

Report on Initial Results and Findings for a Zero-Emission Equipment Grant Program

A practical resource for entities interested in implementing incentive programs to improve air quality and fuel efficiency in local communities.

Funded by a Grant from the Reformulated Gasoline Settlement Fund

BAY AREA CLEAN AIR FOUNDATION

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Table of Contents

Acknowledgement and Disclaimer	3
Overview	4
Solicitation Structure and Schedule.....	5
Outreach Efforts.....	6
Preliminary Results	7
Case Studies	9
Early Findings and Lessons Learned.....	9
Resources.....	11

Acknowledgement and Disclaimer

The project was made possible by a grant from the Reformulated Gasoline Settlement Fund. Created as a result of an antitrust class action, the purpose of the Fund is to achieve clean air and fuel efficiency benefits for California consumers.

This initial report was also prepared as a result of work sponsored and paid for, in whole or in part, by the Bay Area Air Quality Management District (Air District) and the Bay Area Clean Air Foundation (BACAF). The opinions, findings, conclusions, and recommendations are those of the author and do not necessarily represent the views of the Air District or BACAF. The Air District, the BACAF, their officers, employees, contractors, and subcontractors make no warranty, expressed or implied, and assume no legal liability for the information in this report.

Overview

While air quality has continued to improve in the San Francisco Bay Area over the past few decades, communities located near high pollution sources, such as freeways, busy distribution centers, and large industrial facilities, still experience relatively higher levels of air pollution. The Bay Area Air Quality Management District (Air District)¹ has been working to identify communities that are disproportionately impacted by higher rates of air pollution and focusing its efforts to accelerate reductions of air pollution in these communities through its Community Air Risk Evaluation Program (CARE) and the state of California's Community Air Protection Program, also known as Assembly Bill 617 (AB617). The West Oakland and Richmond-San Pablo areas are among those Bay Area communities that experience disproportionate impacts from air pollution and other environmental hazards, and where populations are most vulnerable to air pollution.

The Air District employs a variety of strategies to reduce air pollution in the region, which include planning, regulations, measurement, enforcement, outreach, and incentives. As equipment and vehicles operating in and near CARE/AB617 communities are a significant source of air pollution and greenhouse gases, expanding the use of zero and near-zero emissions technologies, which include deployment of electric equipment and vehicles, is a key strategy for reducing emissions of air pollutants and petroleum consumption in these communities.

On September 25, 2017, the U.S. District Court approved award of \$1.3 million from the Reformulated Gas Settlement Fund (RFG)² under its Open Grants Program for Bay Area Clean Air Foundation (BACAF)³, which was established by the Air District's Board of Directors as a nonprofit public benefit corporation, to develop and administer an incentive program to accelerate adoption of zero- and near-zero-emission equipment and vehicles operating in and around the West Oakland community.

Funded by this RFG grant, the Zero-Emission Grant Equipment Program (Program) was developed to complement the Air District's other efforts that work to reduce emissions and health risk in the West Oakland and Richmond-San Pablo CARE and AB 617 communities shown in Figure 1, and to augment other available funding sources in order to help expedite the adoption of new on- and off-road zero-emission vehicles, infrastructure, and other mobile or stationary equipment that will be installed and operated in these areas. The investment of \$1.3 million in RFG funds, leveraged with Air District and project sponsor funds, were anticipated to achieve a reduction in petroleum fuel consumption of more than 60,000 gallons

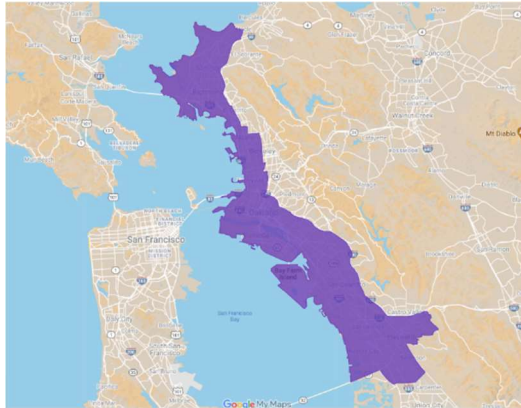
¹ The Air District is the public agency entrusted with regulating stationary sources of air pollution in the nine counties that surround San Francisco Bay: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma counties.

² The RFG Fund was created as a result of a judgment issued in RFG Antitrust and Patent Litigation, MDL Case No. 05-1761 CAS (VBKx) (U.S. District Court Central District of California) to provide grants to achieve clean air and fuel efficiency benefits for California consumers.

³ The purpose of the BACAF is to provide financial, administrative, and programmatic support to the Air District. As part of its charter, the BACAF serves to fund air pollutant emissions reduction efforts, including educational and service programs and other projects, to support the mission of the Air District.

per year, with the co-benefit of reducing criteria pollutants, including diesel particulate matter, and greenhouse gases.

Figure 1. Map of East Bay CARE Area



This initial report is intended to serve as a practical resource for entities interested in implementing incentive programs to improve air quality and fuel efficiency in local communities. As of the date of this initial report, the projects funded through the Program are in progress and an update to the report will be published following the conclusion of the Program’s projects.

This initial report contains an overview of the Program, a description of Program solicitations, procedures and other documents, targeted outreach efforts to applicants and other stakeholders in the targeted areas, the results of solicitations and outreach, a list of the applicants, projects and equipment/vehicles funded by this program, and lessons learned to date.

Solicitation Structure and Schedule

The Program accepted applications for funding through four rounds of open solicitations. The first solicitation opened on April 4, 2018. At the close of the first solicitation, the program was undersubscribed so three additional rounds were issued as separate solicitations. During each new solicitation the geographic area and eligibility requirements were slightly modified to align with the priority of the Program and to increase the potential pool of eligible applicants. The final round of solicitation closed on February 3, 2020. A summary of the solicitations is presented in Table 1, and copies of the solicitation guidance document and application forms are available under the resources section.

Table 1. Summary of the Schedule of Solicitations

Round	Open Date	Close Date	# of projects awarded	Eligible Area
1	4/4/18	5/18/18	1	West Oakland only
2	6/15/18	7/31/18	1	West Oakland and surrounding areas
3	2/18/19	6/30/19	3	West Oakland only
4	8/28/19	2/3/20	6	West Oakland and surrounding areas

Outreach Efforts

In each of the four rounds of solicitation, the Program was announced by email to nearly 3,000 interested stakeholders, ranging from public entities to small private fleet owners in the Bay Area, and follow up emails were sent throughout the solicitation period as reminders of upcoming deadlines.

In addition, several online workshops were conducted during each round. These workshops were meant to help familiarize potential applicants with the requirements and obligations of the program and to guide them through the application process. A total of 177 potential applicants attended the 16 workshops that were held over the four rounds of solicitation. Table 2 below lists the dates and attendees for each of these workshops.

Table 2. Online Workshops

Round	Date	Attendees
1	4/19/18	30
	5/2/18	15
2	6/26/18	19
	7/12/18	9
	7/24/18	13
3	2/28/19	5
	3/12/19	2
	4/3/19	15
	5/9/19	8
4	9/6/19	7
	9/12/19	8
	10/3/19	10
	11/5/19	8
	12/10/19	13
	12/17/19	6
	1/15/20	9
TOTAL	16	177

In addition to emails, targeted outreach in the form of direct conversations, phone calls, presentations and individualized e-mails was conducted with several stakeholders at meetings, workshops, conferences and other events targeting:

- Port of Oakland
- Tenants and businesses that operate diesel equipment in and around the Port, and
- Local jurisdictions and governments in and near West Oakland and adjacent Air District designated CARE areas of Richmond and Western Alameda County.

Table 3 below lists the targeted outreach performed, and copies of promotional flyers and of the webinar presentation are available under the resources section.

Table 3. Targeted Outreach

Date	Event / Contact	Target Audience/Attendees
3/18/2019	Port of Oakland Truckers Workgroup Meeting	30-40
3/19/2019 & 3/20/2019	California Air Resources Board Low-Carbon Transportation Heavy Duty Showcase and CALSTART 2030 Summit, Sacramento	~10
3/29/2019	Bay Area County Transportation Agencies Directors Meeting in Oakland	30
4/19/2019	BYD Service Center Opening	3
4/23/2019	ACT Expo	10
9/10-9/12, 2019	Hydrogen@Ports Workshop	~20
9/25/2019	AC Transit Tour and Workshop	25
Nov. 2019	West Oakland Environmental Indicators Project	~20
12/11/2019	East Bay Clean Cities Lunch & Learn	20

Preliminary Results

Awards and Projects Funded

As of July 2020, 25 applications had been received. Of these, 11 were found to be eligible and awarded a total of \$1,106,630 in RFG funds, supporting total project costs of \$9,573,756. The remainder of the costs were provided through other incentive programs, e.g., Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP), or were covered by the Project Sponsor.

The 11 projects will deploy zero-emission alternatives to conventional combustion vehicles and equipment in the communities of Richmond, West Oakland, and Western Alameda County. As of July 2020, two projects have received delivery of the zero-emission equipment and are operating. The other nine projects are currently being implemented and are scheduled to deploy their equipment by June 2023. Table 4 below provides a list of the applicants and equipment/vehicles funded by this Program.

Table 4. Applicants and Equipment/Vehicles Funded

Round	Project Sponsor	Equipment/Vehicles funded	RFG Funds Awarded	Total Cost
1	Wyse Logistics	3 electric forklifts and 1 electric terminal tractor.	\$40,200	\$361,920
2	Hayward Unified School District	43 level 2 dual-port electric vehicle charging stations	\$94,000	\$1,020,897
3	Evgo Services	10 DC fast charging stations	\$389,400	\$778,800
3	Oakland Maritime	1 electric terminal tractor	\$39,400	\$262,150
3	GSC Logistics	1 electric terminal tractor	\$80,000	\$274,081
4	Another Corporate ISP LLP DBA Monkeybrains ISP	5 electric vehicles	\$14,940	\$72,220
4	Oakland Pallet Co.	1 electric terminal tractor	\$80,000	\$274,081
4	Cass	2 electric terminal tractors	\$102,390	\$651,711
4	Zum services	15 electric school buses	\$173,800	\$4,637,768
4	City of Berkeley	15 light duty zero emission vehicles, 1 heavy duty electric shuttle and 14 electric vehicle charging stations.	\$67,214	\$1,080,668
4	Alameda County	4 light duty electric vehicles.	\$25,286	\$159,461
Total:			\$1,106,630	\$9,573,757

Petroleum Reductions

As part of the application, applicants provided information on the equipment or vehicles being replaced, including logs of the equipment's annual fuel usage and operations (in hours operating per year or miles driven per year). This information was used to estimate the emission and petroleum fuel reductions that would be achieved by replacing with zero-emission equipment. If no vehicle or equipment were being replaced, the estimates were calculated based on the amount of petroleum that would be used had the applicant purchased a new conventionally fueled vehicle or piece of equipment instead.

Table 5 below lists the estimated emissions and petroleum fuel reductions for each of the projects that were awarded. For the purposes of this Program, only tailpipe emissions and petroleum consumed directly by the vehicles or equipment being funded or replaced were considered. A description of the methodology used to calculate these estimates is included under the resources section.

Table 5. Estimated Emissions and Petroleum Fuel Reductions

Project Sponsor	NOx, ROG & PM (tons)		CO2 (tons)		Petroleum Fuel (gal)	
	annual	project life	annual	project life	annual	project life
Wyse Logistics	0.116	0.582	69.1	346	6,214	31,069
Hayward USD	0.126	0.630	150	748	9,749	48,744
Oakland Maritime Support Services	0.084	0.418	22.6	113	2,020	10,101
EVgo Services	0.656	3.28	778	3,889	79,752	398,762
GSC Logistics	0.056	0.280	46.2	231	4,160	20,800
Monkeybrains	0.003	0.015	8.05	40.3	850	4,251
Oakland Pallet Co.	0.102	0.509	46.7	233	4,160	20,800
Cass Recycling	0.783	3.913	58.0	290	5,242	26,210
Zum Transportation	0.237	1.19	170	510	15,148	75,741
City of Berkeley	0.008	0.038	8	42.407	3,441	17,205
Alameda County	0.002	0.011	11	57	1,295	6,473
Total:	2.17	10.86	1,367.88	6,499.47	132,031.16	660,155.82

As part of the award, Project Sponsors are required to submit operational reports that include monthly usage for the first six months and annual usage for 5 years afterwards. These reports will be used to determine realized emissions and petroleum usage reduction results. This report will be updated with realized results following completion of projects. As of July 2020, two projects have had their new zero-emission equipment delivered and operating.

Case Studies

As nine of the 11 projects are not yet operational as of July 2020, case studies are being planned and will be included in an update to this initial report.

Early Findings and Lessons Learned

Data collection and reporting will continue for funded projects until June 30, 2023, thus the following is a summary of preliminary findings and initial lessons learned that may be applicable to future programs:

- The program requires project sponsors to cover a minimum of 50% of project cost. This match requirement meant some projects were heavily dependent on non-RFG, outside sources of funding (HVIP and Clean Off-Road Equipment Voucher Incentive Project (CORE)) being available simultaneously. Aligning the program with the availability of outside stackable funds or decreasing the match requirement would make the program attainable to more applicants.
- The program determined the grant amount based on measurable petroleum reductions. This approach may have prevented some low use but heavily polluting equipment from qualifying. Future programs may consider allowing the evaluation criteria to be based on petroleum or emission reductions.

- The Program accounts for only mileage and emissions reductions in eligible areas. Carsharing, which relies on individual customer usage, proved difficult in estimating operations in the eligible area and monitoring the required usage. Carsharing organizations were unwilling to be held liable to the contractual usage requirements with the possibility of fund repayment. The potential solution of tracking devices was rejected due to privacy concerns. EV carshare projects were not ideal candidates for the program, while traditional tenant fleets with regular route were a stronger fit for the program.
- Multiple delays in milestone deliverables occurred due to the new nature of these nascent technologies, as well as longer production and delivery periods for equipment/vehicles. Further delays, including the placement of orders and financing, also occurred due to shelter-in-place orders as a response to the COVID-19 pandemic. Building in a “cushion” for such delays in the overall program schedule is key to meeting final project deadlines.
- Multiple electric terminal tractors projects were awarded RFG project funds. The technology has long been commercially proven, and the availability of HVIP and CORE—stackable with RFG funds. The technology also benefited from having an attentive vendor who was highly engaged with the program. The success of electrical terminal tractor projects proved that commercially proven technologies with multiple funding streams and engaged vendors had strong prospects for success.
- Since the program focused on zero-emissions vehicles and equipment, interest levels were heavily influenced by technology readiness, operational feasibility and financial cost. As the availability of zero-emissions technologies is rapidly evolving, the projects funded reflect what was commercially available at that time.
- Reaching the right audience is key. Several outreach channels such as attending meetings at the Port resulted in engagement with drivers or other field staff. Directly connecting with decision-makers and management personnel is challenging but critical to project and application development.
- Many fleet owners expressed that they did not have the time, resources nor expertise to apply for a grant and then execute programmatic responsibilities. One vendor helped solve part of this issue by being very engaged in the RFG program, communicating regularly with program staff and aiding customers in submitting applications. Future outreach should be expanded to include vendors, since vendors can be highly knowledgeable regarding their customers operations and may be willing to provide support during the application process.
- Several operators chose not to submit applications, expressing uneasiness in regard to the one-time nature of this Program compared to the continual nature of other incentive programs in this space (e.g., HIVP and Carl Moyer). Future program iterations should coordinate and partner with established funding sources to help improve applicant confidence.

In conclusion, the majority of project sponsors are just beginning to receive and operate their new zero-emission equipment at the time of the publishing of this initial report. Additional data and lessons learned

are anticipated in the forthcoming months. This section will be updated at the conclusion of the project in June 2023 to include these final findings and lessons learned.

Resources

The following resources were used to support the Program. Entities that are interested in implementing similar program are welcome to use and modify these for their own use with acknowledgement to the RFG and Air District. The Air District, the BACAF, their officers, employees, contractors, and subcontractors make no warranty, expressed or implied, and assume no legal liability for the information in these documents.

Appendix 1- Program Guidance: Four solicitations were issued for this Program. Appendix 1 includes the guidance document that was made available for applicants in the fourth round that concluded on February 3, 2020.

Appendix 2- Webinar Presentation: 16 webinars were held and 177 attendees participated. Appendix 2 includes a copy of the webinar presentation from January 15, 2020. A recording of this webinar is also available at <https://www.youtube.com/watch?v=ZBodArvG-mw>

Appendix 3- Application Form: Applications were accepted through an online form on FormAssembly.

Appendix 4- Operations Report: Project Sponsors who were awarded are required to submit Operations Reports monthly, for the first six months, and annually afterwards for a period of 5 years. The data in these reports are used to determine realized emission and petroleum reduction results.

Appendix 5- Methodology for estimating emission and petroleum reductions: This document contains the methodology and assumptions used to estimate a project's emission and petroleum reductions during the application.

Appendix 6- Program Flyer: Program flyers were distributed at various outreach events, including port workshops and conferences.