EV Charging Demonstration Program

Report on Program Results

Bay Area Clean Air Foundation

April 30, 2018

Disclaimers:

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 report was also prepared as a result of work sponsored, 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.

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Background and Introduction

The Reformulated Gasoline Settlement Fund was created as a result of a judgment issued in Reformulated Gasoline (RFG) Antitrust and Patent Litigation, MDL Case No. 05-1761 CAS (VBKx) (U.S. District Court Central District of California). The judgment established a Reformulated Gasoline Settlement Fund and an Open Grants Program for grants to achieve clean air and fuel efficiency benefits for California consumers. The majority of the RFG Open Grants Program funding was awarded in 2010, including a grant to the Bay Area Clean Air Foundation (BACAF), a nonprofit public benefit corporation, for a project to deploy ten converted plug-in electric carsharing vehicles in partnership with City CarShare.

In order to support Bay Area public agencies' efforts to green their fleets and to deploy charging infrastructure in their communities, the BACAF, in partnership with the Bay Area Air Quality Management District (Air District), submitted an application to the RFG's Open Grants Program on February 5, 2015, requesting $500,000 in remaining RFG funds for an electric vehicle (EV) charging station incentive program.

On May 12, 2015, the U.S. District Court approved a grant under the RFG Open Grants Program whereby the BACAF, who, contracting with the Air District, will: (a) provide up to $450,000 in RFG funds that would be matched with the Air District's Transportation Fund for Clean Air (TFCA) funding for the installation of publicly available electric vehicle charging stations; (b) following installation, collect data to measure environmental, economic, and operating benefits; (c) publish a white paper to include a summary, key features, benefits of, and lessons learned from this grant; and (d) share results with local governments, air districts, and other entities with an interest in the deployment of electric vehicle infrastructure. Up to $50,000 of the RFG funds will be used to pay for administration of the incentive program and for the development of the white paper.

The Electric Vehicle Charging Station Demonstration Program

Overview

With the approved RFG funding, the Air District developed the *Electric Vehicle Charging Station Demonstration Program* (Program). The RFG funds were matched with funds from the Air District's TFCA *Charge!* Program to provide grants to public entities to deploy charging stations at a variety of publicly available locations. Public entities were responsible for installing, operating, and maintaining the charging stations; collecting usage and demand data; and sharing lessons learned and best practices. In addition, 25% of RFG funding, or $112,500, was reserved for projects in communities that experience disproportionately high impacts of air pollution, as identified by the Air District's Community Air Risk Evaluation (CARE) Program.

Specifically, the Program provided funding to reimburse for up to 90% of total eligible costs for the purchase and installation of new, publicly available EV charging stations along major transportation corridors, at workplaces, and at key destinations. Funds were awarded through a competitive grant application process whereby applicants who requested lower grant amounts per ton of emissions reduced were scored higher. In addition, the Program prioritized projects that were "shovel-ready,"

incorporated renewable energy, helped to expand the region's charging network, and are located in Air District-designated CARE areas.

The Air District released the Program guidance (see *Appendix A*) and opened a call for projects on August 18, 2015. The call for projects was scheduled to close on October 8, 2015; however, the program was not oversubscribed by that date. On October 14, 2015, after consultation with the administrator of the RFG funds, the Air District extended the solicitation deadline to December 18, 2015.

Outreach and Results in CARE Areas

The Program was promoted through both general outreach and targeted outreach in CARE areas during the solicitation period. To ensure that the Bay Area communities that experience higher pollution levels and corresponding health effects would benefit from the emission reductions resulting from this program, Air District staff reserved 25% of the funds for the most cost-effective projects located in CARE areas. Many of these communities are in close proximity to sources of pollution sources, including freeways and major roadways, which also makes them ideal locations to site EV charging stations, and thus good candidates for this program. Air District staff reached out to and contacted representatives from numerous communities in CARE areas to share information about this program and encouraged them to identify facilities in their communities that would be interested in participation. Representatives that were contacted included:

- Alameda-Contra Costa Transit District
- Alameda Municipal Power
- City of Berkeley
- City of Oakland
- City of San Jose
- City of Walnut Creek
- Contra Costa County
- City of Dublin
- Port of Oakland
- San Francisco Bay Area Rapid Transit District

Air District staff also shared information about this program and distributed a flyer (see Figure 1) at community meetings in CARE areas where appropriate.

In addition to the targeted outreach to representatives of CARE area communities, Air District staff also conducted general outreach for the program. Air District staff sent email notices on August 18, September 1, and October 1, 2015 to 2,000+ local Bay Area organizations, including public entities, local businesses, and non-profits, to advertise the program and availability of funding. Staff also shared information and distributed the program flyer shown in Figure 1 at various meetings and events, including:

- EV Council Meeting (8/25/2015)
- Outreach event for the Charging Station Demonstration Program to cities, counties, and EV stakeholders (9/1/2015)
- National Drive Electric week EV Rally event at De Anza College in Cupertino (9/19/2015)
- EV Coordinating Council Meeting at Oakland City Hall (9/30/2015)
- EV Ride & Drive event at the Oyster Point business park in South San Francisco (10/28/2015)

These events were selected as having a high number of potential interested applicants in attendance.

For applicants, staff hosted four pre-application workshops via online webinars on August 26, September 3, November 5, and December 9, 2015. These webinars were attended by interested applicants and provided information about the program, instructions on how to apply, and an opportunity for interested applicants to ask questions about the Program. Over 150 interested applicants attended the workshops.

Figure 1. EV Charging Station Demonstration Program Flyer

Project Selection

As of the December 18, 2015 deadline, the Air District received 17 applications, which requested a total of $2.6 million in grant funds, of which approximately $1.2 million were RFG funds. Staff evaluated these applications and worked with applicants to gather additional documentation and information to determine Program eligibility. Staff also confirmed that all eligible projects conform to the provisions of HSC 44241 and the Board-adopted cost-effectiveness limits for the *Charge!* Program for the TFCA-funded portion. Each eligible project was scored based on its cost-effectiveness, readiness, percentage of chargers open to the public, and whether the site expands the region's coverage of publicly available chargers. Eligible projects were then ranked based on their scores. Three lower-scoring projects were recommended for award to meet the requirement for reserving 25% of RFG funding for projects in CARE Areas.

Based on the ranking results, staff recommended an original award of a total of $692,233 of TFCA funds and $450,000 of RFG funds to the nine highest ranked projects, which included four projects in CARE

Areas. Two of the nine projects listed were recommended for a partial award based on scoring and ranking. In order to meet the RFG's 25% funding requirement for CARE Areas ($112,500), full funding was recommended for the first three highest ranked projects located in CARE Areas and partial funding was recommended for the fourth highest ranked project located in a CARE Area. In addition, the ninth highest project was also recommended for partial funding (see *Appendix B*).

Originally, nine projects were awarded to install 92 charging stations (11 DC Fast charging stations, 78 Level 2, and 3 Level 1 chargers) at 23 locations throughout the Bay Area and were estimated to, over a three-year period, reduce criteria pollutant emissions by 1.3 tons, reduce more than 2,500 tons of greenhouse gas emissions, and reduce gasoline usage by approximately 300,000 gallons.

Final Project Scope

Due to several challenges during the project implementation phase, the scope changed to 77 charging stations at 19 facilities, which included a total of 129 level 2 charging ports and 11 DC fast charging stations. Table 1 summarizes the funded projects and final grant awards and Figure 2 shows a map of the facilities. Four projects changed their scope and those changes are described below:

Project #16RFG08: City of Millbrae

The City of Millbrae had a fire at one of its five facilities and requested to relocate the proposed charging stations from the affected facility to other approved facilities, thereby reducing the total number of new facilities from five to four, while keeping the same number of new stations/ports that would be deployed.

Project #16RFG15: City of Palo Alto

The City of Palo Alto proposed projects that combined charging stations with renewable solar power, but was unable to complete work at three of their facilities by the Program deadline due to delays in deploying the solar component. As a result, only two chargers at one facility out of the original scope of 16 chargers at four facilities were eligible to receive RFG funds. Furthermore, the City decided to install two dual-port Level 2 chargers rather than the proposed single-port Level 2 and dual-port Level 2 chargers. As a result of these changes, the total RFG funds were reduced from $45,445 to $11,000, with the difference ($34,445) being re-allocated to the NASA Ames project (16RFG11) and the total TFCA funds were reduced from $76,500 to $9,000.

Project #16RFG18: San Francisco Bay Area Rapid Transit District (BART)

Due to parking redesign at the new Warm Springs BART Station in Fremont, BART requested a change from 18 dual-port and 5 single-port charging stations to 20 dual-port and 2 single-port charging stations. Although the total numbers of stations decreased from 23 to 22, the actual number of charging ports increased from 41 to 42.

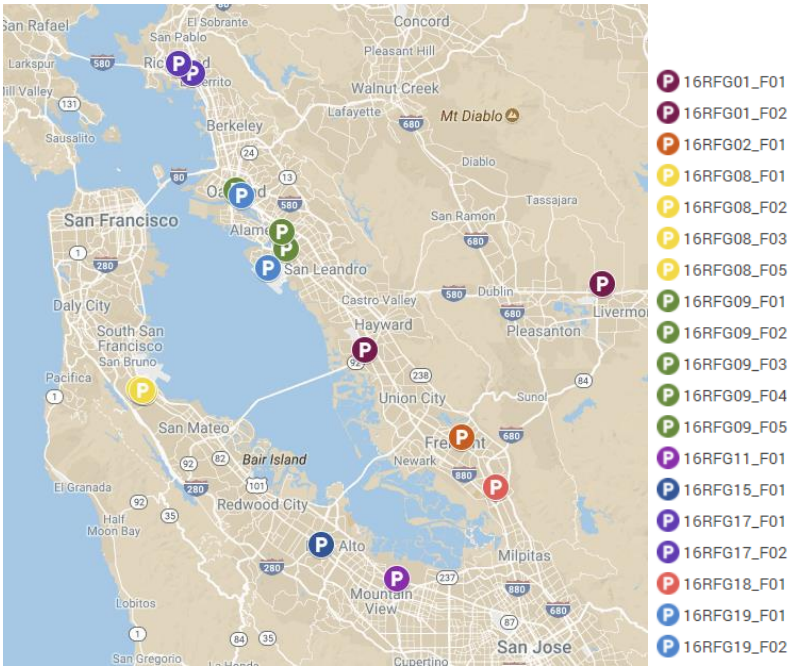
Project #16RFG19: County of Alameda

The County of Alameda proposed projects that combined charging stations with renewable solar power provided by SunEdison. However, during the project implementation phase, SunEdison declared bankruptcy, which affected two of the three project facilities. The County of Alameda then requested to move the proposed charging stations from the two affected facilities (7751 Edgewater in Oakland and 951 Turner Ct. in Hayward) to a new facility (1151 Harbor Bay in Alameda). This reduced the total number of facilities to two, but kept the number of charging stations the same. In addition, the removal of solar from the project also reduced the amount of eligible Air District TFCA funding from $80,348 to $64,103.

Table 1. Summary of Funded Projects (Final Project Scope)

Project Number	Project Sponsor	Title	RFG $ Awarded	TFCA $ Awarded	Total $ awarded	No. of Facilities	No. of Charging Stations
16RFG01	Chabot Las Positas Community College District	Install 12 Dual-Port level 2 charging stations in Livermore and Hayward	$10,852	$54,260	$65,112	2	12
16RFG02	City of Fremont	Install 9 Dual-port level 2 charging stations in Fremont	$27,486	$54,000	$81,486	1	9
16RFG08	City of Millbrae	Install 8 Dual-Port Level 2 Charging Stations in Millbrae	$30,000	$48,000	$78,000	4	8
16RFG09	City of Oakland	Install 1 Dual-Connector DC Fast and 5 Dual-Port level 2 Charging Stations in Oakland	$12,875	$26,414	$39,289	5	6
16RFG11	The NASA Ames Exchange	Install 8 Dual-connector DC fast charging stations in Moffett Field	$142,014	$200,000	$342,014	1	8
16RFG15	City of Palo Alto	Install 2 Dual-port Level 2 charging station in Palo Alto	$11,000	$9,000	$20,000	1	2
16RFG17	City of Richmond	Install 1 DC fast and 1 Single-port Level 2 charging stations in Richmond	$19,511	$28,000	$47,511	2	2
16RFG18	San Francisco Bay Area Rapid Transit District (BART)	Install 20 Dual-Port and 2 Single-Port Level 2 Charging Stations in Fremont	$127,000	$123,000	$250,000	1	22
16RFG19	County of Alameda	Install 1 DC Fast and 7 Dual-Port Level 2 Charging Stations in Oakland and Alameda	$69,262	$64,103	$133,365	2	8
		Total, 9 Projects:	**$450,000**	**$606,777**	**$1,056,777**	**19**	**77**

Figure 2. Map of the Facilities



Summary of Clean Air and Fuel Efficiency Benefits

All 77 charging stations at 19 facilities, which include 129 Level 2 charging ports and 11 DC fast charging stations/ports, were placed into service by September 27, 2017 and are currently in active service (see *Appendix C*). During the operational period, the Air District collected data from project sponsors by February 15, 2017 (for period between August 1, 2016 and January 31, 2017), by August 15, 2017 (for period between February 1 and July 31, 2017), and by February 15, 2018 (for period between August 1, 2017 and January 31, 2018). Depending on when project sponsors placed their projects into service, up to 16 months of data is available.

The cumulative amount of energy dispensed by all charging stations is shown in Figure 3, and Figure 4 shows the total energy dispensed by all charging stations. As of January 31, 2018, a total of 318,154 kWh has been dispensed from the charging stations. This is equivalent to driving approximately 1.1 million electric miles (instead of gasoline) and reducing approximately 0.25 tons of criteria pollutants (ROG, NOx, and PM) and 39,962 gallons of fuel per year. Figure 5 shows the monthly average energy dispensed per port at each facility, which was calculated using energy data beginning with the first full month of data through January 31, 2018. For more information about monthly charging data at each facility, see *Appendix D*.

Figure 3. *Cumulative Energy Dispensed by All Charging Stations*

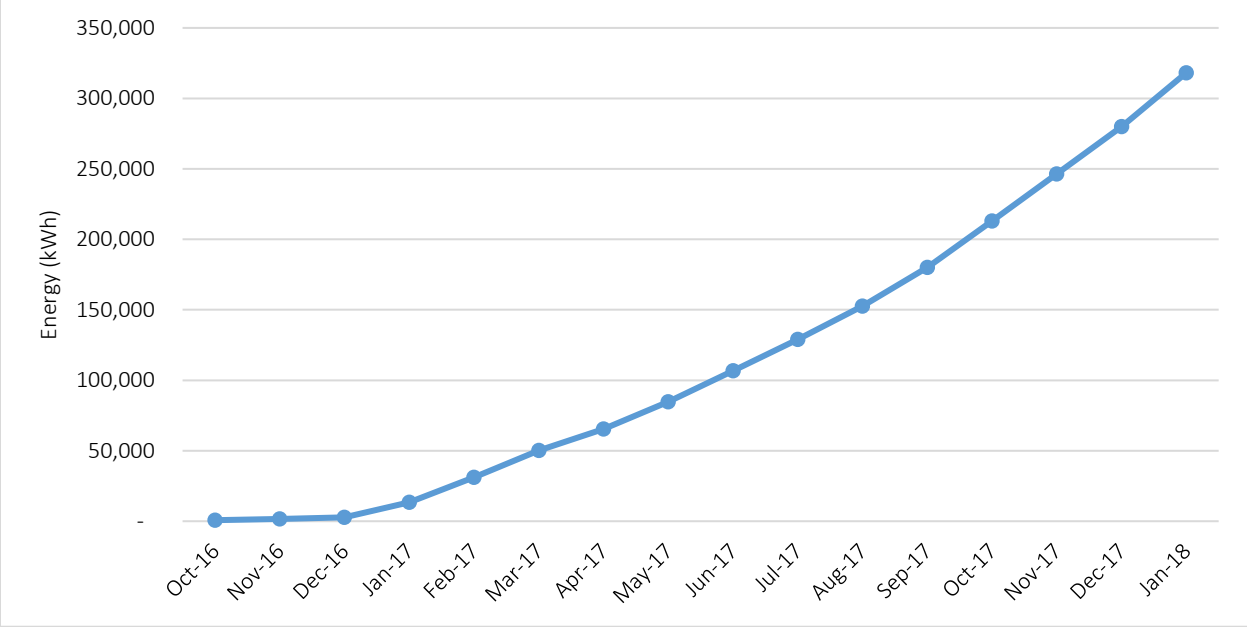


Figure 4. Total Energy Dispensed by All Charging Stations at Each Facility Between Start of Operation and January 31, 2018

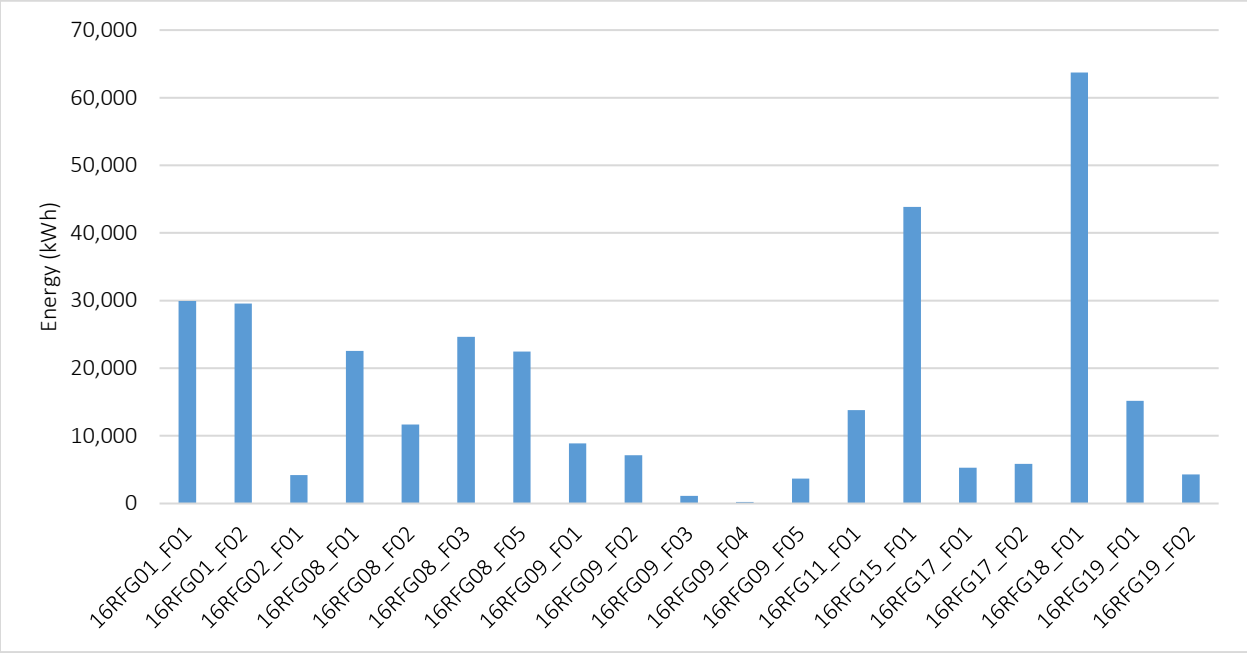
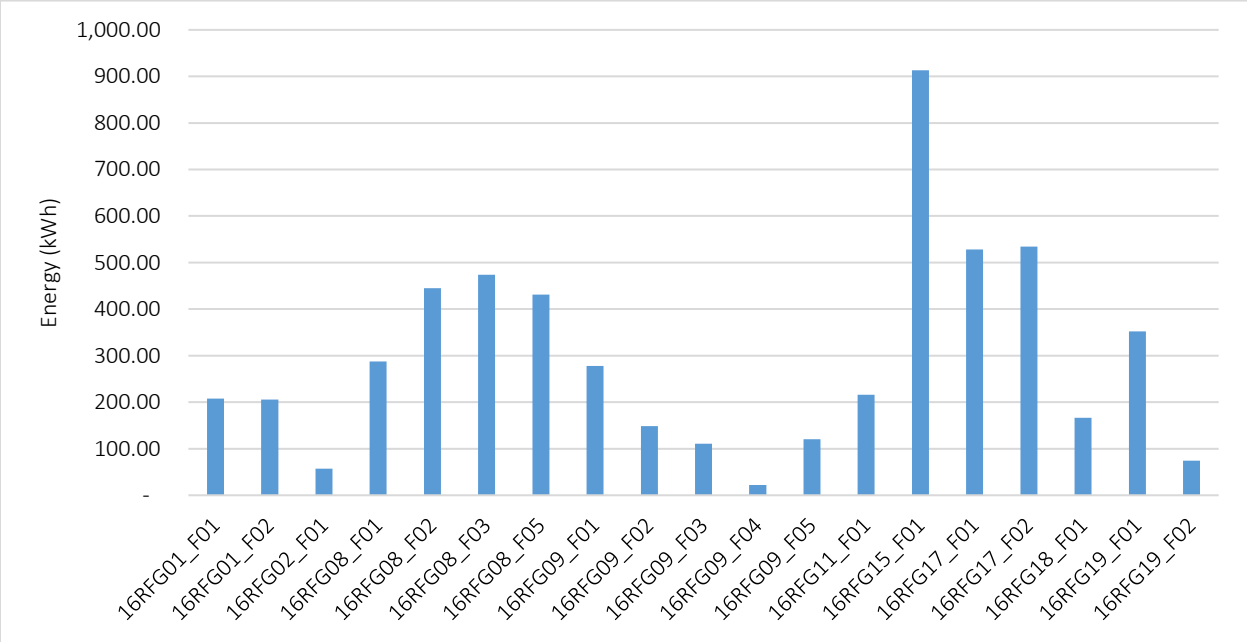


Figure 5. Monthly Average Energy Dispensed per Port at Each Facility[1]



[1] Only full months of data were used to calculate monthly averages.

Each facility delivers a monthly average of 293 kWh per port. The facilities are anticipated to deliver a collective average 362,751 kWh per year, which is equivalent to driving approximately 1.2 million electric miles. Given the number of electric vehicles in the region is increasing, the demand for these stations is

also projected to increase over time, and the amount of energy dispensed by each facility has been increasing by an average of 6% per month for the past four months.

Three scenarios were developed to assess vehicle emissions and fuel efficiency benefits:

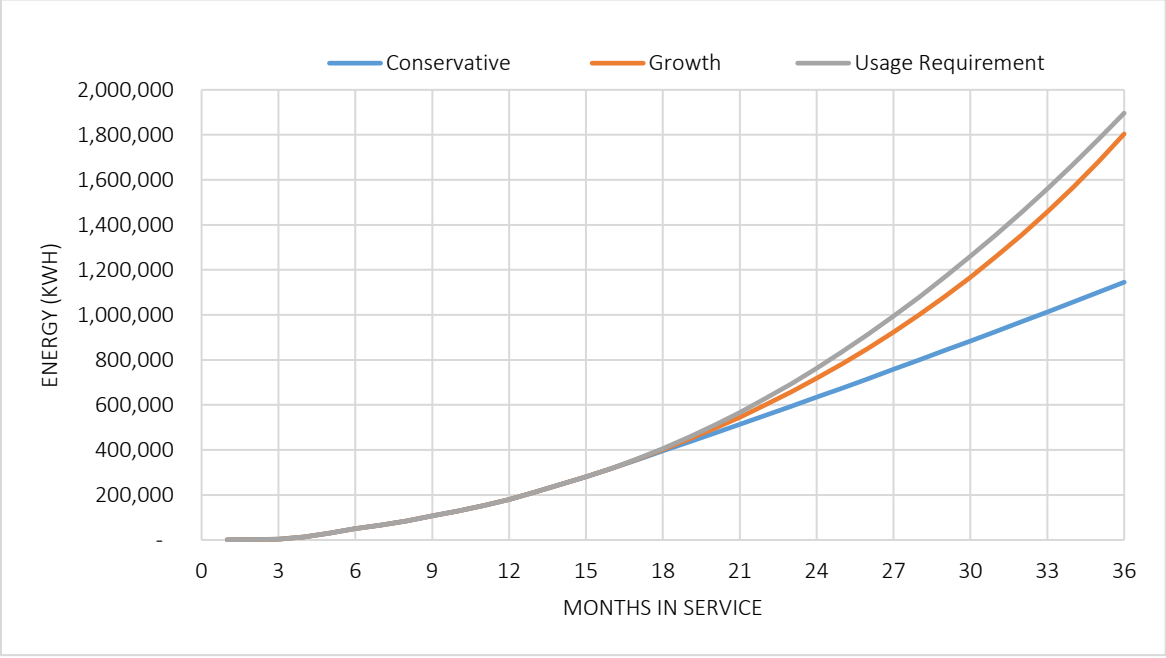
1. Conservative Model: The conservative model assumes that the charging stations will continue to dispense energy at the same monthly average rate over the next three years. This would mean that the facilities would deliver a collective 1.1 million kWh (approximately 3.7 million electric miles, resulting in 155,000 gallons of petroleum reduced).

2. Growth Model: The growth model assumes that the charging rates will continue to increase by 6% per month. This would mean that the facilities would deliver a collective 1.8 million kWh over the next three years (approximately 6.1 million electric miles, resulting in 255,000 gallons of petroleum reduced).

3. Usage Requirement: During the application evaluation process, the Air District projected the amount of usage for each charger, which was used to estimate the criteria and CO2 emissions and the gallons of petroleum reduced by the chargers. The usage requirement model shows the amount of energy dispensed that is required to meet the usage projected in the application evaluation, which is 1.9 million kWh over the three-year implementation period (approximately 6.4 million electric miles, resulting in 265,000 gallons of petroleum reduced).

The cumulative energy dispensed over three years for each scenario is shown in Figure 6.

Figure 6. *Cumulative Three-Year Projection Scenarios*



Case Studies

The Program funded a number of projects that targeted specific demographics of EV drivers, with diverse parking locations in communities with different rates of EV adoption. Three of these projects are featured here as case studies for further analysis.

Case Study 1: The NASA Ames Exchange (16RFG11)

The NASA Ames Research Center is one of ten NASA field centers that conducts world-class research and development in aeronautics, exploration technology, and science. Located in Moffett Field, the NASA Ames Exchange is a large workplace situated at a major transit corridor ideal for public charging. Eight DC Fast charging stations were installed at the NASA Ames visitor badging parking lot (see Figure 7), which is less than one mile from the U.S. 101 and CA-85 Moffett Boulevard exits as well as downtown Mountain View.

The chargers are publicly available at all hours of the day for a fee of $0.25 per minute. This rate is on the higher end to use DC Fast chargers in the area, which is typically up to $0.20 per minute. Between the start of operation on June 1, 2017 and January 31, 2018, this facility has dispensed 13,823 kWh, which is equivalent to driving approximately 46,445 miles, and has satisfied 2% of its total usage requirement of 600,000 kWh. Setbacks for this project included significant delays with the installation of the transformer and account set up, which was performed by Pacific Gas & Electric (PG&E). Average duration per charge session was 19 minutes, while average charging time per charge session was 18 minutes. On average, approximately 13.7 charging sessions occurred per day at the facility. As shown in Figure 8, charging start times were distributed throughout the day, with the highest demand of charging starting mid-day. Figure 9 shows a histogram of the charging time in minutes per session, and Figure 10 shows a histogram of energy dispensed per charging session.

Figure 7. Eight DC Fast Chargers Installed at the NASA Ames Visitor Center Parking Lot

Figure 8. Histogram of Charging Start Times at NASA Ames Visitor Center

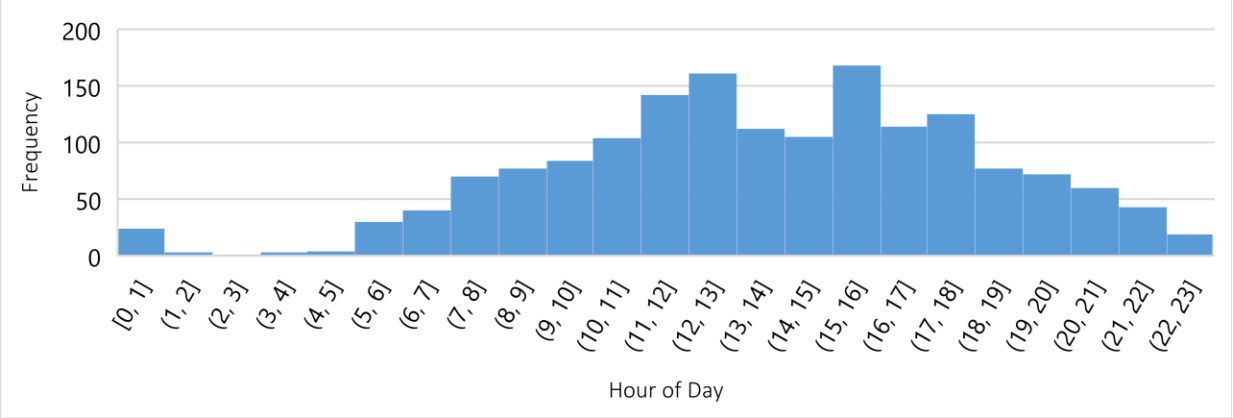


Figure 9. Histogram of Active Charging Time per Charging Session at NASA Ames Visitor Center

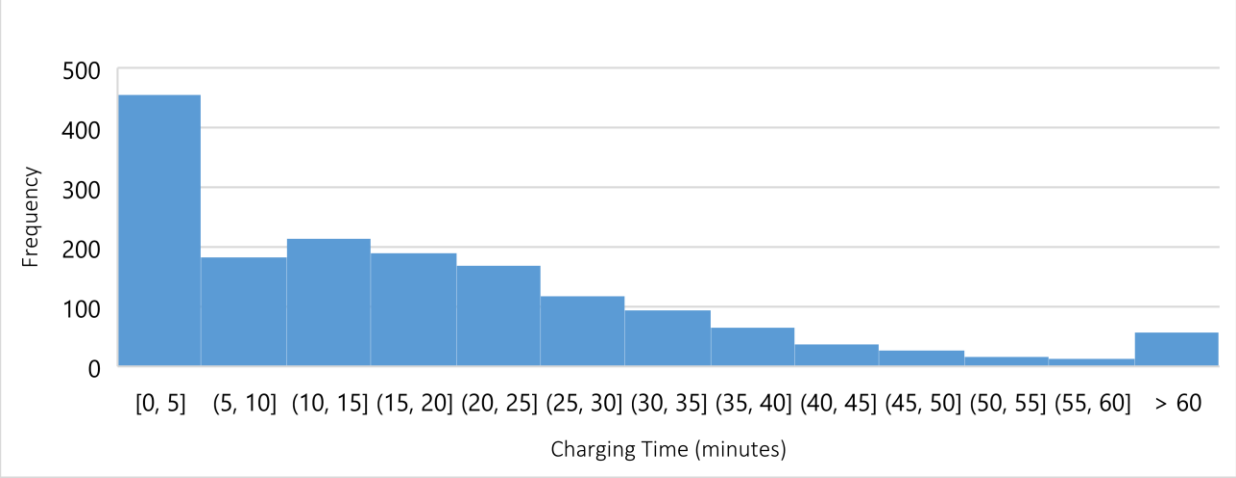
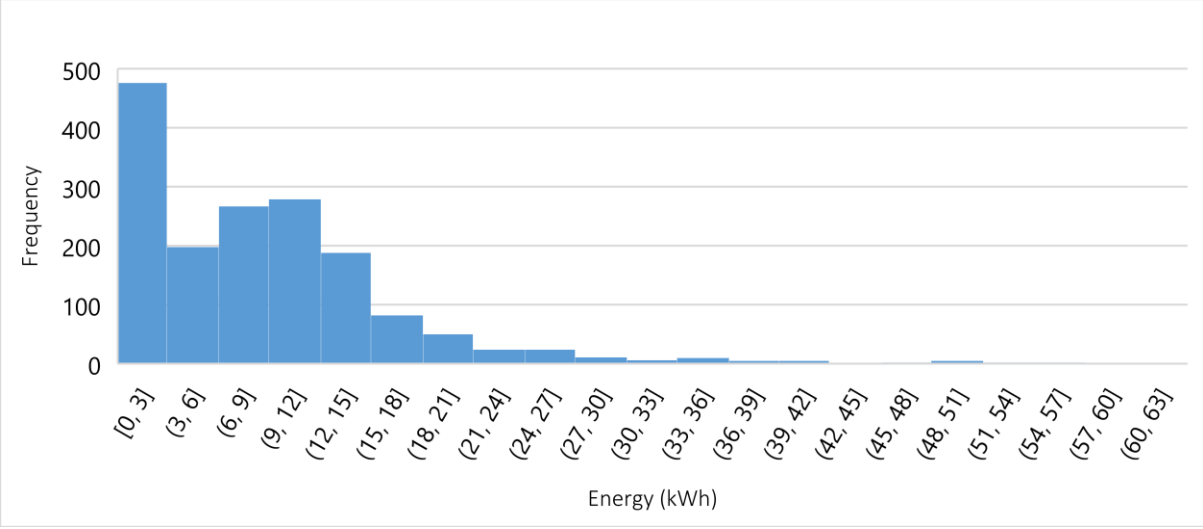


Figure 10. Histogram of Energy Dispensed per Charging Session at NASA Ames Visitor Center



Case Study 2: San Francisco Bay Area Rapid Transit District (16RFG18)

The San Francisco Bay Area Rapid Transit District (BART) is the heavy rail rapid transit system in the Bay Area with an annual ridership of over 128 million trips. Warm Springs station in Fremont opened in April 2017 as the first line on the new San Jose extension. Twenty dual-port and two single-port Level 2 charging stations were installed at the Warm Springs station (see Figure 11).

The chargers are available during BART service hours, which are weekdays from 4 AM to midnight, Saturdays from 6 AM to midnight, and Sundays from 8 AM to midnight. Pricing for the use of charging stations is embedded in the parking rates. BART Daily EV Charging Single Day Reserved permits, which are $6.00 per day, are required to park at the charging stations on weekdays from 4 AM to 3 PM. For the BART Americans with Disabilities Act (ADA) lot EV Charging spaces, Daily Parking fees are $3.00 per day on weekdays from 4 AM to 3 PM. Payment is not required outside of the weekday hours for either lot.

Challenges included installation costs and logistics, identifying a pricing structure that fit BART standards and EV Charging demands, and complying with State ADA requirements. Between May 1, 2017 and January 31, 2018, this facility has dispensed 62,908 kWh, which is equivalent to driving approximately 46,101 miles, and has satisfied 17% of its total usage requirement of 378,000 kWh. As shown in Figure 12, the charger usage peaks around 7-8 AM, which is aligned with the morning work commute times, and then again at 5-6 PM. Figure 13 shows a histogram of the charging times, which shows that most users are charging between 0 and 30 minutes instead of the entire duration for which they are parked. Figure 14 shows a histogram of the amount of energy dispensed per charging session, which peaked between 0 and 3 kWh. On average, approximately 18.2 charging sessions occurred per day at the facility.

Figure 11. *EV Charging Station at the Warm Springs BART Station*

Figure 12. *Histogram of Charging Start Times at Warm Springs BART Station*

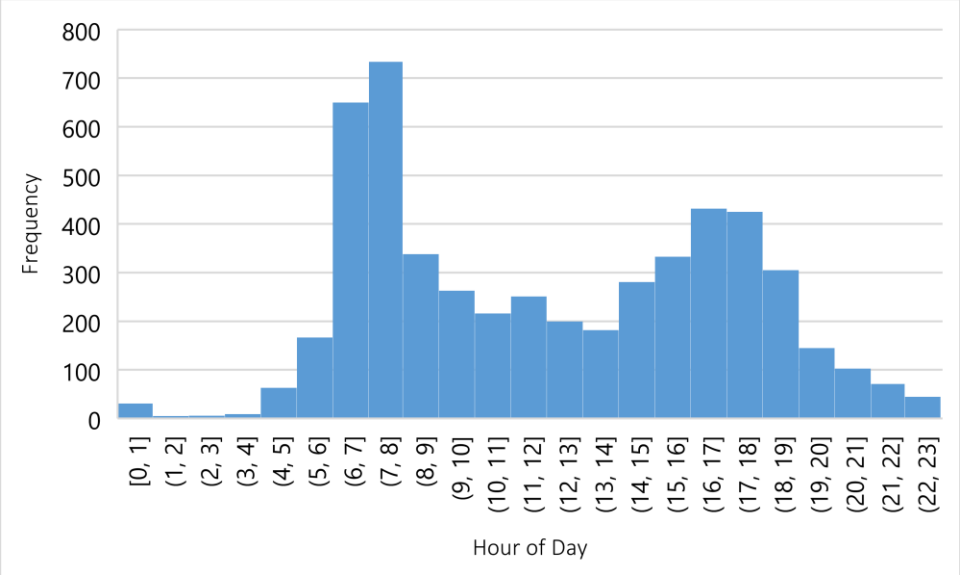


Figure 13. Histogram of Active Charging Time per Charging Session at Warm Springs BART Station

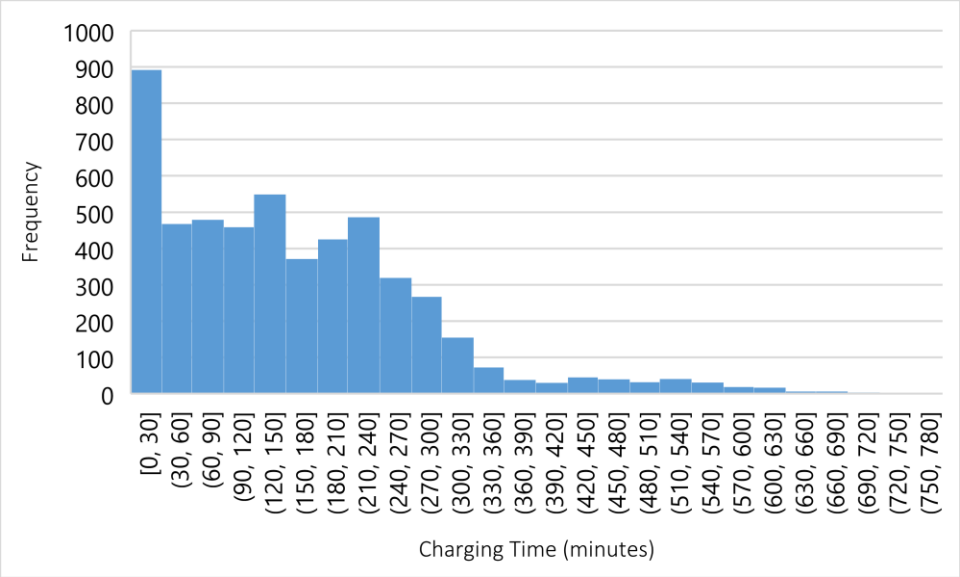
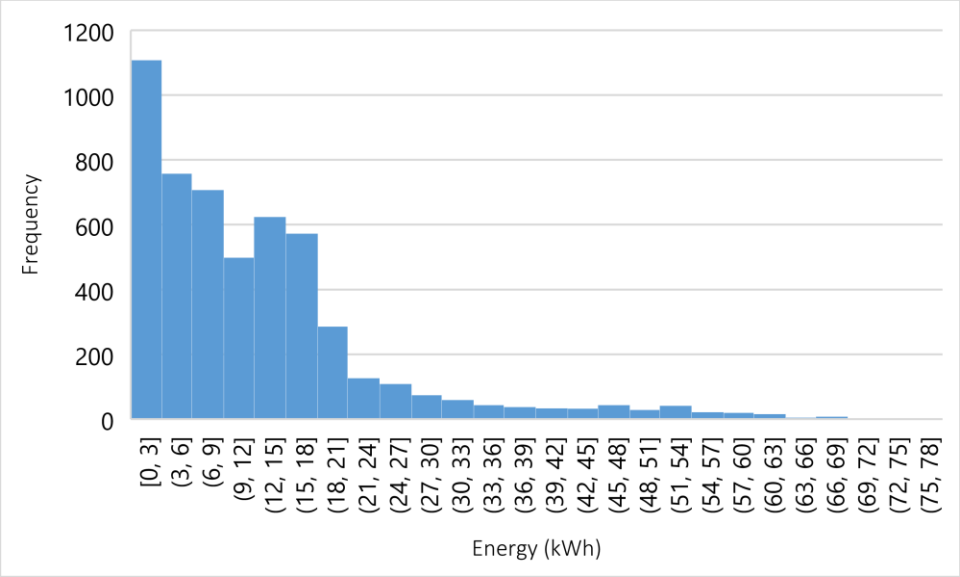


Figure 14. Histogram of Energy Dispensed per Charging Session at Warm Springs BART Station



To assess usage for the typical BART commuter, further analysis was conducted for morning BART commuters who parked at the EV charging stations between 7 and 9 AM. As shown in Figure 15, the duration of charging sessions (plug-in time) was around 8-12 hours, which is expected for commuters who take BART to work. However, active charging time occurred mainly for the first four hours, as shown in Figure 16. Once active charging ends, the vehicle sits idle and plugged in for another 4-8 hours before vehicle owners return. This suggests that a lower-rate charger may be enough to satisfy the demand.

Figure 15. Histogram of Duration of Charging Sessions Beginning Between 7 and 9 AM at Warm Springs BART Station

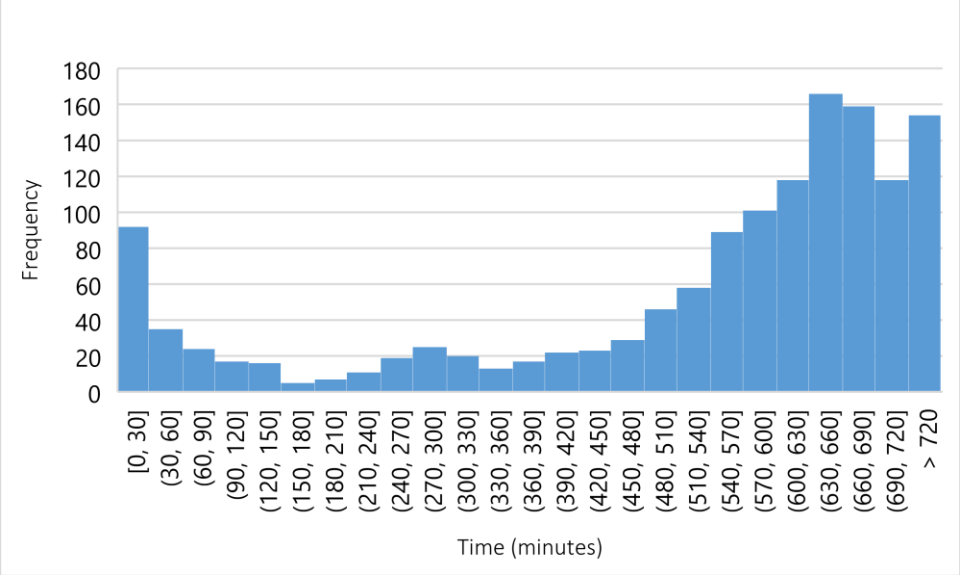
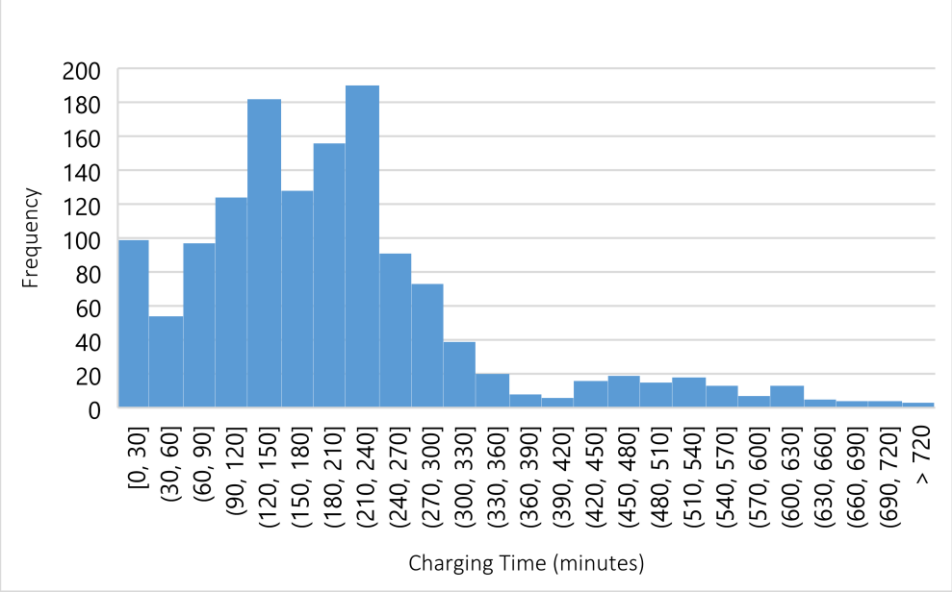


Figure 16. Histogram of Active Charging Time of Sessions Beginning Between 7 and 9 AM at Warm Springs BART Station



Case Study 3: City of Richmond (16RFG17)

The City of Richmond installed two charging stations in Richmond. One single-port Level 2 charger was installed at the Family Justice Center, and one DC Fast charger was installed at Kennedy High School Swim Center (see Figure 17). At the Swim Center, the DC fast charging station is available on weekdays between 8 AM and 6 PM at a rate of $7 per hour with a minimum $1 charge. At the Family Justice Center, the Level 2 charging station is available at all hours for a rate of $1 per hour and $5 after four hours of charging.

On average, approximately 2.6 Level 2 charging sessions and 3.3 DC Fast charging sessions occurred per day. The average duration per charge session was 2 hours and 37 minutes for the level 2 charger, while the average charging time per charge session was 1 hour 54 minutes. The average duration per charge session was 17 minutes for the DC fast charging station, while the average charging time per charge session was 16 minutes. As shown in Figure 18, the most popular charging time for the level 2 charger was started between the hours of 7-8 AM, which is when the majority of people arrive at work. Figure 19 shows a peak for the DC Fast Charger between 3 and 4 PM, which is when school typically ends. Figure 20 and Figure 21 show histograms of the active charging time per session for the Level 2 and DC Fast Charger, respectively. Figure 22 and Figure 23 show histograms of the energy dispensed per session for the Level 2 and DC Fast Charger, respectively.

Figure 17. One Single-Port Charger Installed at the Family Justice Center (left) and One DC Fast Charger Installed at Kennedy High School Swim Center (right)

Figure 18. Histogram of Charging Start Time of the Level 2 Charger at the Family Justice Center

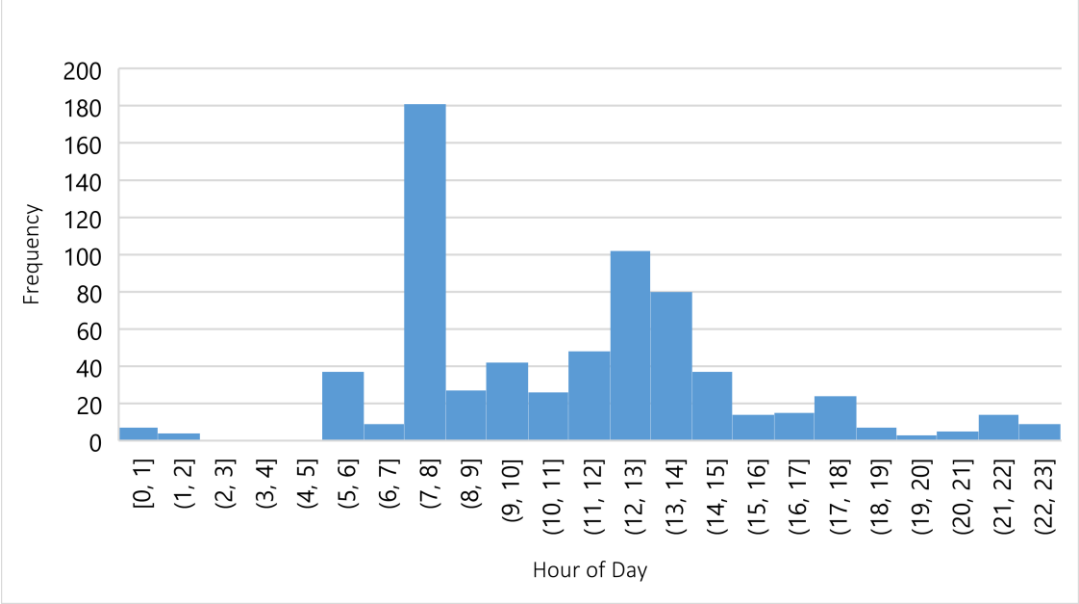


Figure 19. Histogram of Charging Start Time of the DC Fast Charger at the Kennedy High School Swim Center

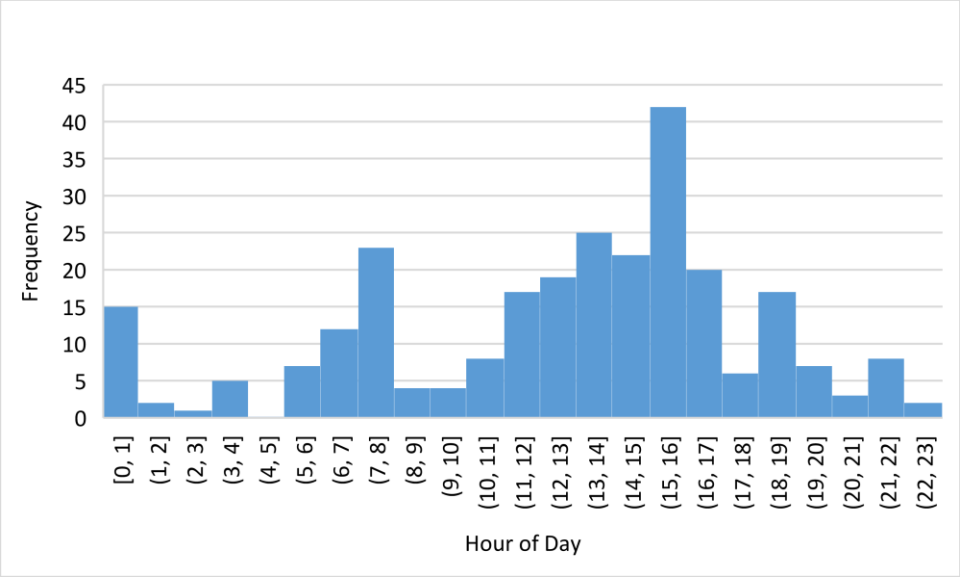


Figure 20. Histogram of Active Charging Time per Session of the Level 2 Chargers at the Family Justice Center

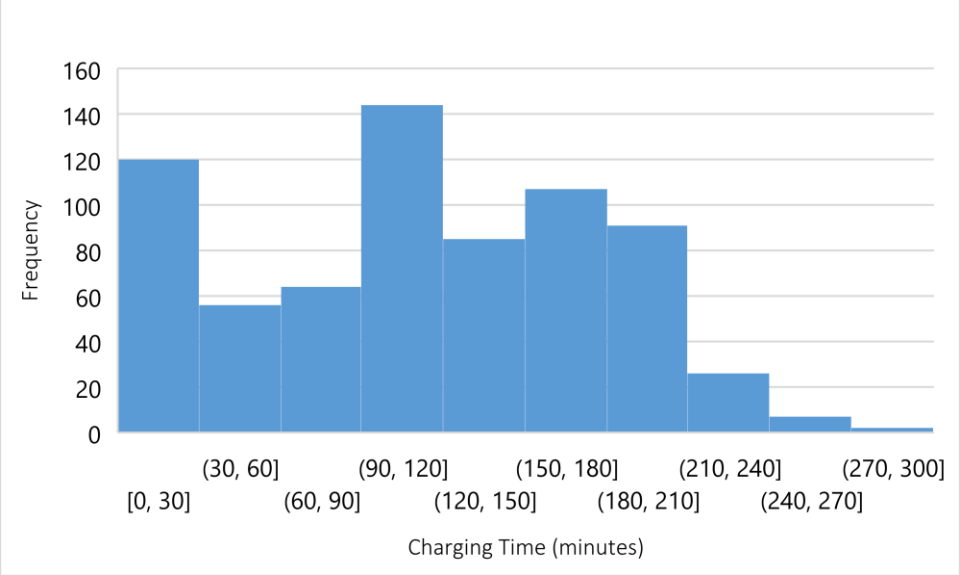


Figure 21. Histogram of Active Charging Time per Session of the DC Fast Charger at the Kennedy High School Swim Center

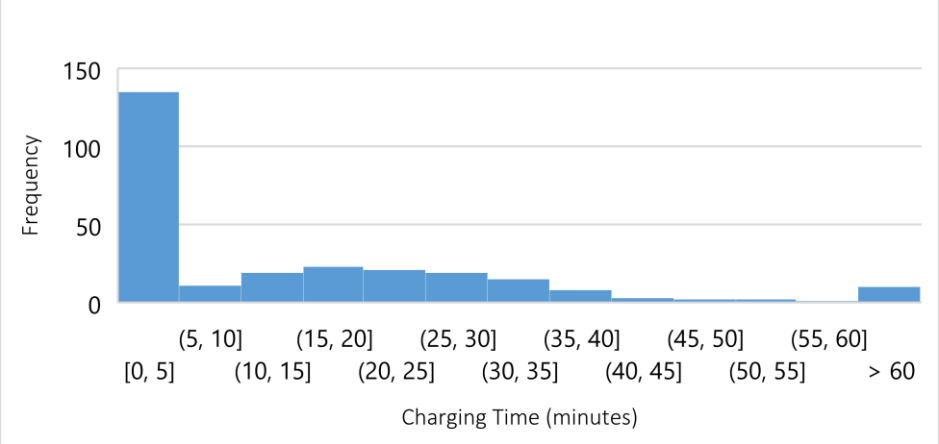


Figure 22. Histogram of Energy Dispensed per Charging Session of the Level 2 Chargers at the Family Justice Center

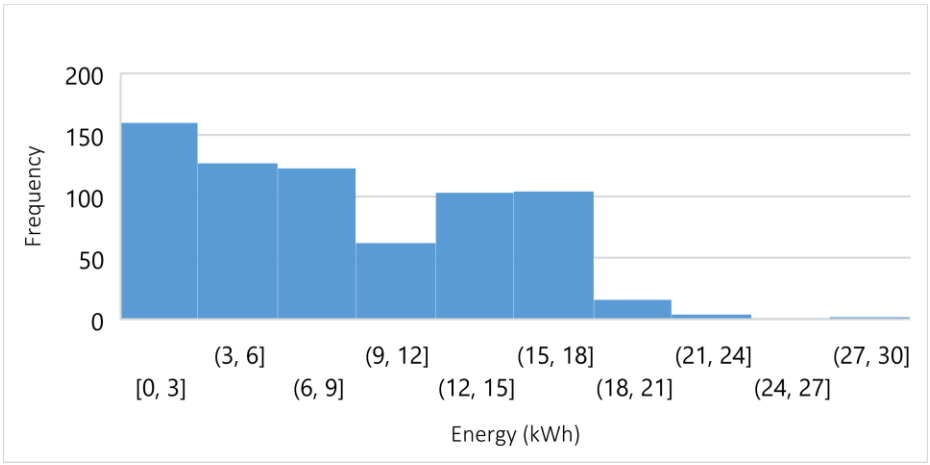
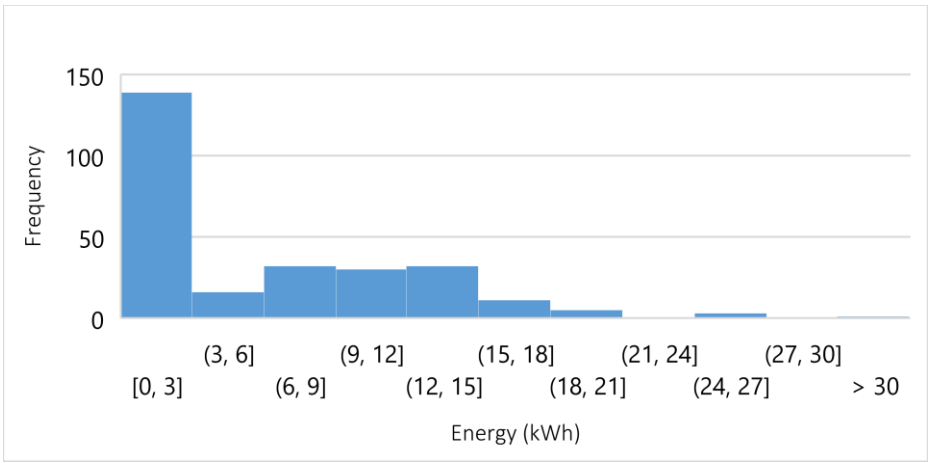


Figure 23. Histogram of Energy Dispensed per Charging Session of the DC Fast Charger at the Kennedy High School Swim Center



Lessons Learned

Project Delays

After project selection, each project sponsor entered into a funding agreement with the Air District. All projects were to be completed and placed into service by the deadline of March 3, 2017; however, the RFG administrator granted extensions for five projects, which were completed after this deadline. Table 2 summarizes the timeline for each project. On average, it took about 236 days from contract execution to the start of service. Some delays occurred due to outdated infrastructure, which required new electrical parts to be special ordered and installed before power could be provided to the charging stations. Several project sponsors also noted delays due to coordination with PG&E, which was required for the installation of transformers, activation of the new electric meters, and account set up.

Table 2. Project Timeline

Project Number	Project Sponsor	Contract Execution	Date Placed Into Service	Number of Days Between Execution and Service
16RFG01	Chabot Las Positas Community College District	7/12/16	2/17/17	220
16RFG02*	City of Fremont	8/22/16	9/27/17	401
16RFG08	City of Millbrae	6/30/16	12/23/16	176
16RFG09	City of Oakland	6/6/16	10/5/16	121
16RFG11*	The NASA Ames Exchange	10/21/16	6/1/17	223
16RFG15	City of Palo Alto	8/9/16	1/6/17	150
16RFG17*	City of Richmond	7/25/16	3/23/17	241
16RFG18*	San Francisco Bay Area Rapid Transit District (BART)	8/22/16	4/20/17	241
16RFG19*	County of Alameda	7/12/16	6/29/17	352

*Provided project extensions.

The largest delays occurred for City of Fremont and County of Alameda.

For the City of Fremont, installation work was completed on April 28, 2017, but the City had to wait for PG&E to activate the new electric meters before the charging units could be put into operation. This process took much longer than anticipated, with PG&E not completing meter activation until September 11, 2017, at which point the City had to complete the re-wiring of the stations to the new electric meters. Stations were finally completed by September 19, 2017 and placed into service on September 27, 2017.

The County of Alameda encountered two major issues. The first issue was a result of SunEdison declaring bankruptcy, which resulted in the cancellation of two major solar projects connected to this project. Since construction would no longer occur at one of the sites, four of the EV charging stations had to be relocated. Furthermore, the removal of solar from this project decreased the amount of eligible funding and the charger installation at the former sites could not be completed on budget. The second issue was

that additional work was needed to make the EV charging stations ADA accessible, as a result of the ADA rules for EV charging stations becoming effective on January 1, 2017. This additional work led to a slight delay.

Availability of Chargers

All chargers are available for use any day or time, except for three facilities:

- At City of Oakland's 250 Frank Ogawa Plaza (16RFG09_F05), chargers are available Monday through Friday between 6:00 AM and 11:00 PM;
- At Kennedy High School in Richmond (16RFG17_F01), the charger is available Monday through Friday between 8:00 AM and 6:00 PM; and
- At Warm Springs/South Fremont BART Station (16RFG18_F01), chargers are available Monday through Friday between 4 AM and midnight, Saturdays between 6 AM and midnight, and Sundays between 8 AM and midnight.

Costs

Table 3 summarizes the equipment, installation, and PG&E costs associated with each project. However, the cost breakdown may be characterized differently by each project sponsor, and therefore what is considered as direct costs may not be consistent across all projects. As shown, the cost to install a level 2 port ranges from $4,000 to $16,000 and the cost to install a DC fast charging port ranges from $45,000 to $59,000. This wide range of costs is dependent on the work involved (e.g., trenching) and costs reported to the Air District. Based on the number of ports installed for each project, the NASA facility was the most expensive per port since only DC Fast chargers were installed.

__Table 3__. Summary of Project Costs

Project #	Equipment	Installation	PG&E	Total Cost	# of Ports	Cost/Port
Level 2 Chargers						
16RFG01	$75,000	$22,484	-	$97,484	24	$4,062
16RFG02	$60,533	$177,343	$43,818	$281,694	18	$15,650
16RFG08	$59,954	$105,919	$5,000	$170,873	16	$10,680
16RFG09	$36,295*	$65,600	-	$101,895	10	$10,190
16RFG15	$11,417	$18,304	-	$29,721	4	$7,430
16RFG17	$5,515	$2,750	-	$8,265	1	$8,265
16RFG18	N/A	N/A	N/A	$537,039	42	$12,787
16RFG19	$45,628	$52,988**	-	$98,616	14	$7,044
DC Fast Chargers						
16RFG09	$30,000*	$14,500	-	$44,500	1	$44,500
16RFG11	$247,631	$188,345	$33,318	$469,294	8	$58,662
16RFG17	$39,405	$11,800	-	$51,205	1	$51,205
16RFG19	$37,797	$11,769**	-	$49,566	1	$49,566

N/A = Not Available

** 16RFG09 had no equipment cost associated with the DC Fast charger and one of the five dual-port Level 2 chargers because these were donated as a joint project. However, the DC fast charger is estimated to be valued at $30,000 and the Level 2 charger is estimated to be valued at $7,113.*

***For 16RFG19, $47,078 of the $64,757 installation cost was a lump sum to install one DC Fast Charger and three Level 2 chargers. This lump sum was distributed evenly across all four of the chargers.*

Pricing Structure

Seven of the 19 facilities (16RFG01_F01, 16RFG01_F02, 16RFG09_F01, 16RFG09_F02, 16RFG09_F03, 16RFG09_F04, 16RFG09_F05) provided free charging for all users. Nine of the remaining 12 facilities had the following time-based pricing schemes:

- $1.50 per hour (16RFG02_F01);
- $1.00 per hour for a maximum of two hours (16RFG08_F01, 16RFG08_F02, 16RFG08_F03, 16RFG08_F05);
- $0.25 per minute (16RFG11_F01);
- $7 per hour with a $1 minimum charge (16RFG17_F01);
- $1 per hour and $5 after four hours of charging; (16RFG17_F02)
- $6.00 per day (16RFG18_F01 – Daily lot); and
- $3.00 per day (16RFG18_F01 – ADA lot).

Three facilities required users to pay based on energy usage under the following pricing schemes:

- $0.20 per kWh and $1 activation fee (16RFG19_F01 – Level 2 charging stations);
- $0.20 per kWh and $5 activation fee (16RFG19_F01 – DC fast charging stations);
- $0.20 per kWh and $0 activation fee between 7 PM and midnight and all day on weekends (16RFG19_F02); and
- $0.23 per kWh and $2.00 per hour after charging stops with 20-minute grace period (16RFG15_F01).

City of Fremont found that the pricing structure of $1.50 per hour disincentivizes vehicles that charge at a slower rate from using public chargers and plans to change the pricing structure to cost per kWh.

BART found it challenging to identify a pricing structure that fit both BART parking standards and EV charging demand. At the Warm Springs BART station, Daily EV Charging Single Day Reserved permits are required and cost $6.00 per day. For EV charging at the BART ADA parking lot, Daily Parking fees are required and cost $3.00 per day. For both lots, payment is required on weekdays from 4 AM – 3 PM and is free outside of these hours.

Usage was influenced significantly by pricing structure. Both the City of Millbrae and the City of Palo Alto initially allowed free charging, but found that implementing a pricing scheme decreased the amount of energy dispensed at the facilities. The City of Millbrae implemented an ordinance requiring a fee of $1.00 per hour for a maximum of two hours. This led to a decline in energy dispensed at the project facilities effective March 16, 2017, as shown in Figure 24. After the first six months of operation, the City of Palo Alto required users to pay $0.23 per kWh and $2.00 per hour after charging stops with a 20-minute grace period. This led to a decline in energy dispensed at the project facility effective August 1, 2017, as shown in Figure 25.

Figure 24. Energy dispensed per charger for free and fee-based charging at the City of Millbrae facilities

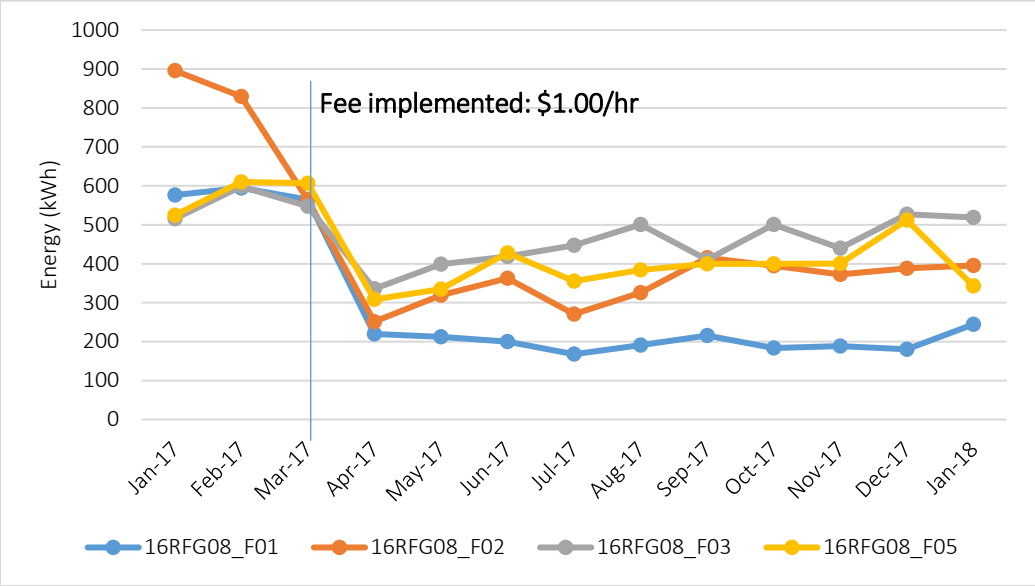
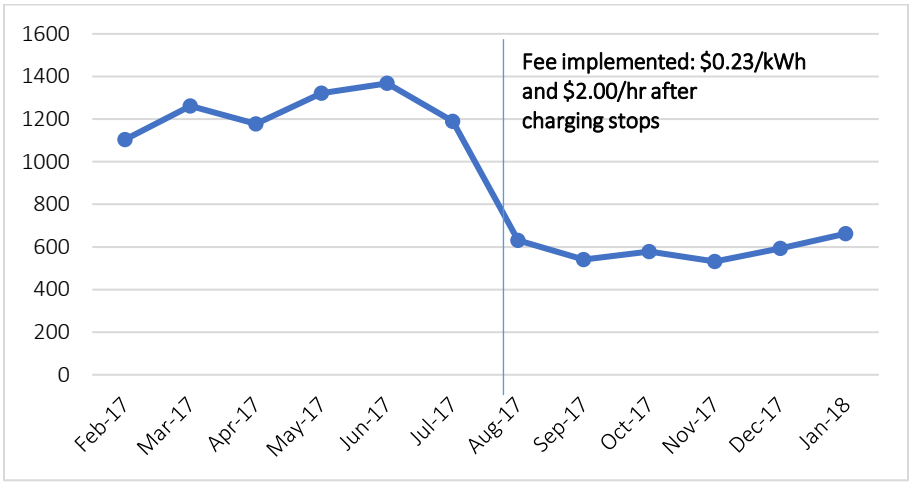


Figure 25. Energy dispensed per charger for free and fee-based charging at the City of Palo Alto facility (16RFG15_F01)



Utilization of Charging Assets

- To maximize use of charging stations, Chabot-Las Positas Community College District found it important to install signage and add pavement striping to reserve parking spaces for charging. They also encouraged courteous use of chargers by encouraging drivers to move vehicles when fully charged.
- City of Oakland noted shared access to site allows more use of charging stations: visitors and employees charge during the day and fleet charging available at night.
- One can maximize use of charging stations by determining the right mix of charging types based on parking dwell times. For example, long-term parking (e.g., BART) should explore a mix of Level 1 and 2 chargers for maximum efficiency.

Bay Area Air Quality Management District

Grant Opportunity Announcement, Program Guidance, and Evaluation Criteria for

Electric Vehicle Charging Station Demonstration Projects

Only open to public agencies

Bay Area Air Quality Management District
939 Ellis Street, San Francisco, CA 94109

Revised October 2015

The deadline for receiving applications is **4 PM, December 18, 2015**

TABLE OF CONTENTS:

The Air District offers grants and incentives for the following projects types:

- Zero-Emissions Vehicles and Fueling Infrastructure
- On and Off-Road Heavy-Duty Diesel Vehicles
- Locomotives
- Agricultural Equipment
- Marine Vessels
- Lower-Emission School Buses
- Trip Reduction
- Community Grants

Contact us to learn more about Air District grants and incentives:
Website: http://www.baaqmd.gov/grant-funding

Email: grants@baaqmd.gov

Grants Information Request Line: (415) 749-4994

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

The California Legislature created the Bay Area Air Quality Management District (Air District) in 1955 as the first regional air pollution control agency in the country, recognizing that air emissions overflow political boundaries. The nine counties of the San Francisco Bay Area form a regional air basin, sharing common geographical features and weather patterns, and therefore similar air pollution burdens, which cannot be addressed by counties acting on their own. 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.

Vehicle emissions contribute to unhealthful levels of ozone (summertime "smog") and particulate matter. In the Bay Area, tailpipe emissions from on-road motor vehicles account for more than 40% of the criteria air pollutants and about 36% of the green-house gasses (GHG) generated.[1, 2] Significant emissions reductions from the on-road transportation sector are key to helping the Bay Area to attain State and Federal ambient air quality standards.

To protect public health, the State Legislature enacted the California Clean Air Act in 1988. As part of the requirements, the Air District prepared the 2010 Clean Air Plan (CAP) which includes transportation control measures (TCMs), defined as "any strategy to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing motor vehicle emissions," and mobile source measures (MSMs), which encourage the introduction of newer, cleaner motor vehicle technologies and the retirement of older, more polluting vehicles.

BAY AREA CLEAN AIR FOUNDATION

The Bay Area Clean Air Foundation (Foundation) was established by the Air District's Board of Directors as a nonprofit public benefit corporation in September 2008. The purpose of the Foundation is to provide financial, administrative, and programmatic support to the Air District. As part of its charter, the Foundation serves to fund air quality emissions reduction efforts and educational and service programs to support the mission of the Air District.

PROGRAM FUNDING SOURCES

Funding for the Electric Vehicle Charging Station Demonstration Program (Program) is provided by the Transportation Fund for Clean Air (TFCA) and Reformulated Gasoline (RFG) Settlement Fund.

Transportation Fund for Clean Air

In 1991, the California State Legislature authorized the Air District to impose a $4 surcharge on motor vehicles registered within the nine-county San Francisco Bay Area to fund projects that reduce on-road motor vehicle emissions. The Air District has allocated these funds to its TFCA program to fund eligible trip reduction and alternative fuel vehicle-based projects that reduce tailpipe criteria emissions from on-road mobile sources. The statutory authority for the TFCA and requirements of the program are set forth in California Health and Safety Code Sections 44241 and 44242.

Reformulated Gasoline Settlement Fund

The Reformulated Gasoline Settlement Fund was created as a result of a judgment issued in Reformulated Gasoline (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. On May 12, 2015, the U.S. District Court approved a grant under the RFG Open Grants Program whereby the Foundation, contracting with the Air District, will: (a) provide up to $450,000 in financial assistance to public agencies for the installation of publicly available charging stations for electric vehicles in their communities; (b) following installation, collect data to measure environmental, economic and operating

[1] BAAQMD, Bay Area Emissions Inventory Summary Report: Criteria Air Pollutants Base Year 2011, May 2014.

[2] BAAQMD, Bay Area Emissions Inventory Summary Report: Greenhouse Gases Base Year 2011, January 2015.

benefits; (c) publish a White Paper to include a summary, key features, benefits of, and lessons learned from this grant; and (d) share Program results with local governments, air districts, and other entities with an interest in the deployment of electric vehicle infrastructure.

PURPOSE OF SOLICITATION

The Air District is seeking public entities interested in demonstrating ready-to-go ("shovel-ready") projects that will deploy electric vehicle (EV) charging stations at a variety of publicly-available locations to determine their environmental, economic, and operating benefits. Public entities will install, operate, and maintain the charging stations; collect usage and demand data; and–in partnership with the Air District–participate in roundtable discussions with other entities to share lessons learned and best practices. Information gathered from this Program will be published in a publicly-available white paper.

Up to $900,000 in grant funding is available for the Program, which will provide up to 90% of total eligible costs for the installation of new, publicly-available EV charging stations along major transportation corridors, at workplaces, and at key destinations. Funds for this project will be awarded through a competitive grant application process whereby applicants who request lower grant amounts per ton of emissions reduced will be scored higher. In addition, the Program prioritizes projects that are "shovel-ready," incorporate renewable energy, help to expand the region's charging network, and are located in Air District-designated Community Air Risk Evaluation (CARE) Program areas. Grant recipients must comply with all Program Requirements and Air District staff may request additional documentation to verify the information provided in applications.

The Air District reserves the right to recommend a reduced amount of funding from the amount that was requested in the event that the Program is oversubscribed, or to ensure that the project meets the cost-effectiveness limits. The Air District also reserves the right to modify this solicitation at its discretion.

PROGRAM SCHEDULE/TIMELINE

DATE	ACTIVITY
August 18, 2015	**Program solicitation released**
August 26, 2015 and September 3, 2015	**Pre-application webinars**
October 13, 2015	**Program guidance revised; application deadline extended**
November 5, 2015	**Pre-application webinar**
December 18, 2015, 4 PM	**Application deadline (solicitation closes)**
By January 25, 2016 (tentative)	**Notice of Determination:** Air District notifies applicants about the results of the evaluation of their application
• Within 30 days of the notice of determination for applicants requesting $100,000 or less, or • Within 90 days of the notice of determination for applicants requesting more than $100,000	**Proposed funding agreements forwarded to applicants with projects that are selected for award** (awardees must return signed agreement within 60 days)
Spring 2016 (no later than May 3, 2016)	**All contracts executed**
Within 90 days after funding agreement is executed	**Projects must commence to remain eligible** (e.g., permits obtained, CEQA completed, equipment purchased) and **1st Semi-Annual Report** submitted to Air District during the implementation phase
Within 6 months after funding agreement is executed	**All project equipment/stations must be installed and available for use by the public;** awarded funds must be expended and **Interim Status Report** and **Final Invoice** submitted to the Air District; Air District reimburses 85% of funds awarded.
Every February 15 and August 15 after charging stations have been placed into service for at least 3 years and until usage requirement is satisfied	**Operational Report (usage, lessons learned)** submitted to Air District
On-going	Participate in roundtable discussions and case studies

After submission of the last Operational Report	**Final Payment:** Air District releases 15% retention amount

PRE-APPLICATION WORKSHOPS

Air District staff will be conducting a public pre-application workshop via webinar to share information and answer questions about the Program. The webinar will cover Program Requirements, application process, application evaluation criteria, and grant awardee administrative requirements. Webinar attendance is optional but encouraged. *Registration is required for attending the webinar, and early registration is encouraged as the webinar is limited to 100 attendees.*

Webinar Date:

- **Thursday, November 5, 2015 (10:00 AM to 11:30 AM)** (Register for webinar)

Based on demand, additional workshops may be scheduled in the future. Notices about additional pre-application workshops will be sent via email to parties that have signed up to receive free TFCA email alerts. Interested parties are also encouraged to visit the Program website for updates.

PROGRAM CONTACT INFORMATION

Please direct all questions about this solicitation in writing to Chengfeng Wang, Supervising Air Quality Specialist, either by email at cwang@baaqmd.gov (subject "EV Charging Station Demonstration Program") or by mail to: Chengfeng Wang; 939 Ellis Street, San Francisco, CA 94109.

Any verbal communication with an Air District staff person concerning this solicitation is not binding on the Air District and shall in no way alter a specification, term, or condition of the solicitation.

Responses to questions, Program materials, and Program updates will be posted on the Program website.

APPLICATION FORMAT, REQUIRED DOCUMENTS, AND DELIVERY

*Complete application packages must be received by the Air District **both** electronically (using the Online Application Form) and as a hardcopy (one copy) **by 4 PM, December 18, 2015.***

Application packages must include the following documents:

- Completed Online Application Form
- Evidence of Authority to Apply and Implement Project, either a signed:
  1) Letter of commitment from the applicant's representative with authority (e.g., Chief Executive or Financial Officer, Executive Director, or City Manager); or
  2) Resolution from the governing body (e.g., City Council, Board of Supervisors)
- Proof of authority to install and operate each Charging Station (e.g., copy of deed or copy of signed agreement with the owner if the property is not owned by the applicant)
- Map showing each proposed Facility and the location of each Charging Station
- Copy of cost estimate for each charger at each facility
- Estimate of usage for each Charging Station with supporting documentation (for projects requesting case-by-case evaluation)
- Proof of insurance
- W-9 Form (submit only as a hardcopy; do not upload)

The hardcopy must be mailed to: Bay Area Air Quality Management District
ATTN: SID "EV Charging Station Demonstration Program"
939 Ellis Street, San Francisco, CA 94109

PROGRAM REQUIREMENTS

BASIC ELIGIBILITY

The Air District will fund only Eligible Projects proposed by Eligible Recipients.

1. **Eligible Projects:** Only projects that result in the surplus reduction of motor vehicle emissions (i.e., reductions that are beyond what is required by regulations, contracts, and other legally binding obligations at the time the Air District executes the project's funding agreement) within the Air District's jurisdiction are eligible.

   Eligible projects must conform to the provisions of the California Health and Safety Code (HSC) sections 44220 et seq. and meet all of the Project Requirements.

2. **Eligible Recipients:** Only public agencies are eligible. Eligible Recipients must meet all of the Applicant/Grantee Requirements.

APPLICANT/GRANTEE REQUIREMENTS

3. **Grantees are required to do the following:**

   A. Operate and maintain each charging station for a minimum period of three (3) years after the last of a Project's Charging Stations is placed into service and becomes available for use by the public.

   B. Maintain the Charging Stations properly and guarantee that the stations are accessible and serviceable for 90 percent of the days during each calendar year.

   C. Allow the Air District or its authorized representatives to conduct financial audits and agree to make available to the Air District all records relating to project performance and expenses incurred in the implementation of the project.

   D. Allow the Air District, the RFG Fund Administrators, and/or their authorized representatives to inspect the charging station locations and equipment at all times during the Project Life. Grant recipients shall cooperate with such inspections; the Air District shall make reasonable efforts to conduct such inspections during normal business hours.

   E. Prepare and maintain all necessary project records to document project activities and performance to support the Program reporting requirements. Grant recipients shall submit the required Semi-Annual, Interim Status, and Operational Reports to the Air District by the due dates specified in the grant agreement.

   F. Acknowledge the Air District, the Reformulated Gasoline Settlement Fund, and the Bay Area Clean Air Foundation as a project funding source at all times during the Project Life.

   G. Install, maintain, and operate the funded equipment in accordance with all applicable state, federal and local laws and regulations, including compliance with all applicable requirements of the Americans with Disabilities Act (ADA) throughout the Project Life.

   H. Allow the Air District or its authorized representatives to compile reported usage information about the Project into a white paper that will be made publicly-available.

4. **Authority to Apply and Implement Project:** Applicants must demonstrate that they have the legal authority to submit the application, to enter into a Project Funding Agreement, to carry out the project, and to bind the applicant entity to perform all of the work associated with the proposed project, including the right or authorization to apply for and obtain necessary electrical/building permits, to install and operate the charging station until the usage requirements are met and for a minimum of three years, and to provide all required funding.

5. **Viable Project and Matching Funds:** *This Program provides incentive funding on a reimbursement basis. Up to 85% of the funds awarded will be reimbursed after the last project charging station has been placed into service and up to 15% (the withheld amount) will be reimbursed after all of the Project Requirements have been satisfied.* Therefore, applicants must demonstrate that they have adequate funds from a non-Air District source to cover all stages of their proposed project(s) from

commencement through the end of their Project's Life. In addition, applicants must demonstrate that they have available and are ready to commit all necessary matching funds from a non-Air District source of funding.

6. **In Compliance with Air Quality Regulations:** Applicants must certify that, at the time of the application and at the time of issuance of the grant, they are in compliance with all local (e.g., Air District), State, and Federal air quality regulations. Applicants who have an unresolved violation of Air District, State, or Federal air quality rules or regulations are not eligible for funding. The Air District may terminate a grant agreement and seek reimbursement of distributed funds from project sponsors who were not eligible for funding at the time of the grant.

7. **In Compliance with Agreement Requirements:** Project sponsors who have failed to meet contractual requirements such as project implementation milestones or monitoring and reporting requirements for any project funded by the Air District may not be considered eligible for new funding until such time as all of the unfulfilled obligations are met.

8. **Executed Funding Agreement:** Only a fully-executed funding agreement (i.e., signed by both the project sponsor and the Air District) constitutes the Air District's award of funds for a project. Approval of an application for the project by the Air District Board of Directors or notices such as a transmittal letter announcing the proposed award do not constitute a final obligation on the part of the Air District to fund a project.

   Applicants must sign and return the Project Funding Agreement(s) within 60 days from the date the agreement(s) was transmitted to them in order to remain eligible for award.

9. **Maintain Insurance:** Project sponsors must maintain general liability insurance and additional insurance that is appropriate for its specific project type throughout the grant agreement term and the Project's Life, with coverage being no less than the amounts specified in the respective funding agreement (see Appendix A). Project sponsors shall require their subcontractors to obtain and maintain such insurance of the type and in the amounts required by the grant agreements.

10. **Independent Air District Audit Findings and Determinations:** Project sponsors who have failed either a fiscal audit or a performance audit for a prior Air District funded project will be excluded from future funding for three (3) years from the date of the Air District's final determination of the finding(s) in accordance with HSC section 44242. Additionally, project sponsors with open projects will not be reimbursed until all audit recommendations and remedies have been satisfactorily implemented.

    A failed fiscal audit means an uncorrected audit finding that confirms an ineligible expenditure of funds. A failed performance audit means that a project was not implemented as set forth in the project funding agreement.

    Project sponsors must return funds that the Air District has determined were expended in a manner contrary to the Program Requirements and/or requirements of HSC Code section 44220 et seq. or otherwise failed to comply with the approved project scope, as set forth in the Project Funding Agreement. Applicants who failed to reimburse such funds to the Air District from prior Air District funded projects will be excluded from future TFCA funding until corrected.

11. **Good Faith Application:** Applications will be evaluated and recommendations for award of funding will be made based on the information provided by the applicants. The Air District reserves the right to reject an application and/or cancel an award at any time if any of the following circumstances are discovered:

    A. The application contains false or intentionally misleading statements or references which do not support an attribute or condition contended by the applicant.

    B. The application is intended to erroneously and fallaciously mislead the Air District in its evaluation of the application and the attribute, condition, or capability is a requirement of this solicitation.

    C. The application does not literally comply or contains caveats that conflict with the solicitation and the variation or deviation is material or it is otherwise non-responsive.

PROJECT REQUIREMENTS

12. Cost-Effectiveness: The Air District will determine the estimated emission reductions, gasoline reductions, and funding effectiveness for the project. Furthermore, projects must not exceed a maximum cost-effectiveness (C-E) ($/weighted ton) limit of $250,000 based on the ratio of TFCA fund awarded divided by the sum of surplus emissions reduced of reactive organic gases (ROG), nitrogen oxides (NO_x), and weighted PM_{10} (particulate matter 10 microns in diameter and smaller) over the Project Life. Projects that propose renewable energy generation must not exceed a C-E limit of $500,000.

Applicants that propose projects that include qualifying dual chargers, chargers that can re-charge vehicles faster, and that request the least amount of funding per charger, will be considered the most cost-effective and will receive a higher C-E score.

13. Readiness: Projects must meet the following implementation milestones:

A. **Within 90 days from the date the funding agreement is executed:** The project sponsor is required to notify the Air District in writing of the status of its implementation of the Project and is required to submit evidence that significant preparatory work has been completed (e.g., permits obtained, CEQA completed, equipment purchased).

B. **Within 6 months from the date the funding agreement is executed:** All Project equipment/stations must be installed and available for use by the public; all Project expenses have been incurred**.**

Applicants that propose projects that have complied with all applicable local permitting authority requirements (e.g., obtained permits, completed CEQA) will be considered the most "shovel-ready" and will receive a higher Readiness score.

14. Project Revisions: The Air District will consider only requests for modifications to approved projects that achieve the same or better cost-effectiveness, comply with all Program Requirements, and are in compliance with all applicable Federal and State laws, and District rules and regulations. The Air District may also approve minor modifications, such as to correct typographical mistakes in the grant agreements or to change the name of the grantees, without re-evaluating the proposed modification in light of the regulations, contracts, and other legally-binding obligations that are in effect at the time the minor modification was proposed.

15. Charging Station Requirements: Projects must meet the following general requirements:

A. Charging Stations must be installed at locations within the boundaries of the Air District's jurisdiction.

B. Charging Stations shall use an open communication protocol if networked.

C. Charging Stations shall have the ability to collect fees from users/customers (e.g., pay-for-use, pay at parking garage). If payment is required to access or use a Charging Station, subscription fees or memberships are allowed; however, the stations must also be capable of accepting payment from non-members (e.g., credit cards, or other forms of on-demand payment).

D. Charging Stations shall be installed in a well-lit, secure area.

E. Project Sponsors may install equipment for use by their own fleet or employees but at least 50% of the Program-funded Charging Stations installed must be accessible for public use.

16. Eligible Facility Categories: Each Project consists of one or more Facilities; each Facility must comply with its facility-specific requirements listed below:

A. **Transportation Corridor Facilities primarily consist of one or more DC Fast Chargers** and must meet the following additional requirements:

i) DC Fast Charging Stations must be located within one mile driving distance from the exit of a heavy volume expressway, conventional highway, or freeway, and at least 10 miles driving

distance away from the nearest existing publicly-available DC fast charging station. Applicants may propose to install equipment closer than the 10-mile limit if they provide evidence that the nearest existing location is not sufficient to meet the demand for charging in the proposed corridor.

ii) Charging Stations shall be accessible for use 24 hours a day/365 days per year.

iii) Level 2 Charging Stations may be co-located to complement DC Fast Charging Stations; however, Level 1 Charging Stations installed at Transportation Corridor Facilities are not eligible for funding.

B. **Workplace Charging Facilities are located at non-residential business employment centers (e.g., business park, office complex)** and must meet the following additional requirements:

i) Charging Stations shall be accessible, at a minimum, during regular business hours.

ii) Applicants who propose projects at Workplace Charging Facilities must also provide a description of how they will encourage shared use of the Charging Stations to maximize their use.

C. **Destination Charging Facilities are located in close proximity to and directly serve one or more commercial activity center (e.g., mixed use, recreational facilities).** Destination Charging Facilities must also be accessible to the public, at a minimum, during regular business hours.

17. Case-by-Case Projects:

A. **Other Charger Types:** Proposed projects with charger types not listed in Table 1 may be evaluated on a case-by-case basis. The proposed charger type must be certified by an independent and nationally-recognized testing and certification company (e.g., Underwriters Laboratories, Inc., Intertek). The charger type must also be able to re-charge California Air Resources Board certified plug-in electric vehicles. Applicants who propose projects with charging types that are not listed in Table 1 must also provide information showing how the usage requirements will be satisfied and an explanation about how the proposed Charging Stations will provide public benefits.

B. **Lower Usage Requirements:** Applicants may propose a lower usage requirement than the limits listed in Table 1 for a reduced award amount.

C. **Chargers Serving TFCA-Funded Fleets**: Applicants may propose projects with chargers that will also serve vehicles that have previously received TFCA funds; however new award amounts will be reduced by the corresponding amount of TFCA funds awarded for each of the vehicles.

18. Solar or Wind: Projects that propose to offset their Charging Stations' energy demand with on-site zero-emission power generation, either by wind or by solar, may qualify for additional funding. Pre-existing solar and wind installations will not qualify for additional funding. Note: Renewable energy credits (RECs) **cannot** be used to qualify for the higher funding limits.

INELIGIBLE PROJECTS AND COSTS

The following costs are neither eligible for reimbursement nor can be applied to fulfill matching fund requirements.

19. Duplication: Projects that have previously received TFCA Funds (including Regional Funds or County Program Manager Funds) and do not propose to achieve additional emissions reductions are not eligible. Additionally, projects that propose charging stations that serve only, or primarily, vehicles that were paid for with TFCA funds, and therefore would not achieve additional emissions reductions, are also not eligible.

20. Planning Activities: The costs of preparing or conducting feasibility studies or any other planning activities are not eligible.

21. Costs Incurred Prior to the Execution of a Funding Agreement: Costs incurred prior to the execution of a funding agreement (e.g., costs related to the development of proposals and applications, obtaining quotes, permitting fees) are not eligible.

22. **Costs for Maintenance, Repairs, and Operations:** Costs incurred from building or repaving parking areas, maintenance, repairs, rehabilitation, extended warranties or maintenance agreements, electricity use (utility), and operations (e.g., network fees) are not eligible.

23. **Administrative Costs:** Administrative costs are not eligible for Program funding. Administrative costs include accounting for Program funds and fulfilling contractual obligations, including, but not limited to participation in roundtable discussions and case studies, audits, reporting and record-keeping requirements specified in the funding agreement.

MONITORING, REPORTING, AND CASE STUDY PARTICIPATION

24. **Progress Reports:** Project sponsors are required to monitor and report on their Project's status during the implementation and operational phases.

25. **Case Study Participation:** In addition to expanding the availability of charging stations in the Bay Area, another Program objective is to gather usage information, document challenges, and develop best practices for the future deployment of charging stations. Therefore, applicants who are awarded funding through this Program will be required to share charger usage data, attend roundtable discussions regarding their Project, and participate in case studies to share information about their Project and lessons learned. Data and usage statistics generated from this Program will be published in a white paper and made publicly-available.

FUNDING LIMITS, USE OF GRANT AND MATCH FUNDS, AND REIMBURSEMENT PROCESS

26. **Minimum Grant Amount:** $10,000 per application (and completed project). The Air District reserves the right to terminate the funding agreement and cancel an award if a project sponsor reduces a Project's scope and the final amount that is eligible for reimbursement falls below the Minimum Grant Amount.

27. **Maximum Grant Amount:**

    A. $250,000 per applicant for Projects that deploy Level 2 and Level 1 Charging Stations.

    B. For applicants proposing Projects with DC Fast Chargers, the maximum funding limit is increased to $600,000 per applicant; however, any additional funding requested above the $250,000 limit may only be used for the installation of DC Fast Chargers.

    The Air District reserves the right to increase or decrease these limits.

28. **Funding Award Limits:** *This is a competitive solicitation; applicants requesting less funds per charger or proposing qualifying dual chargers or charging stations that can re-charge vehicles faster, will rank higher on cost-effectiveness.*

    The total award amount for each Project is limited to 90% of eligible project costs incurred. The award per Charging Station is limited to the amount, varying by charger type, listed in Table 1 below. These funding amounts have been determined based on the estimated usage of each charger type. Definitions for the charger types can be found in Appendix B. The total Project Life usage requirement per charger is also listed in Table 1 below.

Table 1. Funding Award Limits and Usage Requirements per Charging Station

Project Scope	Maximum Funding Amounts *(Usage Requirement[3])*		
	Level 1 *(1,500 kWh)*	**Level 2** *(9,000 kWh)*	**DC Fast** *(75,000 kWh)*
Charging Station	$3,000	$11,000	$75,000
Bonus for **Solar or Wind Power**	***$0.50 per kWh generated, up to a maximum of:***		
	$500	$3,000	$25,000
+ ***Total Maximum***	**$3,500**	**$14,000**	**$100,000**

The Air District may recommend a lower funding award to applicants who have not fully demonstrated how they will fulfill the usage requirements. Similarly, Project Sponsors that fail to meet the usage requirements will have their Funding Amounts for the Charger and the Solar or Wind Bonus proportionally reduced, based on the percentage of their usage requirement that is fulfilled.

29. **Eligible Project Costs:** Only costs that are *directly related* to the installation of the approved Charging Station(s) and incurred after the execution of the Project Funding Agreement are eligible for reimbursement. The following costs are eligible for funding and may be considered as match funds:

    A. Charging Station hardware, including tax and shipping fees;

    B. Labor, materials (e.g., trenching, wiring, and conduit), and necessary electrical upgrades to meet the demands of the Charging Stations (i.e., electrical panels and transformers);

    C. Permit fees;

    D. Hardware equipment separate from the charger used to record kWh dispensed from the equipment to PEVs (e.g., separate meter, data logger); and

    E. Additionally, for projects that propose to incorporate a solar or wind power generation component:

        i) Power generation and battery storage hardware, including tax and shipping fees;

        ii) Labor and materials directly related to the installation of power generation and battery storage equipment.

30. **Funding for Chargers Serving TFCA-Funded Vehicles:** *The Air District provides funding for the purchase and lease of new plug-in electric vehicles through its PEV Rebate Program. Applicants interested in purchasing vehicles along with deploying chargers are encouraged to apply to both programs separately.* Proposed projects for chargers that will service public fleets that have received Air District funding will be evaluated on a case-by-case basis.

31. **Reimbursement Process:** Payment is made on a reimbursement basis after all Project equipment is placed into service and after all Project costs have been incurred and documented.

    Up to 85% of the funds awarded will be reimbursed after the last Project Charging Station has been placed into service and after the Air District has received and approved the Interim Status Report and

[3] The Project Life usage requirement will be evaluated on a per Project basis across all funded Charging Stations.

invoice for each Facility. The remaining 15% (the withheld amount) is reimbursed after the Project Sponsor submits the final Operational Report and all of the other Project Requirements have been satisfied.

The award and reimbursable amount may be reduced (prorated) if the Project's usage requirements are not satisfied by the end of the Project Life or if the actual total project cost is less than the estimated total project cost.

EVALUATION CRITERIA

Proposed projects must meet all the Program Requirements, and applications will be scored in each of the first five evaluation criteria outlined in Table 2. Projects will be ranked by calculating the percentage of total eligible points scored in descending order. In the event that two or more projects achieve an equal score, the project with the best cost-effectiveness will receive a higher ranking.

Recommendations for award of funds will be made beginning with the highest ranking project and proceeding in sequence to lower ranking projects. If the solicitation for these funds is oversubscribed, the point where the next-ranked eligible project cannot be fully funded defines the cut-off point for the funding, i.e., all projects above this point will be recommended for award; projects below the cut-off point will be placed on a waitlist, and will be considered for award if funding becomes available.

Applications will be scored and ranked using following evaluation criteria:

Table 2. Evaluation Criteria

Criteria	Max Points
1. **Cost-Effectiveness** (C-E): Projects will be evaluated based on the ratio of funds requested to gallons of gasoline use reduced and the ratio of funds requested to tons of tailpipe criteria pollutant emissions reduced. Examples of projects that will score higher in this criterion include those that request less than the maximum amount of funding allowed per charger, or propose charging stations with dual ports capable of refueling two vehicles at the same time and at the same charging rate required of a single charger or charging stations that can re-charge vehicles faster. *Air District staff will determine the estimated emissions reductions, gasoline use reductions, and funding effectiveness based on the information provided in the applications.*	75
2. **Readiness**: Projects that have complied with all applicable local permitting authority requirements (e.g., obtained permits, completed CEQA) will be considered the most "shovel-ready" and will qualify for additional points.	10
3. **Public Accessibility**: Projects that have more than 50% of their charging stations available for public use will qualify for additional points.	10
4. **Charger Network Expansion**: Projects installing charging stations that are located at least two miles driving distance from the nearest charging station will qualify for additional points.	5
5. **Highly-Impacted Community:** The first 25% of funding will be reserved for the highest-scoring projects located in Community Air Risk Evaluation (CARE) Program areas.	Y/N
TOTAL	**100**

The Air District reserves the right to request additional information to substantiate an applicant's request for funding.

APPENDIX A: INSURANCE GUIDELINES

This appendix provides guidance on the insurance coverage and documentation typically required for grant funded projects. Note that the Air District reserves the right to specify different types or levels of insurance in the funding agreement.

The typical funding agreement requires that each project sponsor provide documentation showing that the project sponsor meets the following requirements for each of its projects.

a) **Liability Insurance** with a limit of not less than $1,000,000 per occurrence, of the type usual and customary to the business of the Project Sponsor, and to the operation of the vehicles, vessels, engines or equipment operated by the Project Sponsor.

b) **Property Insurance** in an amount of not less than the insurable value of Project Sponsor's vehicles, engines or equipment funded under the Agreement, and covering all risks of loss, damage or destruction of such vehicles, vessels, engines or equipment.

c) **Workers Compensation Insurance** as required by California law and employer's liability insurance with a limit of not less than $1,000,000.

d) **Acceptability of Insurers:** Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A, VII. The Air District may, at its sole discretion, waive or alter this requirement or accept self-insurance in lieu of any required policy of insurance.

The table lists the types of insurance coverage generally required. The requirements may differ in specific cases. Project Sponsors should contact the Air District with questions, especially about unusual projects.

Activity	Insurance Required
Charging Stations	Commercial General Liability Automobile Liability Automobile Physical Damage Workers Compensation

APPENDIX B: DEFINITIONS

Charging Station: Also known as electric vehicle supply equipment (EVSE), consist of the conductors, including the ungrounded, grounded, and equipment grounding conductors and the electric vehicle connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of delivering energy from the premises wiring to the electric vehicle. (http://www.psrc.org/assets/3729/A_NEC_625_2008.pdf)

Destination Charging: This category is for destinations that drivers travel "medium-to-long" distances from their home and where the vehicle would tend to be parked for more than one hour. Examples of this category include shopping and retail/commercial centers, recreational areas, restaurants, theaters, stadiums, amusement parks, museums, and airports.

Direct Current (DC) Fast Charger: Configured at 40kW or higher with a CHAdeMO connector or with a dual SAE Combo and CHAdeMO connector. Requires a three-phase 208 Volt AC minimum input power. Chargers must have the ability to communicate with vehicle battery management systems and can accept various forms of payment for customers to use equipment include, but not limited to, pay-by-phone, credit card, pre-paid card, and subscription service. Payment can not only be limited to solely a subscription service. Additionally, these chargers must be certified by the Underwriters Laboratories, Inc. (UL), or equivalent safety standard.

Facility: A discrete location (e.g., same parcel number or physical address, parking structure) that has one or more Charging Stations.

Level 2 Charger: Configured to a minimum output of 6.6 kW, offers charging through 240 to 208 volt electrical service, and meets the Society of Automotive Engineers (SAE) standard J1772. Additionally, requires installation of a dedicated circuit of 20 to 100 amps and can operate at up to 80 amperes and 19.2 kW. (http://www.psrc.org/assets/3729/A_NEC_625_2008.pdf).

Level 1 Charger: Configured to a minimum output of 1.4 kW and permits plugging into a common, grounded 120-volt electrical receptacle (NEMA S-15R or S-20R). The maximum load on this receptacle is 12 amperes or 1.4 kVa. The minimum circuit and overcurrent rating for this connection is 15 amperes for a 15-ampere receptacle and 20 amperes for a 20-ampere receptacle. (http://www.psrc.org/assets/3729/A_NEC_625_2008.pdf).

Plug-in Electric Vehicle (PEV): A vehicle that is propelled in part or solely by an electric motor, is capable of being recharged from an external source of electricity that meets the Society of Automotive Engineers and/or CHAdeMO protocol standard, and has a California air Resources Board fuel standard of Plug-in Gasoline Electric Hybrid or LI+.

Project: Complies with all applicable EV Charging Station Demonstration Program requirements and consists of one or more Facilities.

Project Life: The period of time that begins when the last of a Project's Charging Stations have been placed into service (and becomes available for use by the public) and ends after the Project's usage requirement has been satisfied and after all of the station have been in service for a minimum of three years.

Transportation Corridor Charging: Corridor charging gives existing and prospective electric vehicle owners the assurance that they can re-fuel when travelling long distances away from home. Chargers are sited in qualifying locations (e.g., rest areas, coffee shops, gas stations) in close proximity to major roadways and provide extended electric- range to Bay Area and long-distance PEV drivers.

Workplace Charging: Workplace charging allows PEV drivers to maximize the zero-emissions miles driven as part of their daily commute. Chargers can also be considered an amenity to the workplace's customers, employees, and to the public.

Appendix B: Scoring of Projects Recommended for Funding (Original Project Scope)

RECOMMENDED FOR FUNDING																
Project Number	Rank	Score (points)	CARE Area	Sponsor	# of Facilities	Total Charging Stations	CO2 Reductions (tons)	Criteria Reductions (tons)	Gasoline Reduced (gallons)	Total Project Cost	Recommended Award	TFCA Portion	RFG Portion	RFG C/E	County	Percent Public
16RFG01	1	91	YES	Chabot Las Positas Comm College District	2	12	259	0.14	30,297	$ 72,347	$ 65,112	$ 54,260	$ 10,852	$ 0.36	ALA	100%
16RFG09	2	83	YES	City of Oakland	5	6	101	0.05	11,835	$ 85,295	$ 41,000	$ 28,125	$ 12,875	$ 1.09	ALA	55%
16RFG19	3	81	YES	County of Alameda	3	8	241	0.13	28,193	$ 175,170	$ 149,610	$ 80,348	$ 69,262	$ 2.46	ALA	67%
16RFG17*	4	79	YES	City of Richmond	1	2	101	0.05	11,782	$ 107,466	$ 47,511	$ 28,000	$ 19,511	$ 4.92	CC	100%
16RFG08	5	90	NO	City of Millbrae	5	8	172	0.09	20,198	$ 142,349	$ 78,000	$ 48,000	$ 30,000	$ 1.49	SM	100%
16RFG02	6	89	NO	City of Fremont	1	9	194	0.10	22,722	$ 107,003	$ 81,486	$ 54,000	$ 27,486	$ 1.21	ALA	100%
16RFG15	7	87	NO	City of Palo Alto	4	16	296	0.14	32,190	$ 156,600	$ 121,945	$ 76,500	$ 45,445	$ 1.41	SC	75%
16RFG18	8	87	NO	San Francisco Bay Area Rapid Transit District (BART)	1	23	442	0.23	51,757	$ 469,093	$ 250,000	$ 123,000	$ 127,000	$ 2.45	ALA	100%
16RFG11*	9	85	NO	The NASA Ames Exchange	1	8	718	0.38	84,157	$ 477,786	$ 307,569	$ 200,000	$ 107,569	$ 2.73	SC	100%
TOTAL:					23	92	2,523	1.32	293,131	$ 1,793,109	$ 1,142,233	$ 692,233	$ 450,000			

*These projects are recommended for a partial award. 16RFG17 is eligible for a total award up to $86,000. 16RFG11 is eligible for a total award up to $430,007

Appendix C: Facility Information of Funded Projects

Facility ID	Project Sponsor	Facility Address	Type of Facility	Total No. of Stations	No. of Level 2 Ports	No. of DC Fast Stations/Ports
16RFG01_F01	Chabot Las Positas Community College District	3000 Campus Hill Drive, Livermore, CA 94568	Destination	6	12	
16RFG01_F02	Chabot Las Positas Community College District	25555 Hesperian Blvd., Hayward, CA 94545	Destination	6	12	
16RFG02_F01	City of Fremont	3000-3500 Capitol Avenue, Fremont, CA 94538	Destination	9	18	
16RFG08_F01	City of Millbrae	1 Library Ave., Millbrae, CA 94030	Destination	3	6	
16RFG08_F02	City of Millbrae	320 Magnolia Ave. Millbrae, CA 94030	Destination	1	2	
16RFG08_F03	City of Millbrae	200 Block Broadway (City of Millbrae Public Parking), Millbrae, CA 94030	Destination	2	4	
16RFG08_F05	City of Millbrae	400 Block Broadway (City of Millbrae Public Parking), Millbrae, CA 94030	Destination	2	4	
16RFG09_F01	City of Oakland	7101 Edgewater Dr., Bldg. 2, Oakland, CA	Workplace	1	2	
16RFG09_F02	City of Oakland	7101 Edgewater Dr., Bldg. 3, Oakland, CA	Workplace	2	2	1
16RFG09_F03	City of Oakland	7101 Edgewater Dr., Bldg. 5, Oakland, CA	Workplace	1	2	
16RFG09_F04	City of Oakland	5050 Coliseum, Oakland, CA	Workplace	1	2	
16RFG09_F05	City of Oakland	250 Frank Ogawa Plaza, Oakland, CA 94612	Destination	1	2	
16RFG11_F01	The NASA Ames Exchange	Bldg 25 Moffett Blvd., Moffett Field, CA 94035 (NASA Ames Visitor Parking Lot)	Workplace	8		8
16RFG15_F01	City of Palo Alto	528 High St. Palo Alto, CA 94301	Destination	2	4	
16RFG17_F01	City of Richmond	4300 Cutting Blvd., Richmond, CA 94804	Destination	1		1
16RFG17_F02	City of Richmond	256 24th St., Richmond, CA 94804	Workplace	1	1	
16RFG18_F01	San Francisco Bay Area Rapid Transit District (BART)	45193 Warm Springs. Blvd., Fremont, CA 94539	Destination	22	42	
16RFG19_F01	County of Alameda	165 13th St., Oakland, CA 94612	Workplace	4	6	1
16RFG19_F02	County of Alameda	1151 Harbor Bay, Alameda, CA 94502	Workplace	4	8	
		Total, 19 Facilities:		**77**	**129**	**11**

Appendix D: Monthly Charging Data (kWh) at Each Facility

Facility	Oct 2016	Nov 2016	Dec 2016	Jan 2017	Feb 2017	Mar 2017	Apr 2017	May 2017	Jun 2017	Jul 2017	Aug 2017	Sep 2017	Oct 2017	Nov 2017	Dec 2017	Jan 2018	Total
16RFG01_F01					1,408	1,834	1,841	1,845	1,114	1,605	1,860	2,618	4,117	4,051	3,560	4,107	**29,959**
16RFG01_F02					884	1,173	1,371	1,489	1,468	2,086	3,044	3,533	3,913	3,693	2,856	4,070	**29,581**
16RFG02_F01												68*	891	824	1,217	1,197	**4,197**
16RFG08_F01			116*	3,457	3,568	3,390	1,317	1,275	1,197	1,005	1,144	1,295	1,099	1,133	1,081	1,468	**22,544**
16RFG08_F02			97*	1,792	1,658	1,127	502	638	725	541	652	830	790	745	776	791	**11,665**
16RFG08_F03			20*	2,062	2,394	2,189	1,342	1,597	1,673	1,789	2,002	1,643	2,004	1,759	2,108	2,074	**24,654**
16RFG08_F05			42*	2,097	2,440	2,428	1,234	1,337	1,710	1,422	1,537	1,598	1,599	1,600	2,050	1,370	**22,466**
16RFG09_F01	357	376	391	531	467	622	507	618	576	397	608	511	827	806	484	823	**8,901**
16RFG09_F02	348	426	382	518	421	509	642	713	574	468	360	455	471	404	123	310	**7,124**
16RFG09_F03											8*	95	147	253	322	291	**1,116**
16RFG09_F04										4*	6*	45	55	64	28	28	**230**
16RFG09_F05	38*	53	126	90	146	215	237	335	295	167	207	344	387	264	353	402	**3,659**
16RFG11_F01									1,592	1,338	1,263	1,494	1,992	2,237	1,687	2,220	**13,823**
16RFG15_F01					4,415	5,044	4,709	5,288	5,471	4,761	2,524	2,162	2,313	2,127	2,373	2,650	**43,836**
16RFG17_F01						12*	54	233	644	559	507	796	895	481	556	557	**5,296**
16RFG17_F02						591	504	661	547	406	320	639	456	504	593	658	**5,878**
16RFG18_F01							804*	3,419	4,205	4,670	5,650	6,211	7,679	9,023	10,318	11,732	**63,712**
16RFG19_F01										410*	1,553	2,638	2,456	2,646	2,784	2,714	**15,200**
16RFG19_F02									159*	601	406	596	704	690	510	647	**4,313**
All Facilities	**743**	**855**	**1,174**	**10,546**	**17,801**	**19,134**	**15,066**	**19,447**	**21,952**	**22,230**	**23,652**	**27,571**	**32,793**	**33,302**	**33,778**	**38,110**	**318,154**

*Partial month data.