved
24	Alternative Fuel Heavy-Duty Vehicles and Buses	500,000
25	On-Road Goods Movement Truck Replacements	90,000
26	Alternative Fuel Infrastructure	250,000 500,000*
27	Ridesharing Projects - Existing	150,000
28.a.-h.	Shuttle/Feeder Bus Service – Existing	200,000; 250,000 for services in CARE Areas or PDAs
29.a.	Shuttle/Feeder Bus Service - Pilot	Year 1 - 250,000 Year 2 - see Policy #28.a.-h.
	Shuttle/Feeder Bus Service – Pilot in CARE Areas or PDAs	Years 1 & 2 - 500,000 Year 3 - see Policy #28.a.-h.

**Agenda #5 – Attachment A:
Proposed TFCA County Program Manager Fund Policies for FYE 2021**

29.b.	Pilot Trip Reduction	500,000
30	Bicycle Projects	
	Bikeways	500,000
	Bicycle Parking	250,000
31	Bike Share	500,000
32	Arterial Management	175,000
33	Smart Growth/Traffic Calming	175,000

*This higher C-E limit is for projects that install electric vehicle charging stations at multi-dwelling units, transit stations, and park-and-ride lot facilities.

3. **Eligible Projects and Case-by-Case Approval:** Eligible projects are those that conform to the provisions of the HSC section 44241, Air District Board-adopted policies, and Air District guidance. On a case-by-case basis, County Program Managers must receive approval by the Air District for projects that are authorized by the HSC section 44241 and achieve Board-adopted TFCA cost-effectiveness but do not fully meet other Board-adopted Policies.
4. **Consistent with Existing Plans and Programs:** All projects must comply with the Transportation Control and Mobile Source Control Measures included in the Air District's most recently approved strategies for achieving and maintaining State and national ozone standards, those plans and programs established pursuant to HSC sections 40233, 40717, and 40919; and, when specified, other adopted federal, State, regional, and local plans and programs.
5. **Eligible Recipients:** Grant recipients must be responsible for the implementation of the project, have the authority and capability to complete the project, and be an applicant in good standing with the Air District (Policies #8-10).
 - a. **Public agencies** are eligible to apply for all project categories.
 - b. **Non-public entities** are only eligible to apply for new alternative-fuel (light, medium, and heavy-duty) vehicle and infrastructure projects, and advanced technology demonstrations that are permitted pursuant to HSC section 44241(b)(7).
6. **Readiness:** Projects must commence by the end of calendar year 2021. For purposes of this policy, “commence” means a tangible preparatory action taken in connection with the project’s operation or implementation, for which the grantee can provide documentation of the commencement date and action performed. “Commence” includes, but is not limited to, the issuance of a purchase order to secure project vehicles and equipment, commencement of shuttle/feeder bus and ridesharing service, or the delivery of the award letter for a construction contract.
7. **Maximum Two Years Operating Costs for Service-Based Projects:** Unless otherwise specified in policies #22 through #33, TFCA County Program Manager Funds may be used to support up to two years of operating costs for service-based projects (e.g., ridesharing, shuttle and feeder bus service). Grant applicants that seek TFCA funds for additional years must reapply for funding in the subsequent funding cycles.

APPLICANT IN GOOD STANDING

8. **Independent Air District Audit Findings and Determinations:** Grantees who have failed either the financial statement audit or the compliance audit for a prior TFCA-funded project awarded by either County Program Managers or the Air District are excluded from receiving an award of any TFCA funds for three (3) years from the date of the Air District’s final audit determination in accordance

with HSC section 44242 or for a duration determined by the Air District Air Pollution Control Officer (APCO). Existing TFCA funds already awarded to the project sponsor will not be released until all audit recommendations and remedies have been satisfactorily implemented. A failed financial statement audit means a final audit report that includes an uncorrected audit finding that confirms an ineligible expenditure of TFCA funds. A failed compliance audit means that the program or project was not implemented in accordance with the applicable Funding Agreement or grant agreement.

A failed financial statement or compliance audit of the County Program Manager or its grantee may subject the County Program Manager to a reduction of future revenue in an amount equal to the amount which was inappropriately expended pursuant to the provisions of HSC section 44242(c)(3).

9. **Authorization for County Program Manager to Proceed:** Only a fully executed Funding Agreement (i.e., signed by both the Air District and the County Program Manager) constitutes the Air District's award of County Program Manager Funds. County Program Managers may incur costs (i.e., contractually obligate itself to allocate County Program Manager Funds) only after the Funding Agreement with the Air District has been executed.
10. **Maintain Appropriate Insurance:** Both the County Program Manager and each grantee must obtain and maintain general liability insurance, workers compensation insurance, and additional insurance as appropriate for specific projects, with required coverage amounts provided in Air District guidance and final amounts specified in the respective grant agreements.

INELIGIBLE PROJECTS

11. **Duplication:** Projects that have previously received TFCA Regional or County Program Manager funds and do not propose to achieve additional emission reductions are not eligible.
12. **Planning Activities:** The costs of preparing or conducting feasibility studies are not eligible. Planning activities are not eligible unless they are directly related to the implementation of a specific project or program.
13. **Reserved.**
14. **Cost of Developing Proposals:** The costs to prepare grant applications are not eligible.

USE OF TFCA FUNDS

15. **Combined Funds:** TFCA County Program Manager Funds may not be combined with TFCA Regional Funds to fund a County Program Manager Fund project. Projects that are funded by the TFCA County Program Manager Fund are not eligible for additional funding from other funding sources that claim emissions reduction credits. However, County Program Manager-funded projects may be combined with funds that do not require emissions reductions for funding eligibility.
16. **Administrative Costs:** The County Program Manager may not expend more than 6.25 percent of its County Program Manager Funds for its administrative costs. The County Program Manager's costs to prepare and execute its Funding Agreement with the Air District are eligible administrative costs. Interest earned on County Program Manager Funds shall not be included in the calculation of the administrative costs. To be eligible for reimbursement, administrative costs must be clearly identified in the expenditure plan application and in the Funding Agreement, and must be reported to the Air District.
17. **Expend Funds within Two Years:** County Program Manager Funds must be expended within two (2) years of receipt of the first transfer of funds from the Air District to the County Program Manager in

the applicable fiscal year, unless a County Program Manager has made the determination based on an application for funding that the eligible project will take longer than two years to implement. Additionally, a County Program Manager may, if it finds that significant progress has been made on a project, approve no more than two one-year schedule extensions for a project. Any subsequent schedule extensions for projects can only be given on a case-by-case basis, if the Air District finds that significant progress has been made on a project, and the Funding Agreement is amended to reflect the revised schedule.

18. **Unallocated Funds:** Pursuant to HSC 44241(f), any County Program Manager Funds that are not allocated to a project within six months of the Air District Board of Directors approval of the County Program Manager’s Expenditure Plan may be allocated to eligible projects by the Air District. The Air District shall make reasonable effort to award these funds to eligible projects in the Air District within the same county from which the funds originated.

19. Reserved.

20. Reserved.

21. Reserved.

ELIGIBLE PROJECT CATEGORIES

Clean Air Vehicle Projects

22. Alternative Fuel Light-Duty Vehicles:

These projects are intended to accelerate the deployment of qualifying alternative fuel vehicles that operate within the Air District’s jurisdiction. All of the following conditions must be met for a project to be eligible for TFCA funds:

- a. Vehicles must be new (model year 2020 or newer), and have a gross vehicle weight rating (GVWR) of 8,500 lbs. or lower.
- b. Vehicles must be:
 - i. hybrid-electric, electric, or fuel cell vehicles that are approved by the California Air Resources Board (CARB) for on-road use
 - ii. neighborhood electric vehicles (NEV) as defined in the California Vehicle Code.
- c. Vehicles must be maintained and operated within the Air District’s jurisdiction.
- d. The amount of TFCA funds awarded may not exceed 90% of the project’s cost after all other grants and applicable manufacturer and local/state/federal rebates and discounts are applied.

Vehicles that are solely powered by gasoline, diesel, or natural gas, and retrofit projects are not eligible.

Grantees may request authorization of up to 100% of the TFCA Funds awarded for each vehicle to be used to pay for costs directly related to the purchase and installation of alternative fueling infrastructure and/or equipment used to power the new vehicle.

23. **Reserved.**

24. Alternative Fuel Heavy-Duty Vehicles and Buses:

**Agenda #5 – Attachment A:
Proposed TFCA County Program Manager Fund Policies for FYE 2021**

These projects are intended to accelerate the deployment of qualifying alternative fuel vehicles that operate within the Air District's jurisdiction by encouraging the replacement of older, compliant trucks and buses with the cleanest available technology. If replacing heavy-duty vehicles and buses with light-duty vehicles, light-duty vehicles must meet Policy #22. All of the following conditions must be met for a project to be eligible for TFCA Funds:

- a. Each vehicle must be new and have a GVWR greater than 8,500 lbs.
- b. Eligible vehicles must be approved by the CARB.
- c. Vehicles must be maintained and operated within the Air District's jurisdiction.
- d. The total amount of TFCA funds awarded combined with all other grants and applicable manufacturer and local/state/federal rebates and discounts may not exceed 90% of the project's eligible cost

Vehicles that are solely powered by gasoline, diesel, or natural gas and retrofit projects are not eligible.

Grantees may request authorization of up to 100% of the TFCA Funds awarded for each vehicle to be used to pay for costs directly related to the purchase and installation of alternative fueling infrastructure and/or equipment used to power the new vehicle.

Projects that seek to replace a vehicle in the same weight-class as the proposed new vehicle, may qualify for additional TFCA funding. Costs related to the scrapping and/or dismantling of the existing vehicle are not eligible for reimbursement with TFCA funds.

25. **On-Road Goods Movement Truck Replacements:** The project will replace Class 6, Class 7, and Class 8 diesel-powered trucks that have a gross vehicle weight rating (GVWR) of 19,501 lbs. or greater (per vehicle weight classification definition used by Federal Highway Administration (FHWA) with new or used trucks that have an engine certified to the 2010 CARB emissions standards or cleaner. Eligible vehicles are those that are used for goods movement as defined by CARB. The existing truck(s) to be replaced must be registered with the California Department of Motor Vehicles (DMV) to an address within the Air District's jurisdiction, and must be scrapped after replacement.

26. **Alternative Fuel Infrastructure:**

Eligible refueling infrastructure projects include new dispensing and charging facilities, or additional equipment or upgrades and improvements that expand access to existing alternative fuel fueling/charging sites (i.e., electric vehicle, hydrogen). This includes upgrading or modifying private fueling/charging sites or stations to allow public and/or shared fleet access. TFCA funds may be used to cover the cost of equipment and installation. TFCA funds may also be used to upgrade infrastructure projects previously funded with TFCA funds as long as the equipment was maintained and has exceeded the duration of its useful life after being placed into service.

Equipment and infrastructure must be designed, installed, and maintained as required by the existing recognized codes and standards and as approved by the local/state authority.

TFCA funds may not be used to pay for fuel, electricity, operation, and maintenance costs. Projects that include installation of charging stations at multi-dwelling units, transit stations, and park-and-ride lot facilities qualify for funding at a higher cost-effectiveness limit (see Policy #2).

Trip Reduction Projects

27. **Existing Ridesharing Services:** The project will provide carpool, vanpool, or other rideshare services. Projects that provide a direct or indirect financial transit or rideshare subsidy are also eligible under this category. Projects that provide a direct or indirect financial transit or rideshare subsidy *exclusively* to employees of the grantee are not eligible.

28. **Existing Shuttle/Feeder Bus Service:**

The project will reduce single-occupancy vehicle trips by providing short-distance connections. All of the following conditions must be met for a project to be eligible for TFCA funds:

- a. The service must provide direct connections between a mass transit hub (e.g., a rail or Bus Rapid Transit (BRT) station, ferry or bus terminal, or airport) and a distinct commercial or employment location.
- b. The service’s schedule, which is not limited to commute hours, must be coordinated to have a timely connection with corresponding mass transit service.
- c. The service must be available for use by all members of the public.
- d. TFCA funds may be used to fund only shuttle services to locations that are under-served and lack other comparable service. For the purposes of this policy, “comparable service” means that there exists, either currently or within the last three years, a direct, timed, and publicly accessible service that brings passengers to within one-third (1/3) mile of the proposed commercial or employment location from a mass transit hub. A proposed service will not be deemed “comparable” to an existing service if the passengers’ proposed travel time will be at least 15 minutes shorter and at least 33% shorter than the existing service’s travel time to the proposed destination.
- e. Reserved.
- f. Grantees must be either: (1) a public transit agency or transit district that directly operates the shuttle/feeder bus service; or (2) a city, county, or any other public agency.
- g. Applicants must submit a letter of concurrence from all transit districts or transit agencies that provide service in the area of the proposed route, certifying that the service does not conflict with existing service.
- h. Each route must meet the cost-effectiveness requirement in Policy #2. Projects that would operate in Highly Impacted Communities or Episodic Areas as defined in the Air District Community Air Risk Evaluation (CARE) Program, or in Priority Development Areas (PDAs), may qualify for funding at a higher cost-effectiveness limit (see Policy #2).

29. **Pilot Projects:**

a. **Pilot Shuttle/Feeder Bus Service Projects:**

These projects are new shuttle/feeder bus service routes that are at least 70% unique and where no other service was provided within the past three years. In addition to meeting the conditions listed in Policy #28.a.-h. for shuttle/feeder bus service, project applicants must also comply with the following application criteria and agree to comply with the project implementation requirements:

- i. Demonstrate the project will reduce single-occupancy vehicle trips and result in a reduction in emissions of criteria pollutants.

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Proposed TFCA County Program Manager Fund Policies for FYE 2021

- ii. Provide data and/or other evidence demonstrating the public's need for the service, including a demand assessment survey and letters of support from potential users.
- iii. Provide a written plan showing how the service will be financed in the future and require minimal, if any, TFCA funds to maintain its operation after the pilot period;
- iv. Provide a letter from the local transit agency denying service to the project's proposed service area, which includes the basis for denial of service to the proposed areas. The applicant must demonstrate that the project applicant has attempted to coordinate service with the local service provider and has provided the results of the demand assessment survey to the local transit agency. The applicant must provide the transit service provider's evaluation of the need for the shuttle service to the proposed area. Pilot projects located in Highly Impacted Communities as defined in the Air District CARE Program and/or a Planned or Potential PDA may receive a maximum of three years of TFCA Funds under the Pilot designation. For these projects, the project applicants understand and must agree that such projects will be evaluated every year, and continued funding will be contingent upon the projects meeting the following requirements:
 - 1. During the first year and by the end of the second year of operation, projects must not exceed a cost-effectiveness of \$500,000/ton, and
 - 2. By the end of the third year of operation, projects must meet all of the requirements, including cost-effectiveness limit, of Policy #28.a.-h. (existing shuttles).
- v. Projects located outside of CARE areas and PDAs may receive a maximum of two years of TFCA Funds under this designation. For these projects, the project applicants understand and must agree that such projects will be evaluated every year, and continued funding will be contingent upon the projects meeting the following requirements:
 - 1. By the end of the first year of operation, projects shall meet a cost-effectiveness of \$250,000/ton, and
 - 2. By the end of the second year of operation, projects shall meet all of the requirements, including cost-effectiveness limit, of Policy #28.a.-h. (existing shuttles).

b. Pilot Trip Reduction:

The project will reduce single-occupancy commute-hour vehicle trips by encouraging mode-shift to other forms of shared transportation. Pilot projects are defined as projects that serve an area where no similar service was available within the past three years, or will result in significantly expanded service to an existing area. Funding is designed to provide the necessary initial capital to a public agency for the start-up of a pilot project so that by the end of the third year of the trip reduction project's operation, the project will be financially self-sustaining or require minimal public funds, such as grants, to maintain its operation. All the following conditions must be met for a project to be eligible for TFCA funds:

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- i. Applicants must demonstrate the project will reduce single-occupancy commute-hour vehicle trips and result in a reduction in emissions of criteria pollutants;
- ii. The proposed service must be available for use by all members of the public;
- iii. Applicants must provide a written plan showing how the service will be financed in the future and require minimal, if any, TFCA funds to maintain its operation by the end of the third year;
- iv. If the local transit provider is not a partner, the applicant must demonstrate that they have attempted to have the service provided by the local transit agency. The transit provider must have been given the first right of refusal and determined that the proposed project does not conflict with existing service;
- v. Applicants must provide data and any other evidence demonstrating the public's need for the service, including a demand assessment survey and letters of support from potential users;
- vi. Pilot trip reduction projects that propose to provide ridesharing service projects must comply with all applicable requirements in policy #27.

30. Bicycle Projects:

New bicycle facility projects or upgrades to an existing bicycle facility that are included in an adopted countywide bicycle plan, Congestion Management Program (CMP), countywide transportation plan (CTP), city plan, or the Metropolitan Transportation Commission's (MTC) Regional Bicycle Plan are eligible to receive TFCA funds. Projects that are included in an adopted city general plan or area-specific plan must specify that the purpose of the bicycle facility is to reduce motor vehicle emissions or traffic congestion.

a. Bicycle Parking:

The project will expand the public's access to bicycle parking. The electronic bicycle lockers and bicycle racks must be publicly accessible and available for use by all members of the public.

Eligible projects are limited to the following types of bike parking facilities that result in motor vehicle emission reductions:

- i. Bicycle racks, including bicycle racks on transit buses, trains, shuttle vehicles, and ferry vessels;
- ii. Electronic bicycle lockers;
- iii. Capital costs for attended bicycle storage facilities; and
- iv. Purchase of two-wheeled or three-wheeled vehicles (self-propelled or electric), plus mounted equipment required for the intended service and helmets.

b. Bikeways:

- i. Class I Bikeway (bike path), new or upgrade improvement from Class II or Class III bikeway;
- ii. New Class II Bikeway (bike lane);
- iii. New Class III Bikeway (bike route);

- iv. Class IV Bikeway (separated bikeway), new or upgrade improvement from Class II or Class III bikeway;

All bicycle facility projects must, where applicable, be consistent with design standards published in the California Highway Design Manual, or conform to the provisions of the Protected Bikeway Act of 2014.

31. Bike Share:

Projects that make bicycles available to individuals for shared use for completing first- and last-mile trips in conjunction with regional transit and stand-alone short distance trips are eligible for TFCA funds, subject to all of the following conditions:

- a. Projects must either increase the fleet size of existing service areas or expand existing service areas to include new Bay Area communities.
- b. Projects must have a completed and approved environmental plan and a suitability study demonstrating the viability of bicycle sharing.
- c. Projects must have shared membership and/or be interoperable with the Bay Area Bike Share (BABS) project when they are placed into service, in order to streamline transit for end users by reducing the number of separate operators that would comprise bike trips. Projects that meet one or more of the following conditions are exempt from this requirement:
 - i. Projects that do not require membership or any fees for use, or
 - ii. Projects that were provided funding under MTC's Bike Share Capital Program to start a new or expand an existing bike share program; or
 - iii. Projects that attempted to coordinate with, but were refused by, the current BABS operator to have shared membership or be interoperable with BABS. Applicants must provide documentation showing proof of refusal.

Projects may be awarded FYE 2021 TFCA funds to pay for up to five years of operations.

32. Arterial Management:

Arterial management grant applications must identify a specific arterial segment and define what improvement(s) will be made to affect traffic flow on the identified arterial segment. Projects that provide routine maintenance (e.g., responding to citizen complaints about malfunctioning signal equipment) are not eligible to receive TFCA funds. Incident management projects on arterials are eligible to receive TFCA funds. Transit improvement projects include, but are not limited to, bus rapid transit and transit priority projects. Signal timing projects are eligible to receive TFCA funds. Each arterial segment must meet the cost-effectiveness requirement in Policy #2.

33. Smart Growth/Traffic Calming:

Physical improvements that support development projects and/or calm traffic, resulting in motor vehicle emission reductions, are eligible for TFCA funds, subject to the following conditions:

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Proposed TFCA County Program Manager Fund Policies for FYE 2021**

- a. The development project and the physical improvements must be identified in an approved area-specific plan, redevelopment plan, general plan, bicycle plan, pedestrian plan, traffic-calming plan, or other similar plan.
- b. The project must implement one or more transportation control measures (TCMs) in the most recently adopted Air District plan for State and national ambient air quality standards. Pedestrian projects are eligible to receive TFCA funds.
- c. The project must have a completed and approved environmental plan. If a project is exempt from preparing an environmental plan as determined by the public agency or lead agency, then that project has met this requirement.

Traffic calming projects are limited to physical improvements that achieve motor vehicle emission reductions by designing and improving safety conditions for pedestrians, bicyclists or transit riders in residential retail, and employment areas.

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Proposed TFCA County Program Manager Fund Policies for FYE 2021
(redlined version of Board-approved TFCA CPM Fund Policies for FYE 2020)**

The following Policies apply to the Bay Area Air Quality Management District’s (Air District) Transportation Fund for Clean Air (TFCA) County Program Manager Fund for fiscal year ending (FYE) 2021~~0~~.

BASIC ELIGIBILITY

- Reduction of Emissions:** Only projects that result in the reduction of motor vehicle emissions within the Air District’s jurisdiction are eligible.

Projects must conform to the provisions of the California Health and Safety Code (HSC) sections 44220 et seq. and these Air District Board of Directors adopted TFCA County Program Manager Fund Policies.

Projects must achieve surplus emission reductions, i.e., reductions that are beyond what is required through regulations, ordinances, contracts, and other legally binding obligations at the time of the execution of a grant agreement between the County Program Manager and the grantee. Projects must also achieve surplus emission reductions at the time of an amendment to a grant agreement if the amendment modifies the project scope or extends the project completion deadline.

- TFCA Cost-Effectiveness:** Projects must not exceed the maximum cost-effectiveness (C-E) limit specified in Table 1. Cost-effectiveness (\$/weighted ton) is the ratio of TFCA funds awarded to the sum of surplus emissions reduced, during a project’s operational period, of reactive organic gases (ROG), nitrogen oxides (NOx), and weighted PM10 (particulate matter 10 microns in diameter and smaller). All TFCA-generated funds (e.g., reprogrammed TFCA funds) that are awarded or applied to a project must be included in the evaluation. For projects that involve more than one independent component (e.g., more than one vehicle purchased, more than one shuttle route), each component must achieve this cost-effectiveness requirement.

County Program Manager administrative costs are excluded from the calculation of a project’s TFCA cost-effectiveness.

Table 1: Maximum Cost-Effectiveness for TFCA County Program Manager Fund Projects

Policy No.	Project Category	Maximum C-E (\$/weighted ton)
22	Alternative Fuel Light-Duty Vehicles	2500,000
23	Reserved	Reserved
24	Alternative Fuel Heavy-Duty Vehicles and Buses	2500,000
25	On-Road Goods Movement Truck and Bus Replacements	90,000
26	Alternative Fuel Infrastructure	250,000 500,000*
27	Ridesharing Projects - Existing	150,000
28.a.-h.	Shuttle/Feeder Bus Service – Existing	200,000; 250,000 for services in CARE Areas or PDAs
29.a.	Shuttle/Feeder Bus Service - Pilot	Year 1 - 250,000 Year 2 - see Policy #28.a.-h.

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	Shuttle/Feeder Bus Service – Pilot in CARE Areas or PDAs	Years 1 & 2 - 500,000 Year 3 - see Policy #28.a.-h.
29.b.	Pilot Trip Reduction	500,000
30	Bicycle Projects <u>Bikeways</u> <u>Bicycle Parking</u>	500,000 <u>250,000</u>
31	Bike Share	500,000
32	Arterial Management	175,000
33	Smart Growth/Traffic Calming	175,000

*This higher C-E limit is for projects that install electric vehicle charging stations at multi-dwelling units, transit stations, and park-and-ride lot facilities.

3. **Eligible Projects and Case-by-Case Approval:** Eligible projects are those that conform to the provisions of the HSC section 44241, Air District Board-adopted policies, and Air District guidance. On a case-by-case basis, County Program Managers must receive approval by the Air District for projects that are authorized by the HSC section 44241 and achieve Board-adopted TFCA cost-effectiveness but do not fully meet other Board-adopted Policies.
4. **Consistent with Existing Plans and Programs:** All projects must comply with the Transportation Control and Mobile Source Control Measures included in the Air District's most recently approved strategies for achieving and maintaining State and national ozone standards, those plans and programs established pursuant to HSC sections 40233, 40717, and 40919; and, when specified, other adopted federal, State, regional, and local plans and programs.
5. **Eligible Recipients:** Grant recipients must be responsible for the implementation of the project, have the authority and capability to complete the project, and be an applicant in good standing with the Air District (Policies #8-10).
 - a. **Public agencies** are eligible to apply for all project categories.
 - b. **Non-public entities** are only eligible to apply for new alternative-fuel (light, medium, and heavy-duty) vehicle and infrastructure projects, and advanced technology demonstrations that are permitted pursuant to HSC section 44241(b)(7).
6. **Readiness:** Projects must commence by the end of calendar year 202~~10~~. For purposes of this policy, “commence” means a tangible preparatory action taken in connection with the project’s operation or implementation, for which the grantee can provide documentation of the commencement date and action performed. “Commence” includes, but is not limited to, the issuance of a purchase order to secure project vehicles and equipment, commencement of shuttle/feeder bus and ridesharing service, or the delivery of the award letter for a construction contract.
7. **Maximum Two Years Operating Costs for Service-Based Projects:** Unless otherwise specified in policies #22 through #33, TFCA County Program Manager Funds may be used to support up to two years of operating costs for service-based projects (e.g., ridesharing, shuttle and feeder bus service). Grant applicants that seek TFCA funds for additional years must reapply for funding in the subsequent funding cycles.

APPLICANT IN GOOD STANDING

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8. **Independent Air District Audit Findings and Determinations:** Grantees who have failed either the ~~fiscal-financial statement~~ audit or the ~~performance-compliance~~ audit for a prior TFCA-funded project awarded by either County Program Managers or the Air District are excluded from receiving an award of any TFCA funds for three (3) years from the date of the Air District's final audit determination in accordance with HSC section 44242 or for a duration determined by the Air District Air Pollution Control Officer (APCO). Existing TFCA funds already awarded to the project sponsor will not be released until all audit recommendations and remedies have been satisfactorily implemented. A failed ~~fiscal-financial statement~~ audit means a final audit report that includes an uncorrected audit finding that confirms an ineligible expenditure of TFCA funds. A failed ~~performance-compliance~~ audit means that the program or project was not implemented in accordance with the applicable Funding Agreement or grant agreement.

A failed ~~fiscal-financial statement~~ or ~~performance-compliance~~ audit of the County Program Manager or its grantee may subject the County Program Manager to a reduction of future revenue in an amount equal to the amount which was inappropriately expended pursuant to the provisions of HSC section 44242(c)(3).
9. **Authorization for County Program Manager to Proceed:** Only a fully executed Funding Agreement (i.e., signed by both the Air District and the County Program Manager) constitutes the Air District's award of County Program Manager Funds. County Program Managers may incur costs (i.e., contractually obligate itself to allocate County Program Manager Funds) only after the Funding Agreement with the Air District has been executed.
10. **Maintain Appropriate Insurance:** Both the County Program Manager and each grantee must obtain and maintain general liability insurance, workers compensation insurance, and additional insurance as appropriate for specific projects, with required coverage amounts provided in Air District guidance and final amounts specified in the respective grant agreements.

INELIGIBLE PROJECTS

11. **Duplication:** Projects that have previously received TFCA Regional or County Program Manager funds and do not propose to achieve additional emission reductions are not eligible.
12. **Planning Activities:** The costs of preparing or conducting feasibility studies are not eligible. Planning activities are not eligible unless they are directly related to the implementation of a specific project or program ~~that result in emission reductions~~.
13. **Reserved.**
14. **Cost of Developing Proposals:** The costs to prepare grant applications are not eligible.

USE OF TFCA FUNDS

15. **Combined Funds:** TFCA County Program Manager Funds may not be combined with TFCA Regional Funds to fund a County Program Manager Fund project. Projects that are funded by the TFCA County Program Manager Fund are not eligible for additional funding from other funding sources that claim emissions reduction credits. However, County Program Manager-funded projects may be combined with funds that do not require emissions reductions for funding eligibility.
16. **Administrative Costs:** The County Program Manager may not expend more than 6.25 percent of its County Program Manager Funds for its administrative costs. The County Program Manager's costs to prepare and execute its Funding Agreement with the Air District are eligible administrative costs. Interest earned on County Program Manager Funds shall not be included in the calculation of the

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administrative costs. To be eligible for reimbursement, administrative costs must be clearly identified in the expenditure plan application and in the Funding Agreement, and must be reported to the Air District.

17. **Expend Funds within Two Years:** County Program Manager Funds must be expended within two (2) years of receipt of the first transfer of funds from the Air District to the County Program Manager in the applicable fiscal year, unless a County Program Manager has made the determination based on an application for funding that the eligible project will take longer than two years to implement. Additionally, a County Program Manager may, if it finds that significant progress has been made on a project, approve no more than two one-year schedule extensions for a project. Any subsequent schedule extensions for projects can only be given on a case-by-case basis, if the Air District finds that significant progress has been made on a project, and the Funding Agreement is amended to reflect the revised schedule.
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ELIGIBLE PROJECT CATEGORIES

Clean Air Vehicle Projects

22. Alternative Fuel Light-Duty Vehicles:

These projects are intended to accelerate the deployment of qualifying alternative fuel vehicles that operate within the Air District’s jurisdiction. All of the following conditions must be met for a project to be eligible for TFCA funds:

- a. Vehicles must be new (model year 2019-2020 or newer), and have a gross vehicle weight rating (GVWR) of 14,000-8,500 lbs. or lighter/lower.
- b. Vehicles must be:
 - i. hybrid-electric, electric, or fuel cell vehicles that are approved by the California Air Resources Board (CARB) for on-road use
 - ii. neighborhood electric vehicles (NEV) as defined in the California Vehicle Code.
- c. Vehicles must be maintained and operated within the Air District’s jurisdiction.
- d. The amount of TFCA funds awarded may not exceed 90% of the project’s cost after all other grants and applicable manufacturer and local/state/federal rebates and discounts are applied.

Vehicles that are solely powered by gasoline, diesel, or natural gas, and retrofit projects are not eligible.

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23. **Reserved.**

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These projects are intended to accelerate the deployment of qualifying alternative fuel vehicles that operate within the Air District's jurisdiction by encouraging the replacement of older, compliant trucks and buses with the cleanest available technology. If replacing heavy-duty vehicles and buses with light-duty vehicles, light-duty vehicles must meet Policy #22. All of the following conditions must be met for a project to be eligible for TFCA Funds:

- a. Each vehicles must be new (model year 2019 or newer), and either have a GVWR greater than 14,0008,500 lbs. or are classified as urban buses.
- b. Eligible vehicles must be hybrid electric, electric, or hydrogen fuel cell vehicles approved by the CARB.
- b.—
- c. Vehicles must be maintained and operated within the Air District's jurisdiction.
- d. The total amount of TFCA funds awarded combined with may not exceed 90% of the project's cost after all other grants and applicable manufacturer and local/state/federal rebates and discounts are applied may not exceed 90% of the project's eligible cost.

Vehicles that are solely powered by gasoline, diesel, or natural gas and retrofit projects are not eligible.

Grantees may request authorization of up to 100% of the TFCA Funds awarded for each vehicle to be used to pay for costs directly related to the purchase and installation of alternative fueling infrastructure and/or equipment used to power the new vehicle.

Projects that seek to replace a vehicle in the same weight-class as the proposed new vehicle, may qualify for additional TFCA funding. Costs related to the scrapping and/or dismantling of the existing vehicle are not eligible for reimbursement with TFCA funds.

25. **On-Road Goods Movement Truck ~~and Bus~~ Replacements:** The project will replace Class 6, Class 7, and Class 8 diesel-powered trucks ~~and buses~~ that have a gross vehicle weight rating (GVWR) of 19,501 lbs. or greater (per vehicle weight classification definition used by Federal Highway Administration (FHWA) with new or used trucks ~~and buses~~ that have an engine certified to the 2010 CARB emissions standards or cleaner. Eligible vehicles are those that are used for goods movement as defined by CARB. The existing truck(s) ~~or bus(es)~~ to be replaced must be registered with the California Department of Motor Vehicles (DMV) to an address within the Air District's jurisdiction, and must be scrapped after replacement.

26. **Alternative Fuel Infrastructure:**

Eligibility: Eligible refueling infrastructure projects include new dispensing and charging facilities, or additional equipment or upgrades and improvements that expand access to existing alternative fuel fueling/charging sites (i.e., electric vehicle, hydrogen). This includes upgrading or modifying private

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fueling/charging sites or stations to allow public and/or shared fleet access. TFCA funds may be used to cover the cost of equipment and installation. TFCA funds may also be used to upgrade infrastructure projects previously funded with TFCA funds as long as the equipment was maintained and has exceeded the duration of its useful life after being placed into service.

Equipment and infrastructure must be designed, installed, and maintained as required by the existing recognized codes and standards and as approved by the local/state authority.

TFCA funds may not be used to pay for fuel, electricity, operation, and maintenance costs. Projects that include installation of charging stations at multi-dwelling units, transit stations, and park-and-ride lot facilities qualify for funding at a higher cost-effectiveness limit (see Policy #2).

Trip Reduction Projects

27. Existing Ridesharing Services: The project will provide carpool, vanpool, or other rideshare services. Projects that provide a direct or indirect financial transit or rideshare subsidy are also eligible under this category. Projects that provide a direct or indirect financial transit or rideshare subsidy *exclusively* to employees of the grantee are not eligible.

28. Existing Shuttle/Feeder Bus Service:

These projects ~~are intended to will~~ reduce single-occupancy vehicle trips by providing short-distance connections. All of the following conditions must be met for a project to be eligible for TFCA funds:

- a. The service must provide direct connections between a mass transit hub (e.g., a rail or Bus Rapid Transit (BRT) station, ferry or bus terminal, or airport) and a distinct commercial or employment location.
- b. The service's schedule, which is not limited to commute hours, must be coordinated to have a timely connection with corresponding mass transit service.
- c. The service must be available for use by all members of the public.
- d. TFCA funds may be used to fund only shuttle services to locations that are under-served and lack other comparable service. For the purposes of this policy, "comparable service" means that there exists, either currently or within the last three years, a direct, timed, and publicly accessible service that brings passengers to within one-third (1/3) mile of the proposed commercial or employment location from a mass transit hub. A proposed service will not be deemed "comparable" to an existing service if the passengers' proposed travel time will be at least 15 minutes shorter and at least 33% shorter than the existing service's travel time to the proposed destination.
- e. Reserved.
- f. Grantees must be either: (1) a public transit agency or transit district that directly operates the shuttle/feeder bus service; or (2) a city, county, or any other public agency.
- g. Applicants must submit a letter of concurrence from all transit districts or transit agencies that provide service in the area of the proposed route, certifying that the service does not conflict with existing service.
- h. Each route must meet the cost-effectiveness requirement in Policy #2. Projects that would operate in Highly Impacted Communities or Episodic Areas as defined in the Air

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District Community Air Risk Evaluation (CARE) Program, or in Priority Development Areas (PDAs), may qualify for funding at a higher cost-effectiveness limit (see Policy #2).

29. Pilot Projects:

a. Pilot Shuttle/Feeder Bus Service Projects:

These projects are new shuttle/feeder bus service routes that are at least 70% unique and where no other service was provided within the past three years. In addition to meeting the conditions listed in Policy #28.a.-h. for shuttle/feeder bus service, project applicants must also comply with the following application criteria and agree to comply with the project implementation requirements:

- i. Demonstrate the project will reduce single-occupancy vehicle trips and result in a reduction in emissions of criteria pollutants.
- ~~ii.~~ Provide data and/or other evidence demonstrating the public's need for the service, including a demand assessment survey and letters of support from potential users. ~~Project applicants must agree to conduct a passenger survey for each year of operation.~~
- ~~iii.~~ Provide a written plan showing how the service will be financed in the future and require minimal, if any, TFCA funds to maintain its operation after the pilot period; documentation of plans for financing the service in the future;
- ~~iii.~~ Provide a letter from the local transit agency denying service to the project's proposed service area, which includes the basis for denial of service to the proposed areas. The applicant must demonstrate that the project applicant has attempted to coordinate service with the local service provider and has provided the results of the demand assessment survey to the local transit agency. The applicant must provide the transit service provider's evaluation of the need for the shuttle service to the proposed area.
- iv. Pilot projects located in Highly Impacted Communities as defined in the Air District CARE Program and/or a Planned or Potential PDA may receive a maximum of three years of TFCA Funds under the Pilot designation. For these projects, the project applicants understand and must agree that such projects will be evaluated every year, and continued funding will be contingent upon the projects meeting the following requirements:
 1. During the first year and by the end of the second year of operation, projects must not exceed a cost-effectiveness of \$500,000/ton, and
 2. By the end of the third year of operation, projects must meet all of the requirements, including cost-effectiveness limit, of Policy #28.a.-h. (existing shuttles).
- v. Projects located outside of CARE areas and PDAs may receive a maximum of two years of TFCA Funds under this designation. For these projects, the project applicants understand and must agree that such projects will be evaluated every year, and continued funding will be contingent upon the projects meeting the following requirements:

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1. By the end of the first year of operation, projects shall meet a cost-effectiveness of \$250,000/ton, and
2. By the end of the second year of operation, projects shall meet all of the requirements, including cost-effectiveness limit, of Policy #28.a.-h. (existing shuttles).

b. Pilot Trip Reduction:

The project will reduce single-occupancy commute-hour vehicle trips by encouraging mode-shift to other forms of shared transportation. Pilot projects are defined as projects that serve an area where no similar service was available within the past three years, or will result in significantly expanded service to an existing area. Funding is designed to provide the necessary initial capital to a public agency for the start-up of a pilot project so that by the end of the third year of the trip reduction project's operation, the project will be financially self-sustaining or require minimal public funds, such as grants, to maintain its operation. All the following conditions must be met for a project to be eligible for TFCA funds:

- i. Applicants must demonstrate the project will reduce single-occupancy commute-hour vehicle trips and result in a reduction in emissions of criteria pollutants;
- ii. The proposed service must be available for use by all members of the public;
- iii. Applicants must provide a written plan documenting showing how the service will be financed in the future and require minimal, if any, TFCA steps that would be taken to ensure that the project will be financially self-sustaining or require minimal public funds to maintain its operation by the end of the third year;
- iv. If the local transit provider is not a partner, the applicant must demonstrate that they have attempted to have the service provided by the local transit agency. The transit provider must have been given the first right of refusal and determined that the proposed project does not conflict with existing service;
- v. Applicants must provide data and any other evidence demonstrating the public's need for the service, including a demand assessment survey and letters of support from potential users;
- vi. Pilot trip reduction projects that propose to provide ridesharing service projects must comply with all applicable requirements in policy #27.

30. Bicycle Projects:

New bicycle facility projects or upgrades to an existing bicycle facility that are included in an adopted countywide bicycle plan, Congestion Management Program (CMP), countywide transportation plan (CTP), city plan, or the Metropolitan Transportation Commission's (MTC) Regional Bicycle Plan are eligible to receive TFCA funds. Projects that are included in an adopted city general plan or area-specific plan must specify that the purpose of the bicycle facility is to reduce motor vehicle emissions or traffic congestion.

a. Bicycle Parking:

The project will expand the public's access to bicycle parking. The electronic bicycle lockers and bicycle racks must be publicly accessible and available for use by all members of the public.

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Eligible projects are limited to the following types of ~~bike parking facilities, cycle facilities for public use~~ that result in motor vehicle emission reductions:

- ~~i. Class I Bikeway (bike path), new or upgrade improvement from Class II or Class III bikeway;~~
- ~~ii. New Class II Bikeway (bike lane);~~
- ~~iii. New Class III Bikeway (bike route);~~
- ~~iv. Class IV Bikeway (separated bikeway), new or upgrade improvement from Class II or Class III bikeway;~~
- v.i. Bicycle racks, including bicycle racks on transit buses, trains, shuttle vehicles, and ferry vessels;
- vi.ii. Electronic bicycle lockers;
- vii.iii. Capital costs for attended bicycle storage facilities; and
- iv. Purchase of two-wheeled or three-wheeled vehicles (self-propelled or electric), plus mounted equipment required for the intended service and helmets.

b. Bikeways:

- i. Class I Bikeway (bike path), new or upgrade improvement from Class II or Class III bikeway;
- ii. New Class II Bikeway (bike lane);
- iii. New Class III Bikeway (bike route);
- iv. Class IV Bikeway (separated bikeway), new or upgrade improvement from Class II or Class III bikeway;

All bicycle facility projects must, where applicable, be consistent with design standards published in the California Highway Design Manual, or conform to the provisions of the Protected Bikeway Act of 2014.

31. Bike Share:

Projects that make bicycles available to individuals for shared use for completing first- and last-mile trips in conjunction with regional transit and stand-alone short distance trips are eligible for TFCA funds, subject to all of the following conditions:

- a. Projects must either increase the fleet size of existing service areas or expand existing service areas to include new Bay Area communities.
- b. Projects must have a completed and approved environmental plan and a suitability study demonstrating the viability of bicycle sharing.
- c. Projects must have shared membership and/or be interoperable with the Bay Area Bike Share (BABS) project when they are placed into service, in order to streamline transit for end users by reducing the number of separate operators that would comprise bike trips.

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Projects that meet one or more of the following conditions are exempt from this requirement:

- i. Projects that do not require membership or any fees for use, or
- ii. Projects that were provided funding under MTC's Bike Share Capital Program to start a new or expand an existing bike share program; or.
- iii. Projects that attempted to coordinate with, but were refused by, the current BABS operator to have shared membership or be interoperable with BABS. Applicants must provide documentation showing proof of refusal.

Projects may be awarded FYE 2021~~0~~ TFCA funds to pay for up to five years of operations.

32. Arterial Management:

Arterial management grant applications must identify a specific arterial segment and define what improvement(s) will be made to affect traffic flow on the identified arterial segment. Projects that provide routine maintenance (e.g., responding to citizen complaints about malfunctioning signal equipment) are not eligible to receive TFCA funds. Incident management projects on arterials are eligible to receive TFCA funds. Transit improvement projects include, but are not limited to, bus rapid transit and transit priority projects. Signal timing projects are eligible to receive TFCA funds. Each arterial segment must meet the cost-effectiveness requirement in Policy #2.

33. Smart Growth/Traffic Calming:

Physical improvements that support development projects and/or calm traffic, resulting in motor vehicle emission reductions, are eligible for TFCA funds, subject to the following conditions:

- a. The development project and the physical improvements must be identified in an approved area-specific plan, redevelopment plan, general plan, bicycle plan, pedestrian plan, traffic-calming plan, or other similar plan.
- b. The project must implement one or more transportation control measures (TCMs) in the most recently adopted Air District plan for State and national ambient air quality standards. Pedestrian projects are eligible to receive TFCA funds.
- c. The project must have a completed and approved environmental plan. If a project is exempt from preparing an environmental plan as determined by the public agency or lead agency, then that project has met this requirement.

Traffic calming projects are limited to physical improvements that achieve ~~reduce motor vehicle~~ ~~vehicle~~ ~~speed~~ emission reductions by designing and improving safety conditions for pedestrians, bicyclists or transit riders in residential retail, and employment areas.

Comments Received and Staff's Responses to Draft Proposed Updates to TFCA County Program Manager Fund Policies for FYE 2021

Committer and Organization	Comments received from County Program Managers (CPMs) between February 20 – August 28, 2019	Air District Staff's Responses
<p>Jacki Taylor, Alameda County Transportation Commission</p>	<p>Policy 2. TFCA Cost-Effectiveness</p> <p>Staff supports the proposed increases to the Cost-Effectiveness (C-E) Maximums for various project categories.</p> <p>Staff suggests also including an increase to the cost-effectiveness maximum of \$500K/ton for bike parking/storage projects to match the recent increase to \$500K/ton for new bike facilities. Although the current limit of \$250K/ton for bike parking may be sufficient to fund a good portion of the total cost of a basic bike rack project, this is not the case for lockers and other controlled-access bike parking facilities, which are needed at mass transit hubs and stations to support a commute mode shift from SOV to bikes and transit.</p>	<p>Noted. Staff will work with County Program Managers to assess the cost-effectiveness limit for bike parking facilities.</p>
	<p>Policy 8. Independent Air District Audit Findings and Determinations</p> <p>Staff suggests renaming the "Performance Audit" to "Compliance Audit" to more accurately reflect the purpose of the audit.</p>	<p>Staff revised the language to clarify the purpose of the independent Air District audit.</p>
	<p>Policy 8.b. Independent Air District Audit Findings and Determinations</p> <p>Staff suggests removing item "8b." It seems that the Air District should not reduce or withhold a CPM's future TFCA funding if a project that has been implemented is consistent with the approved scope, but does not</p>	<p>Staff removed the proposed language.</p>

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Committer and Organization	Comments received from County Program Managers (CPMs) between February 20 – August 28, 2019	Air District Staff's Responses
	<p>achieve the amount of emissions reductions estimated at the time of the award of TFCA funding. For example, under 8b., if installed EV fueling infrastructure is underutilized during the established performance period, this could result in TFCA needing to be repaid.</p>	
<p>Mike Pickford, San Francisco County Transportation Authority</p>	<p>Policy 1. Reduction of Emissions "surplus emissions" clause. Given the progressive state and city policies on emissions reductions, this restriction greatly reduces eligible projects or parts of projects that can qualify for TFCA funding.</p>	<p>Under California Health and Safety Code (HSC) sections 44220 et seq., TFCA funding shall be used solely to fund projects that reduce air pollution or achieve surplus emission reductions from motor vehicles.</p>
	<p>Policy 2. TFCA Cost-Effectiveness We are supportive of the proposed increase in the cost effectiveness limit (from \$250,000 to \$500,000) for multiple project types, however, we believe that this increase should also apply to Bike Parking. Adequate bike parking is important for encouraging active transportation for non-recreational trips. In San Francisco, costs to site and install bike racks require additional funding well beyond the maximum cost effective TFCA amount per rack.</p>	<p>Staff will work with County Program Managers to assess the cost-effectiveness limit for bike parking facilities.</p>
	<p>Policy 8.b. Independent Air District Audit Findings and Determinations We recommend deleting subsection 8b. There may be circumstances when a project fails to result in surplus emissions reductions, even though the grantee has followed the rules and implemented the project, as</p>	<p>Staff removed the proposed language.</p>

Comments Received and Staff's Responses to Draft Proposed Updates to TFCA County Program Manager Fund Policies for FYE 2021

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	<p>designed. This subsection implies that a grantee would incur the risk of losing funds due to circumstances outside their control.</p>	
	<p>Policy 12. Planning Activities</p> <p>We recommend striking the second requirement (“directly contributing to emissions reductions”) because planning activities themselves are unlikely to result in, or directly contribute to emissions reductions. The purpose of planning activities is to support and enable project implementation and the direct nexus with the specific project is already required by the first clause.</p> <p>Planning Activities: based on the discussion here (and in many program guidelines) any pre-construction or parts of the project that do not directly relate to incremental improvement are not eligible. In order to effectively use TFCA funds, it would be beneficial to relax these requirements to be able to move forward projects that serve the emissions goals forward as a holistic project.</p>	<p>Staff revised the proposed language. Pursuant to California Health and Safety Code (HSC) section 44241, TFCA funds cannot be used for any planning activities that are not directly related to the implementation of a specific project or program.</p>
	<p>Policy 24. Alternative Fuel Heavy-Duty Vehicles and Buses</p> <p>The strict correlation to CE for these projects reduces the potential to apply for funds in a geographically constrained service area. When combined with the surplus emissions clause in policy number 1, this particularly impacts San Francisco, which has relatively clean fleets already as well as a municipal service area.</p>	<p>Noted. Staff will work with County Program Managers to assess the cost-effectiveness limit for heavy-duty vehicle projects. Pursuant to California Health and Safety Code (HSC) section 44241, the Air District must adopt cost-effectiveness criteria that maximize emissions reductions and public health benefits, thus programs and projects funded by TFCA must comply with the applicable cost-effectiveness limits set forth in the policies to ensure the maximum emissions reductions and public health benefits achievable are met.</p>

Comments Received and Staff's Responses to Draft Proposed Updates to TFCA County Program Manager Fund Policies for FYE 2021

Committer and Organization	Comments received from County Program Managers (CPMs) between February 20 – August 28, 2019	Air District Staff's Responses
	<p>However, the City's efforts to upgrade its fleets to zero emissions would arguably align with the goals of the program, which are to bring the cleanest technologies to bear on the Bay Area.</p>	
	<p>Policy 26. Alternative Fuel Infrastructure</p> <p>Additionally, the relatively poor CE performance of the infrastructure that is required to run these clean fleets provides a funding conundrum wherein the agency has to fund one to be able to apply for the other. While infrastructure does not inherently provide vehicle emissions reductions, it is required for the effective implementation of new technologies.</p> <p>We appreciated the change to the clause formerly requiring public access to charging infrastructure. However, the funding caps on this category are overly restrictive when compared to actual proposed costs of these projects for transit agency non-revenue or transit use. In a recent attempt to apply for TFCA CPM funds for this use, the resulting application would have funded less than 10% of the total project cost. We propose an increase to the funding caps and/or the CE threshold by a significant amount. While this infrastructure does not result in direct reductions of emissions, it is a necessary investment to utilize cleaner vehicles.</p>	<p>Staff will work with the County Program Managers to assess the cost-effectiveness limit of Alternative Fuel Infrastructure projects. Projects seeking greater grant support for alternative fuel infrastructure can currently qualify for funding at a higher cost-effectiveness limit by installing charging stations at multi-unit dwellings, transit stations, and park-and-ride facilities. Also, Policies 22 and 24 allow up to 100% of the TFCA Funds awarded for each vehicle to be used to pay for costs directly related to the purchase and installation of alternative fueling infrastructure and/or equipment used to power the new vehicle.</p>
	<p>Policy 28. Existing Shuttle/Feeder Bus Service and Policy 29. Pilot Projects</p>	<p>Only Pilot Shuttle/Feeder Bus Service Projects (Policy 29.a.) need to meet the conditions listed in Policy 28 in addition to its own requirements. Pilot Trip Reduction projects (Policy 29.b.) do not need to additionally meet the conditions listed in Policy 28, nor do they require a dynamic route or service.</p>

Comments Received and Staff's Responses to Draft Proposed Updates to TFCA County Program Manager Fund Policies for FYE 2021

Committer and Organization	Comments received from County Program Managers (CPMs) between February 20 – August 28, 2019	Air District Staff's Responses
	<p>Requirements in policies 28 and 29 (which requires adherence to policies in 28) make it exceptionally difficult to design an eligible project that also meets the needs of the service area. For example, 28a requires specific end points of a route, while recent Pilot Trip reduction cycles have required a dynamic route and/or schedule.</p>	
	<p>Policy 29.a.iii. Pilot Shuttle/Feeder Bus Service Projects</p> <p>We suggest either eliminating this sub-policy 29iii entirely or revising it to simply require a funding plan for service in the future. The requirement that projects must be financially self-sustaining or require minimal public funds to maintain operations may not be appropriate for all projects (e.g. projects in disadvantaged communities), but that shouldn't prohibit the pilot projects from seeking TFCA grant funding and particularly if there is a commitment from the local jurisdiction to sustain operations using identified, potential resources. Additionally, the term "minimal public funds" is not defined. "Minimal" relative to typical public transit service subsidies could be substantial.</p>	<p>Staff revised the proposed language.</p>
	<p>Policy 29.b.iii. Pilot Trip Reduction</p> <p>Similar to above, the requirements may not be appropriate for all projects and "minimal" is not defined.</p>	<p>Staff revised the proposed language.</p>

Comments Received and Staff's Responses to Draft Proposed Updates to TFCA County Program Manager Fund Policies for FYE 2021

Committer and Organization	Comments received from County Program Managers (CPMs) between February 20 – August 28, 2019	Air District Staff's Responses
<p>Bill Hough, Santa Clara Valley Transportation Authority</p>	<p>Policy 2. TFCA Cost-Effectiveness The action taken by BAAQMD at the May 1 meeting increased the CE limit for 29.b to 500,000. The FYE2021 TFCA County Program Manager should be updated to be consistent with the May 1 action.</p>	<p>Staff carried over the increased cost-effectiveness limit for Pilot Trip Reduction projects (under policy 29.b.).</p>
	<p>Policy 2. TFCA Cost-Effectiveness I would like to propose an increase in arterial management CE from \$175,000/segment to \$250,000/segment. This would keep it in line with all of the other CE revisions in other categories.</p>	<p>Staff will work with the County Program Managers to assess the cost-effectiveness limit for Arterial Management projects.</p>
	<p>Policy 8.b. Independent Air District Audit Findings and Determinations Delete item (b) for reasons stated on the call. Items A, C and D cover misuse of funds.</p>	<p>Staff removed the proposed language.</p>
	<p>Policy 12. Planning Activities Suggest saying planning is ineligible but design (such as coming up with sites for bike racks) is eligible.</p>	<p>Staff revised the proposed language. Pursuant to California Health and Safety Code (HSC) section 44241, TFCA funds cannot be used for any planning activities that are not directly related to the implementation of a specific project or program.</p>
	<p>Policy 17. Expend Funds within Two Years I would like to submit a comment regarding policy #17, which says in part <i>County Program Manager Funds must be expended within two (2) years of receipt of the first transfer of funds from the Air District to the County</i></p>	<p>California Health and Safety Code (HSC) 44242 requires any agency that receives TFCA funds to encumber and expend those funds within two years of receipt. As mentioned in the comment, a longer time period may be authorized for an eligible project at the time of application for funding. Extensions may also be</p>

Comments Received and Staff's Responses to Draft Proposed Updates to TFCA County Program Manager Fund Policies for FYE 2021

Committer and Organization	Comments received from County Program Managers (CPMs) between February 20 – August 28, 2019	Air District Staff's Responses
	<p><i>Program Manager in the applicable fiscal year. Anecdotally, based on 13 years with the TFCA CPM program, it seems as if project sponsors are taking longer to deliver projects.</i></p> <p><i>Although Policy 17 goes on to say unless a County Program Manager has made the determination based on an application for funding that the eligible project will take longer than two years to implement, it seems as if we are processing more time extensions in recent years. You might want to check your database and/or poll the other county PMs to see if this applies across the Bay Area.</i></p> <p><i>If so, you might want to extend the default to County Program Manager Funds must be expended within three (3) years.</i></p>	<p>authorized if the County Program Manager or the Air District determines that significant progress has been made on the funded project at the time of the request for extension.</p>
	<p>Policy 30. Bicycle Projects</p> <p>Per call, suggest \$250,000 for on-street, \$500,000 for off street bikeways.</p>	<p>The maximum cost-effectiveness limit for all bikeways is \$500,000/ton. County Program Managers may choose to adopt additional criteria and lower cost-effectiveness limit to their respective programs.</p>
	<p>Policy 30. Bicycle Projects and Policy 33 Smart Growth/Traffic Calming</p> <p>We also recommend that you review and increase the cost-effectiveness limit (C-E) limit in the Category 30 Bicycle and 32 Smart Growth/Traffic Calming. The limits haven't changed in many years, while it is evident that construction costs have increased substantially in recent</p>	<p>Staff will continue to work with the County Program Managers to assess the cost-effectiveness limit for Bicycle Projects and Smart Growth/Traffic Calming projects.</p>

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Committer and Organization	Comments received from County Program Managers (CPMs) between February 20 – August 28, 2019	Air District Staff's Responses
	<p>years. The TFCA amounts eligible for many bikeway and pedestrian projects have become a smaller percentage of the total project costs, due to the increase in construction costs. An review and increase to the limits will facilitate the completion of many meaningful bicycle and pedestrian projects throughout the Bay Area.</p>	
	<p>Policy 33. Smart Growth/Traffic Calming</p> <p>Policy 33 states, in part, that <i>traffic calming projects are limited to physical improvements that reduce vehicular speed by designing and improving safety conditions for pedestrians, bicyclists or transit riders in residential retail, and employment areas.</i> This is inconsistent with the purpose of the TFCA program, which is to reduce vehicle emissions. Traffic calming measures, such as speed bumps, bulb-outs or landscaping in the roadway, lead to stop/start driving which <i>increases</i> emissions. Suggest replacing this sentence with <i>traffic calming projects are limited to improvements that reduce vehicular emissions.</i></p>	<p>Staff revised the language to emphasize the reduction of motor vehicle emissions.</p>

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Memorandum

To: Chairperson David Canepa and Members
of the Mobile Source Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: October 10, 2019

Re: Diesel Free by '33: Update on Zero-Emission Medium- and Heavy-Duty Mobile
Source Technologies

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

Diesel exhaust causes significant public health effects and accelerates climate change. The California Air Resources Board estimates that on-road diesel and off-road mobile engines comprise 54% of the State of California's total black carbon emissions, a short-lived climate pollutant that is contributing significantly to global climate change. Diesel air pollution is highly toxic and can have an immediate impact on the health of residents in communities where emissions are most concentrated.

Reducing emissions from the mobile source sector is an essential component of the Bay Area Air Quality Management District's (Air District) strategy to attain state and federal ambient air quality standards and meet state and local greenhouse gas reduction goals. Nearly 70% of the nitrogen oxides, reactive organic gases, and particulate matter emitted by mobile sources in the region are emitted from medium- and heavy-duty vehicles and equipment, which are primarily fueled by petroleum diesel. This category alone accounts for 36% of all anthropogenic criteria pollutant emissions in the San Francisco Bay Area.¹ Reducing diesel consumption by accelerating the wide-

¹ Air District 2017 Clean Air Plan, Emissions Inventory for year 2015. Mobile Sources include: Passenger Cars, Light-, Medium-, Light-Heavy-, Medium-Heavy-, Heavy-Heavy-Duty Trucks, School/Urban Buses, Motor-Homes, Motorcycles, Lawn & Garden Equipment, Transportation Refrigeration Units, Agricultural Equipment, Construction and Mining Equipment, Industrial Equipment, Light Duty Commercial Equipment, Trains, Off-Road Recreational Vehicles, Ships, Commercial Harbor Craft, Recreational Boats, and Airport Ground Support Equipment.

scale adoption of zero emission technologies in the Bay Area is one of the Air District's key strategies to reduce emissions from medium- and heavy-duty vehicles and equipment in the Bay Area.² While the Air District does not have regulatory authority over this sector, it administers approximately \$100 million annually in incentives that accelerate the early adoption of zero emission technologies of this type.

Launched in September 2018, Diesel Free by '33 is an Air District-led initiative, in a worldwide collaboration with city and county governments and industry and business leaders, to identify and adopt technologies that eliminate diesel combustion and black carbon emissions from all sources that affect our communities. Air District staff identified that a key pathway to achieve the goals of Diesel Free by '33 is to encourage a phased-in replacement of diesel-fueled vehicles and equipment with zero-emission technologies.

The attached report provides an updated summary of the status of these technologies based on a literature review and Air District staff's knowledge.

DISCUSSION

Diesel Free by '33, adopted by the Air District in 2018, established an aspirational goal and framework for how the region may eliminate diesel combustion emissions and black carbon from our communities. Signatories from city and county governments, and industry and business leaders, have joined the Air District and the State of California to showcase collective leadership in identifying and adopting innovative solutions to help eliminate diesel emissions.

A key component in developing pathways towards eliminating diesel emissions is the phased-in replacement of diesel-fueled vehicles and equipment with zero-emission alternatives as these new technologies become commercially available. In early 2018, the Air District completed an assessment of zero-emission technology options for replacing diesel combustion vehicles and equipment ("Diesel Free by '33: Summary of Available Zero-Emission Technologies and Funding Opportunities"). ***The zero-emissions technology landscape is advancing rapidly; based on the initial and updated assessments, zero-emissions options will be commercially available for most equipment and vehicle category types by 2033.***

The purpose of the attached update is to identify what zero-emission technology options are currently available and what may be available within the short, medium, or longer term. Identifying these options will help equipment owners and operators, fleet managers, policy makers, and other interested parties in developing their own pathway towards phasing in zero-emission technologies, thereby achieving Diesel Free by '33. The update includes a 2019 snapshot of

² Medium- and heavy-duty vehicles and equipment includes all on-road sources other than Passenger Cars and Light-Duty Trucks, and all off-road sources other than Lawn & Garden Equipment and Transportation Refrigeration Units.

commercially-available and demonstration-phase zero-emission technologies for mobile source vehicles and equipment and stationary source engines, and a discussion of applicable regulations and incentives that are supporting the accelerated drive to a zero-emissions future.

The attached report is structured by general equipment category, headed by a table with information on the technology readiness level status. For technologies that are commercially available, considerations and challenges of extensive deployment (e.g. limited offerings; operational constraints; cost parity; infrastructure availability) are briefly discussed. Readers can also find a table listing the manufacturers of zero-emission vehicles and equipment in Appendix D. For technologies that are still in the demonstration stage, selected case studies of current pilots and testing activities are described based on publicly available information.

Staff will continue to regularly update the assessment, and are currently working on an update that includes information on zero-emission technologies that replace stationary engines and light-duty vehicles. Staff will bring an updated assessment to the Committee when this work is complete, which is anticipated in early 2020.

BUDGET CONSIDERATION / FINANCIAL IMPACT

None.

Respectfully submitted,

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Attachment 6A: Summary of Available Zero-Emission Technologies 2.0 – Heavy Duty On Road and Off-Road Sectors

Summary of Available Zero-Emission Technologies 2.0

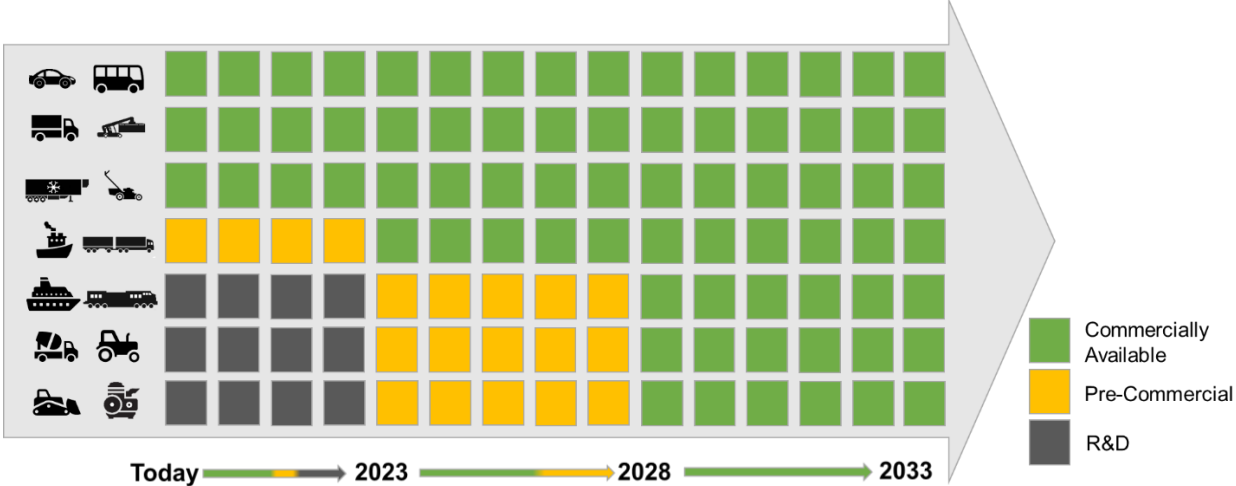


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I. Introduction

Diesel exhaust causes significant public health effects and accelerates climate change. The California Air Resources Board (CARB) estimates that on-road diesel and off-road mobile engines comprise 54 percent of the state of California's total black carbon emissions, a short-lived climate pollutant that is contributing significantly to global climate change. Petroleum diesel air pollution is also highly toxic and can have an immediate impact on the health of residents in communities where emissions are most concentrated.

The [Diesel Free by '33](#) initiative, adopted by the Bay Area Air Quality Management District (BAAQMD) in 2018 establishes an aspirational goal and framework for how the region may eliminate diesel emissions and black carbon from our communities. Signatories from city and county governments, and industry and business leaders, have joined the BAAQMD and the state of California to showcase collective leadership in identifying and adopting innovative solutions to eliminate diesel emissions.

A key component in developing pathways toward eliminating diesel emissions is the phased-in replacement of diesel-fueled vehicles and equipment with zero-emission alternatives as these new technologies become commercially available. In early 2018, the BAAQMD completed an assessment of zero-emission technology options for replacing diesel combustion vehicles and equipment ("Diesel Free by '33: Summary of Available Zero-Emission Technologies and Funding Opportunities"). ***The zero-emissions technology landscape is advancing rapidly; based on the initial and updated assessments zero-emissions options will be commercially available for most equipment and vehicle category types by 2033.***

The purpose of this 2.0 update is to identify what zero-emission technology options are currently available and what may be available within the short-, medium-, or longer term in order to help equipment owners and operators, fleet managers, policy makers, and other interested parties in developing their own pathway towards phasing-in zero-emission technologies, and therefore achieving Diesel Free by '33. This 2.0 update is a 2019 snapshot of commercially-available and demonstration-phase zero-emission technologies for mobile source vehicles and equipment and stationary source engines and a discussion of applicable regulations and incentives that are supporting the accelerated drive to a zero-emissions future.

The report is structured by general equipment category, headed by a table with information on the technology readiness level status. For technologies that are **commercially available**, considerations and challenges of extensive deployment (e.g. limited offerings; operational constraints; cost parity; infrastructure availability) are briefly discussed. Readers can also find a table listing the manufacturers of zero-emission vehicles and equipment in **Appendix D**. For technologies that are still in the **demonstration stage**, selected case studies of current pilots and testing activities are described based on publicly available information.

The BAAQMD will continue to provide regularly updated assessments and is currently working to expand this assessment to include zero-emission technologies that replace stationary engines and light-duty vehicles. The next phase of this work is anticipated to be completed by early 2020. It is BAAQMD's hope that the Diesel Free by '33 initiative and the information in this report will be used to spur the development and adoption of zero-emission technologies and improve air quality in both the Bay Area and globally.

II. Overview of Regulatory Framework & Incentives

Regulations and incentives are significant drivers of zero-emission technology innovation and adoption. While some regulations mandate certain sectors transition to zero-emission technologies (e.g., the Innovative Clean Transit Rule), others can have more diverse effects, such as creating new markets for innovative technologies (e.g. Low Carbon Fuel Standard) or reducing barriers for adopting new technologies.

Incentive programs reduce financial and other barriers of adoption, spur the development of prototypes and test pilots, help current owners and operators offset the incremental cost of deploying zero-emission technologies, and accelerate broader adoption of new cleaner technologies.

Regulations and incentives applicable to transitioning different equipment and vehicle types to zero-emission are shown in **Table 1** below. For a summary of these rules and regulations, see **Appendix B**. For further information on each incentive program that can fund the development and adoption of zero-emission technologies, see **Appendix C**.

Table 1. Equipment/Vehicle Type and Applicable Regulation and Incentives¹

Category	Type	Applicable Regulation	Incentive Source				
			Infrastructure only		Infrastructure & Equipment/Vehicle		Equipment/Vehicle only
On-Road	Buses	Innovative Clean Transit Rule			California Climate Investments	TFCA	HVIP
	Trucks	Drayage Truck Regulation					
Off-Road	Cargo Handling	Cargo Handling Equipment Regulation	LCFS	PG&E	CEC ARFVTP	CORE	DERA
	Airport Ground Support	Off-Road Regulation & LSI Fleet Regulation					
	Construction						
	Locomotive	Statewide Rail Yard Agreement					
	Commercial Harbor Craft	Commercial Harbor Craft Regulation					
	Ocean Going Vessels	At-Berth Regulation & Annex VI					

¹ See Appendix B and C for further discussion of applicable regulations and incentive sources.

III. Technology Readiness Levels of Zero-Emission Vehicles and Equipment

With recent advances in battery and fuel cell technologies, a greater number of zero-emission vehicle and equipment types are becoming feasible. Table 2 summarizes the status of zero-emission technology readiness (Technology Readiness Level) for selected equipment and vehicle categories. Further information about each equipment category is discussed later in this report. For a definition of each vehicle and equipment category, see Appendix A. Technology Readiness Level stages are classified as: Technology Readiness Level stages are classified as:

- **Commercially Available:** A zero-emission technology for the particular vehicle or equipment category has been proven through successful operations and is available for purchase by relevant industry sectors with defined delivery dates.
- **Demonstration:** Either a prototype has been developed or there exists a fully-developed system that is currently going through a process of testing and demonstration in an actual operation environment.
- **Research:** Initial scientific research of a zero-emission technology has been conducted for the particular vehicle or equipment category. Elements of the technology or system components are being evaluated, and/or the potential of the zero-emission technology has been confirmed and established as feasible.
- **No Information Available:** No public information was found regarding zero-emission technologies for the given equipment or vehicle.

Table 2. Summary Status of Zero-Emissions Technologies in the Heavy-Duty Sector

Technology Readiness Level	Vehicle or Equipment Category
Commercially Available	Airport Ground Support Equipment Buses Cargo Handling Equipment Construction Equipment: <i>Stationary Cranes</i> <i>Light Payloads</i> On-Road Trucks
Demonstration	Cargo Handling Equipment: <i>Reach Stackers</i> <i>Heavy-Duty Forklifts</i> <i>Top Handlers</i> Commercial Harbor Craft Locomotives
Research	Ocean-Going Vessels
No Information Available	Construction Equipment: <i>Crawler Cranes</i> <i>Heavy Payloads</i> <i>Specialized Equipment</i>

Buses

The recent advancement of battery electric technology in the light-duty on-road vehicle sector can broadly be transferred to similar applications in medium- and heavy-duty buses. As of August 2019, there are fifteen bus manufacturers and fifty-four bus models that the state of California funds as eligible zero-emission vehicles through the HVIP program². These zero-emission buses have gained CARB certification/approval, comply with all-electric range requirements, and provide warranty provisions and definitive Manufacturer Suggested Retail Price sheets.

Table 3. Technology Readiness Level of Buses and Considerations for Widespread Adoption

Equipment	Technology Readiness Level	Considerations for Widespread Adoption
School Bus Shuttle Bus Transit Bus	Commercially Available	Cost premiums

Cargo Handling Equipment

Zero-emission alternatives are commercially available for most stationary cargo handling equipment or for equipment that operated on strictly fixed paths (due to the ability to plug-in); and for equipment that is intended to exclusively transport containers horizontally (i.e., terminal tractors and automated guided vehicles) or to vertically move only empty containers (i.e., side handler).

Table 4. Technology Readiness Levels of Cargo Handling Equipment and Considerations/Challenges

Equipment Type	Technology Readiness Level	Considerations / Challenges
Automated Guided Vehicles Ship-to-Shore Gantry Cranes Side Handlers Straddle Carriers Terminal Tractors Yard Cranes	Commercially Available	Limited Offerings Demanding Duty-Cycles High Premium
Heavy-Duty Forklifts Reach Stackers Top Handlers	Demonstration	Battery Capacity Charging Infrastructure Electricity Upgrades

Top Handler Pilot: Port of Los Angeles

CARB and California Climate Investments (CCI) are partially funding a demonstration of the first three battery-electric top handlers and one fuel-cell electric range-extended top loader at the Port of Los Angeles. The three battery-electric top handlers are manufactured by Hyster Yale Group and are expected to be in operation in spring 2020. The overall project at the Port of Long Beach also includes a

² California Air Resources Board Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP). Eligible Vehicle Catalog. www.californiahvip.org

battery-electric yard truck and a hydrogen fuel cell (HFC) yard truck³; the total cost of the project is \$8.3 million. The batteries will be lithium-ion and charge by wireless fast charger. The fuel-cell range extended top loader, which includes two 45-kW fuel cell engines built by Nuvera Fuel Cells, and its associated 250 kW wireless inductive charger built by Wireless Advanced Vehicle Electrification (WAVE) are expected to be operating in spring 2020⁴ and will cost \$8.8 million, with up to \$6.5 million of funding provided by CCI. Project partners for these pilots include the Center for Transportation and the Environment and the City of Long Beach Harbor Department.

Reach Stacker Pilot: *Port of Valencia, Spain*

An electric reach stacker with HFC a range extender is being developed for the Port of Valencia and manufactured by Hyster Yale Group Inc., with funding from the Fuel Cells and Hydrogen Joint Undertaking and European Horizon 2020 program and additional support from the H2Ports project⁵. The reach stacker is scheduled to begin operation in 2021.

Heavy-Duty Forklift Pilot: *Port of Stockton*

CARB and CCI are partially funding a demonstration of two 30,000-pound capacity battery-electric forklifts manufactured by DANNAR⁶. The total project cost for the two forklifts is \$1.2 million, of which \$770,000 is funded by CARB and CCI. The two forklifts will also be testing additional cargo handling attachments, including a scissor lift and dump truck bed. The batteries will be lithium-ion and charged by ChargePoint DC fast chargers. The project is expected to be complete in spring 2020.

Construction Equipment

Construction Equipment is a broad category with many types of equipment serving specialized tasks. Equipment types that are generally stationary and can be easily connected to the grid currently have zero-emission options commercially available. Other types of equipment that are more mobile or that may be deployed in remote locations lacking infrastructure typically rely on conventional (petroleum) fuel, although there are some early demonstrations of zero-emission technologies. With this in mind, urban applications are the most promising.

Stationary applications with the ability to plug electric equipment into the grid are uncommon for construction-type activities, with the exception of tower-cranes, which are typically electric. The most significant restriction with battery-electric equipment is the power-demand during heavy lifting or excavating/earth-moving activities. Hybrid applications have been developed where equipment utilize lithium-ion batteries to move the equipment wheels but use a diesel engine to operate the hoist, lift, bucket, arm, etc.

³ California Air Resources Board. "C-PORT: The Commercialization of Port of Long Beach Off-Road Technology Demonstration Project" https://ww3.arb.ca.gov/msprog/lct/pdfs/longbeachoffroad.pdf?_ga=2.244551500.896765447.1565191950-520522063.1534345374

⁴ California Air Resources Board. "Demonstration of Zero-Emission Technologies for Freight Operations at Ports: Fuel Cell Hybrid Electric Top Loader" https://ww3.arb.ca.gov/msprog/lct/pdfs/fuelcelltoploader.pdf?_ga=2.242920267.896765447.1565191950-520522063.1534345374

⁵ Hyster Yale Group. Inc. Press Release.

<https://www.hyster.com/emea/en%2%80%90gb/press/press%2%80%90releases/hyster-electric-container-handlers-progress/>

⁶ California Air Resources Board. "San Joaquin Valley Zero-Emission Cargo Handling Demonstration Project" https://ww3.arb.ca.gov/msprog/lct/pdfs/sjcarehandling.pdf?_ga=2.138649850.896765447.1565191950-520522063.1534345374

Table 5. Technology Readiness Levels of Construction Equipment and Considerations/ Challenges

Equipment Type	Technology Readiness Level	Considerations / Challenges
Boom Lifts Concrete Mixers Dumpers Loaders Mini Cranes Mini Excavators Tippers Tower Cranes	Commercially Available	Charging Availability in Remote Locations Battery Size Limited Applications
Dozers Excavators Graders	Demonstration	High Power Demands Highly Specialized Equipment Types
Crawler Cranes Crushers Pavers Rollers Scrapers Trenchers	No Information Available	High Power Demands Highly Specialized Equipment Types

Early stage demonstration projects are taking place in North America and Europe. Two of these demonstrations are described below:

Early stage demonstration projects are taking place in North America and Europe. Two of these demonstrations are described below:

Grader Demonstration: Borden Lake Mine, Canada

In spring 2018, as part of a larger effort at GOLDCORP’s Borden Lake Mine in Canada to transition to 100% electric, MacLean Engineering commissioned MEDATECH to manufacture a retrofit to an existing motor grader to convert the equipment to battery-electric⁷.

Excavator Demonstration: Gjellerasen, Norway

Norway’s Pon Equipment retrofitted a 26-ton Caterpillar 323 Hydraulic Excavator to an entirely battery-electric power system^{8,9}. The excavator has a 3.4-ton, 300 kwh battery. Norwegian company Veidekke placed an order for eight retrofitted electric excavators.

Airport Ground Support Equipment (GSE)

The relatively light payloads of GSE, along with the short distances travelled and availability of electrical infrastructure where these equipment types operate mean most equipment in this category are good candidates for electrification. However, airport tarmacs are highly trafficked and charging equipment will need to be wireless and/or located away from areas where they may be inadvertently damaged. GSE can also be highly specialized, which means many different prototypes and demonstrations may be needed to prove to operators that their needs are met for each application.

⁷ MEDATECH. Press Release.

<https://medatech.ca/battery-electric-retrofit-of-diesel-grader-for-goldcorp-borden-lake/>

⁸ <https://insideevs.com/news/342491/pon-equipment-reveals-electric-caterpillar-excavator/>

⁹ <https://electrek.co/2019/01/29/caterpillar-electric-excavator-giant-battery-pack/>

Table 6. Technology Readiness Levels of Airport Ground Support Equipment and Considerations/Challenges

Equipment Type	Technology Readiness Level	Considerations / Challenges
Air Conditioners Baggage Tractors Belt Loaders Hydrant Carts Lavatory Trucks Passenger Stands Pushbacks Water Trucks	Commercially Available	Demanding duty cycles Battery size
Cargo Tractors Catering Trucks Fuel Truck Sweepers	Demonstration	Highly specialized equipment types
Air Starts De-Icers Service Trucks	No Information Available	Highly specialized equipment types

On-Road Trucks

As of 2019, there are three models of zero-emission on-road heavy-duty trucks available. Lion Electric Co. and BYD offer battery-electric tractors and a refuse truck. The tractors have an advertised range of up to 250 miles and 125 miles (full-load), and are advertised as appropriate for short-haul or local operations but not for long-haul trucking^{10,11}.

For long-haul operations, four other manufacturers have released prototypes and are testing zero-emission Class 8 trucks. Tesla is accepting orders along with financial deposits for their vehicles. However, no manufacturer has released a specified delivery date. Several companies are already in a testing phase for their zero-emission long-haul trucks in operational environments. Publicly announced information about vehicle availability is summarized in **Table 8**.

For long-haul operations, four other manufacturers have released prototypes and are testing their zero-emission Class 8 trucks. Tesla is accepting orders along with financial deposits for their vehicles. However, neither company has given a specified delivery date. Several companies are already in testing zero-emission long-haul trucks in their operations when these vehicles become available. Publicly announced information about vehicle availability is summarized in **Table 8**.

¹⁰ Lion Electric Co. website. https://thelionelectric.com/documents/en/LION8_specsheet.pdf

¹¹ BYD website. <https://en.byd.com/truck/#models>

Table 7. Technology Readiness Levels of On-Road Trucks and Considerations/ Challenges

Equipment Type	Technology Readiness Level	Considerations / Challenges
Refuse Tractor Trucks	Commercially Available	Limited offerings Range Recharging times
Long-haul Trucks	Demonstration	Range Charging / fueling infrastructure

Table 8. Summary of Class 8 Long-Haul Trucks in Development

Manufacturer Model	Estimated Range	Powertrain	Production Date Target
Tesla Semi ¹²	500 miles	Battery Electric	End of 2020
Daimler eCascadia ¹³	250 miles	Battery Electric	End of 2021
Nikola One and Two ¹⁴	500-750 miles	Fuel Cell Electric	2022
Toyota/Kenworth Project Portal ¹⁵	300 miles	Fuel Cell Electric	No information announced

Commercial Harbor Craft

There are multiple early demonstrations of zero-emission commercial harbor craft currently taking place and commercial availability is expected to occur quickly following successful completion of these demonstrations. Demonstrations include both battery-electric and HFC technologies; battery electric systems are being tested for shorter duration, high-power applications, while HFC are being applied to longer routes.

Table 9. Technology Readiness Levels of Commercial Harbor Craft and Considerations/ Challenges

Equipment Type	Technology Readiness Level	Considerations / Challenges
Commercial Fishing Ferries Tugboats Workboats	Demonstration	Cost Fueling
Excursion Vessels Pilot Boats Research Vessels	Research	Space constraints
Crew and Supply Vessels Charter Fishing	No Information Available	

¹² Tesla Semi website. <https://www.tesla.com/semi>

¹³ Daimler/Freightliner website. <https://www.daimler.com/innovation/case/electric/electric-buses-and-trucks.html>

¹⁴ Nikola Motor website. <https://nikolamotor.com/motor>

¹⁵ Motor Authority. "Toyota and Kenworth Reveal First Fuel Cell Electric Truck Ready to Haul Cargo." https://www.motorauthority.com/news/1122730_toyota-and-kenworth-reveal-first-fuel-cell-electric-truck-ready-to-haul-cargo

There are currently multiple zero-emission ferries and tugboats, an inland barge, and a fishing vessel, under development in California, Alabama, New York, Europe and Japan¹⁶. California and the European Union demonstrations of HFC vessels, utilizing compressed gas and liquid hydrogen, are described below.

There are currently multiple zero-emission ferries and tugboats, an inland barge, and a fishing vessel, under development in California, Alabama, New York, Europe and Japan¹⁷. California and the European Union demonstrations of HFC vessels, utilizing compressed gas and liquid hydrogen, are described below.

HFC Ferry Demonstration- California: *Water-Go-Round*

CARB and BAAQMD have awarded \$3 million for the development and testing of an HFC ferry that will demonstrate both passenger and freight services in the San Francisco Bay. The 70-foot vessel was designed by Incat Crowther and built by Bay Ship & Yacht; the three 120 kW fuel cells were from Hydrogenics; and the fuel cell electric propulsion system was manufactured by BAE Systems. Golden Gate Zero Emission Marine provided project management, and Sandia National Laboratories will provide data analysis and hydrogen safety training. The Water-Go-Round is expected to have enough hydrogen storage capacity to power up to two days of normal operations. The project began in May 2018 and is expected to begin operations in Fall 2019¹⁸.

HFC Ferry Demonstration- Europe: *FLAGSHIPS*

The E.U.'s Research and Innovation program awarded 5 million Euros (\$5.6 million) for the development and testing of two liquid-hydrogen-powered vessels. In Norway, the HFC ferry will carry up to 299 passengers and 80 cars in the local public transit network; in France, the HFC push boat will operate under commercial shipping conditions. The vessels will be designed by LMG Marin and manufactured by ABB; fuel cell technology will be provided by Ballard Europe; and energy monitoring and management will be provided by PersEE. The HFC ferry is expected to have enough capacity for over three tons of liquid hydrogen, fueling three weeks of normal operations. The project started on January 1, 2019 with operations expected to start in 2021¹⁹.

¹⁶ California Air Resources Board. "Technology Assessment: Commercial Harbor Craft"
https://ww3.arb.ca.gov/msprog/tech/techreport/draft_chc_technology_assessment.pdf?_ga=2.72114195.1642215430.1563896364-592388194.1562085676
<https://www.electrive.com/2019/05/23/ballard-abb-developing-fc-tugboat/>
<https://alabamane.wscenter.com/2019/02/15/gees-bend-has-the-nations-first-electric-ferry/>
https://www.electricandhybridmarineworldexpo.com/en/industry-news.php?release=de7f47e09c8e05e6021ababdf6bc58e7&utm_source=mailing&utm_medium=email
<https://corvusenergy.com/projects/karoline-2/>
<https://safety4sea.com/japan-toyota-to-build-fishing-boat-powered-with-hydrogen-fuel-cells/>

¹⁷ California Air Resources Board. "Technology Assessment: Commercial Harbor Craft"
https://ww3.arb.ca.gov/msprog/tech/techreport/draft_chc_technology_assessment.pdf?_ga=2.72114195.1642215430.1563896364-592388194.1562085676
<https://www.electrive.com/2019/05/23/ballard-abb-developing-fc-tugboat/>
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https://www.electricandhybridmarineworldexpo.com/en/industry-news.php?release=de7f47e09c8e05e6021ababdf6bc58e7&utm_source=mailing&utm_medium=email
<https://corvusenergy.com/projects/karoline-2/>
<https://safety4sea.com/japan-toyota-to-build-fishing-boat-powered-with-hydrogen-fuel-cells/>

¹⁸ California Air Resources Board. "Zero-Emission Hydrogen Ferry Demonstration Project"
<https://ww3.arb.ca.gov/msprog/lct/pdfs/hydrogenferry.pdf>

¹⁹ <https://www.maritime-executive.com/article/hydrogen-fuel-cell-vessels-destined-for-france-and-norway>

Ocean Going Vessels

The current conversation on zero-emission technologies for ocean going vessels going completely zero-emission is focused on first proving technologies for smaller zero-emission marine vessels. Reducing the use of the auxiliary engines while at berth (shore power) or the electrification of at-berth operations has been in commercial operations for approximately a decade.

Based on research calculations, a large containership has available space for an HFC powerplant, and the necessary power and energy requirements for cross-ocean routes can be met using liquid hydrogen²⁰.

Table 10. Technology Readiness Level of Ocean Going Vessels and Considerations/ Challenges

Equipment Type	Technology Readiness Level	Challenges
Cargo ships Container ships	Research	Infrastructure Transportation and storage of hydrogen fuel

For current demonstrations of HFC powered ferries and tugboats, see section *Commercial Harbor Craft*.

Locomotives

Although varieties of electric passenger trains are currently commercially available, including over-head catenary electric locomotives and self-propelled electric trains, these technologies are not currently functional in freight applications, due to the necessary overhead clearance or, in the case of self-propelled cars, the lack of power necessary for freight locomotive applications. Additionally, the high cost per mile of deploying electric rail and catenary systems inhibits these applications for long haul operations.

Table 11. Technology Readiness Level of Locomotives and Considerations/ Challenges

Equipment Type	Technology Readiness Level	Considerations / Challenges
Locomotive for Long-haul Switcher Locomotive	Demonstration	Limited applications High cost of infrastructure

Though no full zero-emission prototype for long haul freight and passenger service was found, CARB is demonstrating a zero-emission local (switchyard) locomotive, as well as a single battery-electric locomotive paired with diesel locomotives (a consist) for line-haul operations.

Though no full zero-emission prototype for long haul freight and passenger service was found, CARB is demonstrating a zero-emission local (switchyard) locomotive, as well as a single battery-electric locomotive paired with diesel locomotives (a consist) for line-haul operations.

Switchyard: Zero-Emission Track-Miles Locomotive Project

In October 2018, CARB and the South Coast Air Quality Management District (SCAQMD) announced \$2.7 million of funding for a zero-emission switcher locomotive at the San Pedro Ports. Originally slated as a natural gas-powered project, the transition to battery electric will demonstrate a zero-emission locomotive repower²¹. VeRail Technologies will build the 2,100 hp six-axle switcher locomotive, which features a redesigned cooling system, a new battery mounting system and control computer, and 2.89 MWh of battery storage capacity anticipated to be capable of working a full 12-hour shift before needing to charge. Testing is expected to run through 2020²².

Consist Long Haul Freight: San Joaquin Valley Zero and Near-Zero Emission Enabling Freight Project

In March 2019, CARB and the San Joaquin Valley Air Pollution Control District (SJVAPCD) announced funding for a battery-electric locomotive (BEL), which will power a freight train between Stockton and Barstow. The BEL will be paired with diesel locomotives in a “consist”, or a sequence of connected locomotives, and is expected to result in overall fuel savings of 10-15%. The unit is anticipated to maintain full horsepower for 30 minutes per given charge, allowing zero-emission operations in populated areas where air quality impacts are of concern.

GE Transportation will develop and build the BEL, which will include a new cooling system, 2.4 MWh of battery storage, trip-optimizing software with automated cruise control, and AC Traction System Inverters capable of recharging the battery²³. Demonstration is expected to begin in 2020.

²¹ San Pedro Ports Clean Air Action Plan. “2018 ANNUAL REPORT AND 2019 PRIORITIES Technology Advancement Program”
<http://www.cleanaireactionplan.org/documents/2018-tap-annual-report.pdf/>

²² California Air Resources Board. “Zero-Emission Track-Miles Locomotive Project”
https://ww3.arb.ca.gov/msprog/lct/pdfs/zelocomotive.pdf?_ga=2.96202332.1103824982.1564087744-1670947689.1557852817

²³ GE Transportation. Press release. <https://www.ge.com/reports/leading-charge-battery-electric-locomotives-pushing-us-freight-trains/>

Appendix

Appendix A: Descriptions of Vehicle or Equipment Type

Below are brief descriptions of each of the vehicle or equipment types discussed in this report.

Airport Ground Support Equipment

Airport Ground Support Equipment (GSE) are portable equipment that operate at airports and service the various needs of aircrafts. Examples of GSE include baggage tractors, belt loaders, cargo lifts, pushback tractors, catering trucks, fuel trucks, lavatory trucks, sweepers, water trucks, de-icers and other service vehicles. Conventional GSE are diesel, gasoline or compressed natural gas (CNG) powered.

Buses

Buses are typically 35 to 45 ft. in length (or longer) and are primarily used to transport passengers. Buses can range in size from small shuttles with seating for 10 to 20 passengers, to school and transit buses that can seat 40 to 80 passengers, to articulated and double-decker buses that can carry over 200 passengers.

Cargo Handling Equipment

Cargo handling equipment (CHE) move containers, materials, and other cargo at ports and intermodal facilities to and from various container storage areas and transport modes. Examples of CHE include terminal tractors (aka yard hostlers/yard goats) that ferry containers around a facility; top handlers, side handlers, reach stackers and heavy-duty forklifts, which are all used to lift, stack, and load empty and full cargo containers; yard cranes (such as rubber-tired and rail-mounted gantry cranes); straddle carriers which transport, stack, and load containers; and ship-to-shore gantry cranes which load and unload containers onto and off of vessels. CHE has historically been powered by diesel combustion engines.

Commercial Harbor Craft

Commercial harbor craft means any private, commercial, government, or military marine vessel, including, but not limited to: passenger ferries, excursion vessels, tugboats, ocean-going tugboats, towboats, push-boats, crew and supply vessels, pilot vessels, fishing vessels, research vessels, U.S. Coast Guard vessels, hovercraft, emergency response harbor craft, and barge vessels that do not otherwise meet the definition of ocean-going or recreational vessels.

Construction Equipment

Construction equipment broadly consists of equipment that is used to erect and demolish buildings; grade and pave roads; dig, excavate, and mine; transport earth and other materials; and many other activities. Construction equipment varies widely in size, payload capacity, power, and application, and includes equipment such as dozers, graders, excavators, scrapers, loaders, trenchers, cranes, rollers, mixers, crushers, lifts, tippers and dumpers. Construction equipment is largely powered by diesel combustion engines.

Locomotive

A locomotive is a self-propelled vehicle used to push or pull trains. The combination of locomotive(s) pulling freight or passenger railcars forms a train. Coupled self-propelled cars that form a train (i.e., Electric Multiple Units) are not locomotives.

Ocean Going Vessel

An ocean-going vessel is a commercial ship that is equal to or greater than 400 feet in length, is equal to or greater than 10,000 gross tons, is propelled by a marine compression ignition engine with a displacement of greater than or equal to 30 liters per cylinder, or is any combination of the above.

Trucks

Heavy-duty trucks are large motor vehicles that are primarily used to transport goods and equipment and have a GVWR of 26,001 lbs. and above (class 7 and 8).

Appendix B: Applicable Regulations

Below are brief summaries of applicable regulations for vehicles and equipment discussed in this report operating in California.

Mobile Cargo Handling Equipment Regulation

California Code of Regulations, title 13, section 2479 (13 CCR 2479)

Adopted by CARB in 2005, the Mobile CHE Regulation was fully implemented at the end of 2017. The Mobile CHE Regulation requires newly purchased yard trucks (aka terminal tractors, yard hostlers, yard goats) and other equipment brought onto a port or intermodal rail yard to have either a Tier 4 Final off-road engine or a Model Year (MY) 2010 or newer on-road engine. CARB is considering changes to the Mobile CHE Regulation that would require a transition to new zero-emission technologies and facility infrastructure as guided by CARB resolution 17-8, which directed CARB staff to develop new regulatory requirements for CHE that will require up to 100% zero-emissions technologies at ports and intermodal railyards by 2030.

In-Use Off-Road Diesel-Fueled Fleets Regulation

California Code of Regulations, title 13, section 2449 (13 CCR 2449)

In 2007, CARB adopted the Regulation for In-Use Off-Road Diesel-Fueled Fleets (Off-Road Diesel Regulation) to reduce diesel-particulate matter (PM) and oxides of nitrogen (NOx) emissions from construction, mining, industrial, and other sectors. The Off-Road Diesel Regulation applies to a) vehicles with off-road engines of 25 bhp or greater and b) 2-engine cranes, drilling rigs, and vehicles with auxiliary engines greater than 50 bhp. The regulation restricts idling and requires all new engines to be Tier 3 or higher for large and medium fleets. Small fleets must add tier 3 or higher starting January 1, 2023.

Off-Road Large Spark-Ignition Engines Regulation

California Code of Regulations, title 13, section 2431 (13 CCR 2431)

CARB adopted rules in 2006 (and amended them in 2010 and 2016) for large spark-ignited-engine powered equipment 25 hp or greater, including but not limited to: forklifts, industrial tow tractors and sweepers/scrubbers, and airport GSE. The Off-Road Large Spark-Ignition Engines Regulation requires operators of in-use fleets to achieve fleet average emission level (FAEL) standards that become more stringent over time. FAEL standards vary and are specific to large, mid-size and non-forklift fleets.

Statewide Rail Yard Agreement to Reduce PM at California Rail Yards

CARB, Union Pacific Railroad Company, Burlington Northern, and Santa Fe Railway Company entered into the Statewide Rail Yard Agreement to Reduce Diesel PM at California Rail Yards (Rail Yard Agreement), effective June 30, 2005. The purpose of the Rail Yard Agreement is to reduce diesel emissions in and around rail yards in California by implementing idle-reduction programs and through the evaluation and development of measures to further reduce impacts on local communities. The regulation also requires that parties maximize locomotive use of ultra-low sulfur diesel, and establish a visible emissions reduction and repair program.

Commercial Harbor Craft Regulation

California Code of Regulations, title 13, section 2299.5 (13 CCR 2299.5)

The Emission Limits and Requirements for Diesel Engines on Commercial Harbor Craft Operated within California Waters and 24 Nautical Miles of the California Baseline Regulation (Commercial Harbor Craft Regulation) was adopted in 2007 to reduce emissions of diesel PM, NOx and reactive organic gases

(ROG) from diesel engines used on commercial harbor craft in California waters (within 24 nautical miles of the California coast). The rule was amended in 2010 and will be fully implemented by the end of 2022. The Regulation requires that all newly-acquired engines for in-use harbor craft meet the Tier 2 or Tier 3 marine or off-road standards; New ferries with capacity of 75 or more passengers are required to install best available control technology (BACT) on the propulsion engines or meet Tier 4 standards. Harbor craft with existing Tier 1 and earlier must meet Tier 2 or Tier 3 standards based on their compliance schedules.

Low Carbon Fuel Standard Regulation

California Code of Regulations, title 17, sections 95480-95503 (17 CCR 95480-95503)

The Low Carbon Fuel Standard (LCFS) was first adopted in 2009 (re-adopted in 2015 and amended in 2018) with the purpose of reducing the full fuel-cycle carbon intensity (CI) of the fuel used for transportation in California by at least 20% by 2030. The LCFS sets well-to-wheels CI benchmarks for fuel production, distribution and consumption. Fuels either generate credits or deficits depending on their CI, relative to the benchmark. LCFS credits can also be earned by increasing zero-emission vehicle (ZEV) infrastructure capacity (hydrogen or ZEV fast charging). Electric vehicles, trucks, electric transit systems, electric forklifts, electric CHE, electric transportation refrigeration units (TRUs), and shore power are all eligible to generate credits. Electric Distribution Utilities (EDU) can also earn “base” credits for all residential charging accomplished using the grid average CI, and the load-serving entity, auto manufacturer, or another entity may generate “incremental” credits for supplying metered, low-CI electricity or smart charging to those residences. The person who owns the hydrogen fueling supply equipment or the hydrogen forklift fleet is eligible to generate credits for hydrogen fueling.

Innovative Clean Transit Rule

California Code of Regulations, title 13, section 2023 (13 CCR 2023)

Adopted by CARB in December 2018, the Innovative Clean Transit Rule (ICT) requires all public transit agencies to transition to 100% zero-emission bus fleets by 2040, with transition requirements varying by transit agency fleet size, utilization, and location. The rule requires zero-emission buses to be 25% of new purchases beginning in 2023 for large transit agencies, and 100% of transit agency new bus purchases beginning in 2029, including standard, articulated, over-the-road, double-decker, and cutaway buses over 14,000 gross vehicle weight rating (GVWR).

Drayage Trucks Regulation

California Code of Regulations, title 13, section 2027 (13 CCR 2027)

The In-Use On-Road Diesel-Fueled Heavy-Duty Drayage Trucks Regulation (Drayage Truck Regulation) was adopted by CARB in December 2017. The existing regulation applies to all drayage trucks in California that transport cargo to and from ports and intermodal rail yards in the state. Drayage trucks are class 7 or 8 vehicles with GVWR greater than 26,000. The existing regulation requires the registration of drayage trucks in the Drayage Truck Registry and requires Class 7 and 8 truck owners to either have trucks with an engine model year 2010 or newer, or meeting 2010 engine emission standards, by 2022, in order to enter ports and rail yards in the state. CARB is currently considering adopting a new regulation or amending the existing regulation to direct a transition to zero-emission operations beginning in 2026-2028.

California At-Berth Regulation

California Code of Regulations, title 17, section 93118.3 (17 CCR 93118.3)

The Airborne Toxic Control Measure for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At-Berth in a California Port (California At-Berth) regulation was approved by CARB in December 2007.

Beginning January 1, 2014, the regulation requires onboard auxiliary diesel engines for fleets visiting the Port of Hueneme, Port of Los Angeles, Port of Long Beach, Port of Oakland, Port of San Diego, or Port of San Francisco to meet increasingly stringent operational time limits and reductions of their vessels' on-board power generation. Fleets can achieve compliance with the regulation by plugging their vessels into shore power, also known as cold-ironing, or otherwise utilizing alternative control technology to achieve equivalent emission reductions.

Appendix C: Applicable Incentives

Below are brief summaries of some available incentives, as of August 2019, for zero-emission vehicles and equipment discussed in this report.

Local

Transportation Fund for Clean Air (TFCA): *San Francisco Bay Area*

Transportation Fund for Clean Air (TFCA) revenues are collected from a \$4 surcharge fee on vehicles registered in the Bay Area, to fund cost-effective projects that reduce on-road motor vehicle emissions. BAAQMD administers the program, providing incentives for clean air vehicle projects and trip reduction programs. For further detail, visit:

<http://www.baaqmd.gov/funding-and-incentives/funding-sources/regional-fund>

PG&E Clean Fleets: *Northern California (PG&E Service Areas)*

PG&E provides rebates for eligible customers developing on-site charging for heavy duty vehicles and equipment. Rebates vary at up to 50% or \$42,000 for 150kW and above chargers, or up to \$9,000 per vehicle or equipment for infrastructure upgrade (25 vehicle limit per site). For further information, visit:

https://www.pge.com/en_US/large-business/solar-and-vehicles/clean-vehicles/ev-fleet-program/ev-fleet-program.page

State of California

HVIP

The Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) provides point-of-sale discounts to vehicle purchasers. HVIP works directly with dealers to apply the voucher incentive at the time of purchase. Eligible funding recipients are any commercial vehicle user in California. Commercial vehicles include but are not limited to: municipal fleets, small businesses, school districts and more. Incentive levels for zero-emission vehicles with a GVWR >26,000 lbs range from \$71,000 to \$220,000. For further detail, visit: <https://www.californiahvip.org/>

Carl Moyer Program

Carl Moyer Program

The Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) provides grant funding for cleaner-than-required engines, equipment, and other sources of air pollution. The Carl Moyer Program is implemented as a partnership between CARB and California's 35 local air districts. Eligible equipment includes medium and heavy-duty on-road and off-road vehicles and equipment, marine vessels, and locomotives. For more information, visit: <https://ww2.arb.ca.gov/our-work/programs/carl-moyer-memorial-air-quality-standards-attainment-program>

AB617 Community Air Protection Incentives

The Community Air Protection Program (CAPP) was established after the passage of Assembly Bill 617 and focuses on the reduction of exposure to air pollution in the most vulnerable communities. Strategies to address poor air quality in impacted communities include providing incentives for mobile sources. CAPP incentives are administered by local air districts through the Carl Moyer Program. For further information, visit: <https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program>

Clean Off-Road Equipment (CORE) Voucher Incentive Project

The CORE project is a \$40 million market acceleration program to advance the deployment of zero-emission off-road freight equipment. CORE provides equipment purchasers and lessees with attractive point-of-sale discounts toward the purchase of zero-emission off-road freight equipment, making costs comparable to their traditional fossil-fueled counterparts.

<https://ww2.arb.ca.gov/news/california-air-resources-board-announces-new-incentive-program-clean-road-freight-and-cargo>

California Climate Investments

CCI is a statewide initiative that invests proceeds from cap-and-trade into greenhouse gas emission reductions. SB 862 established continuous appropriations of 60 percent of the available proceeds to certain transportation and sustainable communities programs, including local and regional public transit and low carbon transportation. For further information, visit:

<http://www.caclimateinvestments.ca.gov/sustainable-communities-clean-transportation>.

Alternative and Renewable Fuel and Vehicle Technology Program

The California Energy Commission (CEC) strategically invests to close gaps in the development and deployment of alternative and renewable fuels, and advanced transportation technologies, through the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP). Solicitations vary and are posted periodically, rather than on an ongoing basis. For further detail, visit:

<https://ww2.energy.ca.gov/contracts/transportation.html>

US Federal

FTA Low or No Emission Vehicle Program

The Federal Transportation Authority's (FTA) Low or No Emission Competitive program provides funding to state and local governmental authorities for the purchasing or leasing of zero-emission transit buses, as well as acquisition, construction, and leasing of required supporting facilities, such as fueling infrastructure. For further details, visit: <https://www.transit.dot.gov/funding/grants/lowno>

EPA Clean Diesel and DERA Funding

The Environmental Protection Agency's (EPA) Clean Diesel Program provides funding for projects that reduce harmful emissions from diesel engines. This program includes grants and rebates funded under the Diesel Emissions Reduction Act (DERA). The 2020 request for applications is planned to open in December 2019. For further information, visit: <https://www.epa.gov/cleandiesel>

Congestion Mitigation and Air Quality Improvement Program

Administered by the Federal Highway Administration (FHWA), the Congestion Mitigation and Air Quality Improvement Program (CMAQ) program provides funding to areas that face nonattainment for the National Ambient Air Quality Standards (NAAQS). Eligible activities include diesel retrofits, installation of diesel emission control technology on nonroad diesel equipment or on-road diesel equipment that is operated on highways.

Appendix D: Manufacturers of Zero-Emission Vehicles and Equipment

Below are tables listing the manufacturers of zero-emission vehicles and equipment. All information below was obtained from CARB's Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) eligible vehicle catalogue.²⁴

On-Road

Buses, School Manufacturer and Number of Models by Length			
OEM	<30 feet	30-40 feet	>40 feet
Blue Bird		4	1
Green Power		1	
Lion Electric		4	
Micro Bird	1		
Motiv Power System	1	1	
Thomas Built		1	
Phoenix	1		

Buses - School Manufacturer and Number of Models by Length			
OEM	<30 feet	30-40 feet	>40 feet
Blue Bird	-	4	1
Green Power	-	1	-
Lion Electric	-	4	-
Micro Bird	1	-	-
Motiv Power System	1	1	-
Thomas Built		1	-
Phoenix	1	-	-
TOTAL	3	11	1

Buses- Shuttle, Coach, and Transit Manufacturer and Number of Models by Length			
OEM	<30 feet	30-40 feet	>40 feet
BYD Motors	1	5	3
El Dorado National		2	
Gillig	1	2	
GreenPower Motor Company	1	3	1

²⁴ HVIP Eligible Vehicle Catalogue. <https://www.californiahvip.org/how-to-participate/#Eligible-Vehicle-Catalog>

Lightning Systems	2		
Micro Bird	1		
Motiv Power Systems	1		
New Flyer		3	2
Phoenix	2		
Proterra		5	7
SEA Electric	1		
Zenith Motors	1		
TOTAL:	11	20	13

Tractor and Yard Tractor Manufacturer and Number of Models by Gross Cargo Weight Rating			
OEM	54,600 Lbs.	81,000 Lbs.	>100,000 Lbs.
BYD Motors	-	-	2
Kalmar Ottawa	-	1	-
Lion Electric	1	-	-
Orange EV	-	2	-
TOTAL	1	3	2

Trucks and Refuse Trucks Manufacturer and Number of Models by Gross Vehicle Weight			
OEM	<14,000	14,000-26,000	>26,000
BYD Motors		3	2
Lightning Systems		1	
Motiv Power Systems		3	1
Phoenix		2	
SEA Electric		1	
Workhorse Group		1	
Xos		1	
Zenith Motors	2		
TOTAL:	2	12	3

Tractor and Yard Tractor Manufacturer and Number of Models by Gross Cargo Weight Rating (lbs)			
	54,600	81,000	>100,000
BYD Motors			2
Kalmar Ottawa		1	
Lion Electric	1		
Orange EV		2	
TOTAL:	1	3	2

Off-Road

Equipment Type	Technology Readiness Level	Manufacturer or Further Detail
Airport Ground Support		
Air Conditioner	Commercial	TLD ²⁵
Baggage Tractor	Commercial	Charlatte, Harlan, TUG Technologies Corporation, Eagle ²⁶
Belt Loader	Commercial	Charlatte, TLD, Hercules ²⁷
Cargo Loader / Lift	Commercial	TLD, JBT Corporation ²⁸
Cargo Tractor	Demonstration	A 90-day pilot was completed on an electric cargo tractor by Charlatte America in 2011 ²⁹ .
Catering Truck	Demonstration	A demonstration electric catering vehicle by Doll ³⁰
Hydrant Cart	Commercial	Westmor ³¹
Lavatory Truck	Commercial	Charlatte ³²
Passenger Stand	Commercial	TLD ³³

²⁵ Aero Specialties Ground Support Equipment

<https://www.aerospecialties.com/aviation-ground-support-equipment-gse-products/pre-conditioned-air-service/tld-ace-302-emp-24-ton-air-conditioning-unit/>

²⁶ National Renewable Energy Laboratory. "Electric Ground Support Equipment at Airports"

https://afdc.energy.gov/files/u/publication/egse_airports.pdf

²⁷ Ibid.

²⁸ Ibid.

²⁹ TLD.

<https://www.tld-group.com/news/part-green-strategy-klm-awarded-tld-replacement-lower-deck-loader-full-electric-fleet-recognizing-performance-txl-838-regen/>

³⁰ National Renewable Energy Laboratory. "Electric Ground Support Equipment at Airports"

https://afdc.energy.gov/files/u/publication/egse_airports.pdf

³¹ Westmore.

<https://westmor-ind.com/wp-content/uploads/2017/10/Hydrant-Servicers-WMLT2081ENWB-02.pdf>

³² National Renewable Energy Laboratory. "Electric Ground Support Equipment at Airports"

https://afdc.energy.gov/files/u/publication/egse_airports.pdf

³³ TLD.

Equipment Type	Technology Readiness Level	Manufacturer or Further Detail
Pushback	Commercial	Charlatte, TLD, Lektro, Jetporter, TUG Technologies, Eagle ³⁴
Water Truck	Commercial	Charlatte ³⁵
Cargo Handling		
Automated Guided Vehicles	Commercial	Konecrane, Kalmar ^{36,37}
Heavy-Duty Forklift	Demonstration	Kalmar piloting an electric forklift with Cargotec ³⁸
Reach Stacker	Demonstration	Hyster Europe developing an electric reach stacker using hydrogen fuel cells. Kalmar is also demonstrating an electric reach stacker with Cabooter ^{39,40} .
Ship-to-shore gantry crane	Commercial	Electric gantry cranes are the most common ship-to-shore gantry cranes at California ports.
Side Handler	Commercial	Kalmar ⁴¹
Straddle Carriers	Commercial	Kalmar ⁴²
Top Handler	Demonstration	Battery powered electric container handler at Port of LA with a wireless fast charger.
Yard Cranes	Commercial	Both RMG and RTG's have commercially available grid-electric technologies developed.
Yard Hostler (i.e., Yard Goat)	Commercial	Electric Orange EV, Kalmar Ottawa, BYD ⁴³

<https://www.tld-group.com/products/passenger-steps/bbs-580-e/>

³⁴ National Renewable Energy Laboratory. "Electric Ground Support Equipment at Airports"
https://afdc.energy.gov/files/u/publication/egse_airports.pdf

³⁵ Ibid.

³⁶ Konecrane.

<https://www.konecranes.com/equipment/container-handling-equipment/automated-guided-vehicles>

³⁷ Kalmar.

<https://www.kalmarglobal.com/equipment/automated-guided-vehicles/>

³⁸ Kalmar.

https://www.kalmarglobal.com/pressroom/press_releases/2019/kalmar-forges-ahead-on-its-electrification-journey-with-industrys-first-fully-electric-reachstacker-for-cabooter/

³⁹ Hyster.

<https://www.hyster.com/emea/en%E2%80%9090gb/press/press%E2%80%9090releases/hyster-electric-container-handlers-progress/>

⁴⁰ Kalmar.

https://www.kalmarglobal.com/pressroom/press_releases/2019/kalmar-forges-ahead-on-its-electrification-journey-with-industrys-first-fully-electric-reachstacker-for-cabooter/

⁴¹ Kalmar.

<https://www.kalmarglobal.com/equipment/masted-container-handlers/electric-empty-handler-ecg70-35e3e4/>

⁴² Kalmar.

<https://www.kalmarglobal.com/equipment/straddle-carriers/fastcharge-straddle/>

⁴³ California HVIP.

<https://www.californiahvip.org/how-to-participate/#Eligible-Vehicle-Catalog>

Construction Equipment		
Boom lift	Commercial	JLG ⁴⁴
Concrete Mixers	Commercial	Small portable electric concrete mixers are common.
Dumpers	Commercial	Wacker Neuson ⁴⁵
Excavators	Demonstration	Caterpillar piloted an all-electric 25-ton excavator with a 300 kWh battery pack ⁴⁶ . Smaller "mini" electric excavators are commercially available by Volvo, NASTA, Kobelco, and Wacker Neuson ⁴⁷ .
Loaders	Commercial	Wacker Neuson, Kramer ^{48,49}
Small Cranes	Commercial	UNIC Spydercrane, MAEDA, ZEE Crane ^{50,51, 52}
Tipplers	Commercial	Epiroc ⁵³
Tower Cranes	Commercial	Electric tower cranes are commonly available.
Commercial Harbor Craft		
Ferries	Demonstration	Norwegian shipyard Fjellstrand and Siemens, AG are demonstrating a BE car ferry. Golden Gate Zero Emission Marine and CA Climate Investments are demonstrating a FCE passenger ferry in the San Francisco Bay Area. Alabama's Gee's Bend Ferry was retrofitted to be all electric. SWITCH maritime is designing an all-electric ferry in NYC.
Locomotive		
Locomotive switch (yard)	Demonstration	CARB / SCAQMD pilot with Port of LA and VeRail Technologies through 2020
Locomotive line haul	Demonstration	CARB / SJVAPCD to demonstrate a battery electric locomotive late 2019 through fall 2021
Ocean Going Vessel		
Ocean-Going Vessel	Research	Smaller vessels (commercial harbor craft ferries, tugboat/towboat) are being built and piloted with ZE HFCs in the Bay Area, France and Norway. European pilots expect operational date of 2021.

⁴⁴ JLG.

<https://www.jlg.com/en/equipment/electric-hybrid-boom-lifts/articulating/e450-m450-series/e450aj?Cookie=language>

⁴⁵ Wacker Neuson.

<https://www.wackerneuson.eu/en/products/dumpers/track-dumpers/model/dt10e/>

⁴⁶ Electrek. "Caterpillar unveils an all-electric 26-ton excavator with a giant 300 kWh battery pack"

<https://electrek.co/2019/01/29/caterpillar-electric-excavator-giant-battery-pack/>

⁴⁷ Bellona Europa. "Zero Emission Construction Sites: The Possibilities and Barriers of Electric Construction Machinery"

<https://network.bellona.org/content/uploads/sites/3/2018/06/ZEC-Report-1.pdf>

⁴⁸ Wacker Neuson.

<https://www.wackerneuson.eu/en/products/wheel-loaders/articulated-wheel-loaders/model/wl20e/>

⁴⁹ Kramer.

<https://www.kramer-online.com/en/discover-kramer/zero-emission/the-kramer-5055e/>

⁵⁰ Spydercrane.

<https://spydercrane.com/compare-spydercrane>

⁵¹ ZEE Crane.

<https://www.zeecrane.com/>

⁵² MAEDA Mini Cranes.

<https://www.maeda-minicranes.com/>

⁵³ Epiroc.

<https://www.epiroc.com/en-us/applications/mining/zero-emission>