CALIFORNIA ENERGY COMMISSION

CALIFORNIA NATURAL RESOURCES AGENCY

California Energy Commission

Clean Transportation Program

FINAL PROJECT REPORT

San Joaquin Valley Air Pollution Control District

Electric Vehicle Charging Station Installation and Data Collection and Analysis

Prepared for: California Energy Commission

Prepared by: San Joaquin Valley Air Pollution Control District

San Joaquin Valley AIR POLLUTION CONTROL DISTRICT

January 2022 | CEC-600-2022-017

California Energy Commission

Samir Sheikh
Mehri Barati
Todd DeYoung
Charlie Hemphill
Primary Authors

San Joaquin Valley Air Pollution Control District
1990 East Gettysburg Avenue
Fresno, CA 93726
Valleyair Website www.valleyair.org

Agreement Number: ARV-13-037

Thanh Lopez
Commission Agreement Manager

Mark Wenzel
Office Manager
Advanced Vehicle Infrastructure Office

Hannon Rasool
Deputy Director
Fuels and Transportation

Drew Bohan
Executive Director

ACKNOWLEDGEMENTS

The San Joaquin Valley Air Pollution Control District recognizes the California Energy Commission for their support of this project and the departments and organization listed below:

1. San Joaquin Valley Air Pollution Control District: Management, Finance and Strategies and Incentives Department[1]
2. EV Connect, Inc.[2]

[1] San Joaquin Valley Air Pollution Control District https://www.valleyair.org/Home.htm

[2] EVConnect Home Page https://www.evconnect.com/

PREFACE

Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007) created the Clean Transportation Program. The statute authorizes the CEC to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the state's climate change policies. Assembly Bill 8 (Perea, Chapter 401, Statutes of 2013) reauthorizes the Clean Transportation Program through January 1, 2024, and specifies that the CEC allocate up to $20 million per year (or up to 20 percent of each fiscal year's funds) in funding for hydrogen station development until at least 100 stations are operational.

The Clean Transportation Program has an annual budget of about $100 million and provides financial support for projects that:

- Reduce California's use and dependence on petroleum transportation fuels and increase the use of alternative and renewable fuels and advanced vehicle technologies.
- Produce sustainable alternative and renewable low-carbon fuels in California.
- Expand alternative fueling infrastructure and fueling stations.
- Improve the efficiency, performance and market viability of alternative light-, medium-, and heavy-duty vehicle technologies.
- Retrofit medium- and heavy-duty on-road and nonroad vehicle fleets to alternative technologies or fuel use.
- Expand the alternative fueling infrastructure available to existing fleets, public transit, and transportation corridors.
- Establish workforce-training programs and conduct public outreach on the benefits of alternative transportation fuels and vehicle technologies.

To be eligible for funding under the Clean Transportation Program, a project must be consistent with the CEC's annual Clean Transportation Program Investment Plan Update. The CEC issued PON-13-606 to San Joaquin Valley Air Pollution Control District to provide electric vehicle charging station installations and data collection and analysis. In response to PON-13-606, the recipient submitted an application which was proposed for funding in the CEC's notice of proposed awards April 4, 2014 and the agreement was executed as ARV-13-037 on July 10, 2014.

ABSTRACT

The purpose of this final report is to document the process, approach, extent of success, and impact associated with the installation of the electric vehicle charging stations at the three regional offices of the San Joaquin Valley Air Pollution Control District. The report describes the process from the selection of the general subcontractor to the installation and testing of the equipment. The local economy, subcontractors, and the State of California will benefit from this project. Also, usage data will show the impact of the project on the environment in reducing the emission of criteria pollutants as well as increasing gas savings and adding electric miles. The installed infrastructure, among other factors, was successful in increasing the ownership of plug-in electric vehicles among employees.

Keywords: San Joaquin Valley Air Pollution Control District, EV Connect Inc., plug-in electric vehicles, electric vehicle charging infrastructure, workplace charging

Samir Sheikh, Mehri Barati, Todd DeYoung, Charlie Hemphill. (San Joaquin Valley Air Pollution Control District). 2020. *San Joaquin Valley Air Pollution Control District: Electric Vehicle Supply Equipment Installation and Data Collection and Analysis.* California Energy Commission. Publication Number: CEC-600-2022-017.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Page

EXECUTIVE SUMMARY

This final report is prepared for the California Energy Commission to meet the reporting requirement of agreement ARV-13-037 with the San Joaquin Valley Air Pollution Control District.

The goal of this project is to install level 2 electric vehicle charging stations at the three district offices to encourage and promote the adoption of plug-in electric vehicles (PEV) among employees and the general public. This project is also in line with the districts mission of improving the air quality in the San Joaquin Valley.

To mitigate the cost barrier to PEV ownership, the district has recently been able to offer an organizational incentive to employees. The incentive participation data shows a substantial increase in PEV purchases and charge session data shows the equipment's are being consistently utilized. The cost and administration data compiled as a result of this project has been used to help formulate a new district incentive program to help fund similar infrastructure projects at other workplaces and agencies.

CHAPTER 1:
Project Purpose

Introduction

The San Joaquin Valley Air Pollution Control District (SJVAPCD) and other regional stakeholders have identified that poor air quality within the region presents the most pressing need for robust PEV deployment. In order to encourage PEV deployment in the region, the San Joaquin Valley must overcome several challenges and barriers. One of the greatest barriers is the lack of charging available to support electric vehicles, especially the lack of workplace charging and the lack of public charging. Studies have indicated that workplace charging is the second most frequent location for PEV charging. This is especially important in semi-urban and rural areas where limited electric vehicle (EV) range may preclude PEV purchase due to the inability of the employee to travel roundtrip to and from work on a single charge.

There have been a very limited number of workplace and public EV charging infrastructure installations in the San Joaquin Valley region despite SJVAPCD's recent efforts to coordinate regional PEV planning, increasing outreach and awareness of the benefits of PEVs and the necessary supporting infrastructure network, and inclusion of EV charging by an employer to assist in their compliance of Employer Trip Reduction Rule (SJVAPCD Rule 9410). The rule applies to employers with 100 or more eligible employees and requires the establishment of employee trip reduction programs to encourage employees to reduce single-occupancy vehicle trips, thus reducing pollutant emissions associated with work commutes.

SJVAPCD would like to lead by example by becoming early adopters in the Valley and proving that workplace charging is beneficial as a business model, for air quality, and encouragement of adoption of PEVs by employees. In addition, the district wants to support this new, clean technology by ensuring it is available to the public at all three of its offices.

Goals and Objectives

Goals of the Project

The goal of this project is to install level 2 Electric Vehicle Charging Station (EVCS) at the three offices of the SJVAPCD to be used by plug-in electric vehicles of employees and the general public to increase the adoption of plug-in electric vehicles by SJVAPCD employees and all San Joaquin Valley residents.

Objectives of the Project

The objective of this project is to increase employee PEV ownership and initiate workplace charging in the San Joaquin Valley region. SJVAPCD would like to be a champion for workplace charging to ignite the Valley region into catching up to the PEV adoption like metropolitan cities in the north and the south. Adding charging stations that are available to the public can also increase awareness of the PEV movement.

CHAPTER 2:
Project Approach

To provide a reasonable level of accountability, communication, and to ensure the timely submission of agreement products as outlined primarily in task 1 of the funding agreement with the CEC, the SJVAPCD took the approach of centralizing the execution of the agreement to a limited number of individuals, both internally and externally. All parties involved designated certain staff as points of contact for the project. In regard to task 3, collecting and analyzing usage data and other impacts, the district formulated the collection plan to be as automated and simple to implement as possible. More details are provided in chapter 3 of the report.

For task 2 of the agreement of installing the EVCS, the approach was to select a qualified subcontractor through a competitive bidding process who can demonstrate the following:

1. Have the ability to coordinate the installation of the EVCS at the SJVAPCD's Fresno, Modesto, and Bakersfield offices.
2. Have the ability to provide warranty on parts and labor for at least 5 years.
3. Have a history of successful installations of EVCSs at other workplaces.
4. Will work with the SJVAPCD to meet agreement and regulatory requirements.
5. Install EVCSs that have the flexibility and capability for multiple usage activation/data collection methods, payment, and power management options.
6. Perform the services as close to the budget as possible.

Specific selection activities performed are listed below:

1. Made available to the public the request for proposals on August 20, 2014.
2. Hosted a bidder's conference on August 28, 2014 at the Fresno office with participation of the regional offices being facilitated through the use of the SJVAPCD's video tele-conferencing system.
3. Compared the project proposals submitted by EV Connect, Inc., Clean Fuel Connections, and Conti Corporation against the applicable criteria.
4. Selected EV Connect, Inc. as the subcontractor and secured the Commission Agreement Manager's approval of the final subcontract on November 6, 2014 and the SJVAPCD's Governing Board approval and execution at the November 13, 2014 meeting.

Installation of EVCS

The goal of this task is to complete the installation of the EVCS equipment at each of the three regional SJVAPCD offices. The three charging station sites are:

1. SJVAPCD Fresno Office, 1990 E. Gettysburg Avenue, Fresno, CA 93726, 2 Stations, 4 Ports
2. SJVAPCD Modesto Office, 4800 Enterprise Way, Modesto, CA 95356, 1 Station, 2 Ports

3. SJVAPCD Bakersfield Office, 34946 Flyover Court, Bakersfield, CA 93308, 1 Station, 2 Ports

The installation of the chargers was completed in three stages. The first stage included the selection of the appropriate locations for the chargers that would provide adequate access to the public and SJVAPCD employees for vehicle charging during normal business hours. Consideration was also given to the current and future expected American Disability Act[3] requirements as well as the security of the EVCS against possible vandalism and theft. The second stage included obtaining the necessary permits to begin and complete the electrical and installation work. Permits were obtained and finalized by EV Connect, Inc. from the City of Fresno, Kern County, and Stanislaus County. In the third stage, training was provided on the use of the chargers and each station was tested to ensure that any operational issues were resolved in a timely manner. During the testing of the equipment, it was determined that the standard charging cord for the units may not be of sufficient length to reach some vehicles in certain cases. As a result, longer cords were ordered and installed. Of the three locations within the scope of this project, only the Modesto office experienced a delay in installing the equipment. It was due to the repositioning of a perimeter gate to accommodate the charger's selected location.

Specific installation activities performed include the following:

1. Obtained and submitted the installation permits to the Commission Agreement Manager for the Fresno (Figure 1), Bakersfield (Figure 2) and Modesto (Figure 3) sites on 2/19/15, 4/21/15 and 7/30/15 respectively.
2. Photographed the installed chargers and submitted copies to the Commission Agreement Manager for the Fresno, Bakersfield and Modesto offices on 6/1/15, 6/1/15, and 9/3/15 respectively.

Figure 1: Fresno Office Chargers:

Source: SJCAPCD

[3] American Disability Act Home Page https://www.ada.gov/

Figure 2: Bakersfield Office Charger:

Source: SJCAPCD

Source: SJCAPCD

Subcontractors

Table 1 contains a list of the subcontractors that are part of this project, their names, addresses, and amount of funding provided to them are also listed.

Table 1: Consolidated list of the subcontractors funded in whole or in part

Period	Subcontractor	Address	Services Performed	Funded
4/1/14 to 3/31/16	EV Connect, Inc.	615 N. Nash Street, Suite 203, El Segundo, CA, 90245	Electrical/Installation	$29,800.00
4/1/14 to 3/31/16	Performance Electric	11206 Avenue 264, Visalia, CA, 93277	Electrical/Installation	$12,450.00
4/1/14 to 3/31/16	AGJ Electrical	45552 Ruth Ct., Lancaster, CA 93535	Electrical/Installation	$7,750.00
			Total	**$50,000.00**

Source: Project Invoicing Documentation https://www.valleyair.org/Home.htm

CHAPTER 3:
Project Results

Data Collection Plan

The development of the collection plan was focused toward collecting and analyzing the data in accordance with what has been outlined in the agreement in the areas of operational usage of the equipment and the economic and environmental impacts of the project. To this end, the SJVAPCD will exclusively utilize the network capabilities of the installed EVCSs and the online interface hosted by EV Connect, Inc. to collect and aggregate the data. Applicable mathematical models would then be used to calculate criteria pollutants reductions and carbon intensity values.

Results

General Operation

The installed EVCSs are level 2 alternating current (AC) chargers with a current output power capacity of 7.2 kilowatts. In general, there are no charging time restrictions or cost to charge during normal business hours; however, the SJVAPCD has coordinated 1.5-hour charging sessions among employees in order to efficiently accommodate the current demand. Also, it is normal procedure for the district to observe peak usage conservation requests by the utility company to alleviate the load on the electrical grid. The curtailments will eliminate the cost of charging at the higher rates. These restrictions apply equally to both employees and the public.

Economic Impact

Although the scope of the project was not sufficiently large to generate new jobs, it did, however, provide gainful employment to the three vendors that were instrumental in the installation of the EVCSs. The subcontractor's section in chapter 2 provides a concise breakdown of what services were performed and their allocation of the project funds. The local economy may also benefit from the patronage of individuals who are waiting for their vehicle to charge at one of the stations. At the SJVAPCD's main office, what is required to enjoy lunch at the food court of a local mall, or shop at any of the department stores open for business, is a 13[4] minute walk each way. Given that taxes are a primary source of revenue for the State of California, the increased sales of EVCSs to accommodate the maturing PEV market, will also benefit the state economically. The State will receive $897.00[5] of tax revenue from the sale of the EVCSs based on the statewide rate of 7.5 percent as a result of the project.

---

[4] Walking distance between these two addresses 1990 E Gettysburg Ave, Fresno, CA 93726 to Fashion Fair, 645 East Shaw Avenue, Fresno, CA 93710.
https://www.google.com/maps/dir/E+Gettysburg+Ave,+Fresno,+CA+93726/Fashion+Fair,+645+E+Shaw+Ave,+Fresno,+CA+93710

[5] Sale Tax Calculation: $897.00 ($11,960.00 (Charging Points) x 7.5 percent (State Tax Rate))
https://www.salestaxhandbook.com/california/calculator

Project Data

EV Connect, Inc. provided the number of charge sessions, charge duration, connection duration, and power provided. The SJVAPCD was able to compile this information (in Table 2) for the months of July through December of 2015 to show the activity for the chargers. Table 2 is based on the SJVAPCD's average electricity cost of $0.21 per kilowatt-hour (kWh), approximately $1,802.41 was spent in additional electricity costs for vehicles charging during this six-month period.

Table 2: Charge Sessions, Charge Duration and Power Provided per Month (2015)

Month	Sum of Charge Sessions	Sum of Charge Dur (min)	Sum of Connection Dur (min)	Sum of Power Provided kWh
Jul	473	49,619.04	91,071.04	1,347.52
Aug	494	68,170.45	121,986.45	1,379.53
Sep	454	74,185.22	118,083.22	1,545.73
Oct	426	52,150.43	132,992.43	1,437.34
Nov	379	41,276.05	115,999.24	1,458.74
Dec	447	55,657.79	70,297.18	1,414.06
Grand Total	**2673**	**341,058.98**	**650,429.56**	**8,582.92**

Source: SJVAPCD staff calculations

EV Connect, Inc.'s data collection included the charge sessions, charge duration (in minutes), the connection duration (in minutes), the power provided in kWh, the greenhouse gas emissions savings (in metric tons per kilogram of carbon dioxide), the gas savings (in gallons), and the Electric Miles Per Charge (EMPG)[6] added. Using the 2013 Emission Factor Tables for Evaluating Motor Vehicle Registration Fee Projects and Congestion Mitigation and Air Quality Improvement Projects, the SJVAPCD was able to calculate the nitrogen oxides, reactive organic gases, and particulate matter$_{2.5}$ (criteria pollutants) as pounds reduced per month and the carbon dioxide as pounds reduced per month. The Carbon Intensity Values was calculated using the Carbon Intensity Lookup Table for Gasoline and Fuels that Substitute for Gasoline. Approximately 4.5 cars' worth of criteria pollutant emissions were avoided each month as a direct result of the EV chargers being used to charge an EV instead of a conventional gasoline vehicle, which produces approximately 0.3 pounds of criteria pollutants per month per vehicle.

[6] Electric Miles Per Charge https://cars.usnews.com/cars-trucks/what-is-mpge

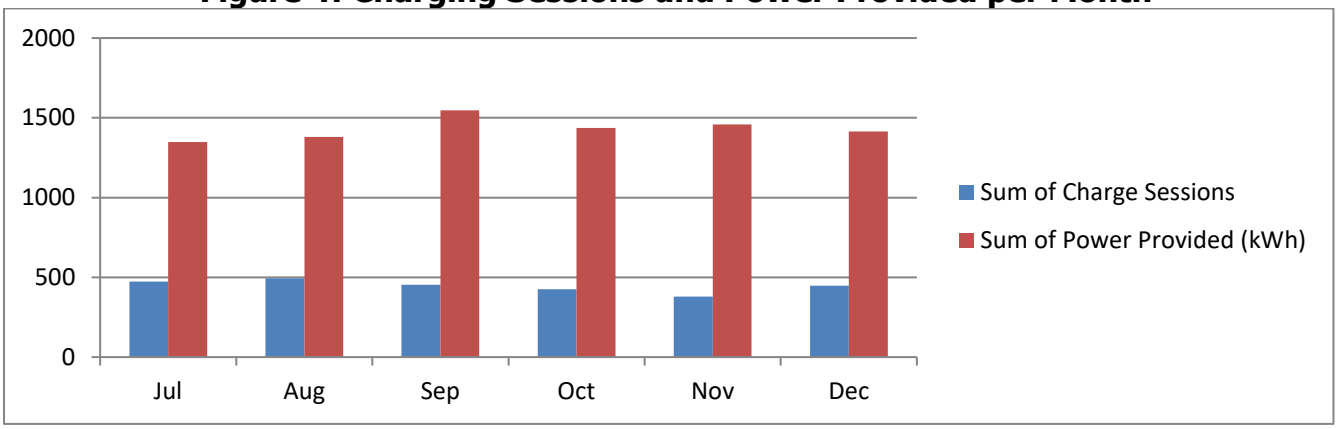
Table 3: Gas, EMPC, and Emissions Saved/Reduced per Month

Month 2015	Gas Savings per gallon	EMPG added	Emissions Savings greenhouse gas metric tons/kilo grams/CO2	Nitrogen oxides _ reactive organic gases _ particulate matter (pounds/ month)	Carbon dioxide Reduced (pounds/ month)	Carbon Intensity Values
Jul	101.91	4,716.31	824.69	1.3933	21.8351	46,452.01
Aug	104.35	4,828.30	844.28	1.4264	22.3536	47,555.46
Sep	116.89	5,410.13	945.98	1.5983	25.0473	53,284.75
Oct	108.72	5,030.72	879.68	1.4862	23.2908	49,548.30
Nov	110.32	5,105.64	892.76	1.5083	23.6376	50,286.01
Dec	106.96	4,949.20	865.41	1.4621	22.9133	48,745.79
Grand Total	**649.15**	**30,040.30**	**5252.80**	**8.8745**	**139.0778**	**295,872.33**

Source: SJVAPCD staff calculations

Figure 4 shows the number of charging sessions per month and the amount of kWh provided per month.

Figure 4: Charging Sessions and Power Provided per Month

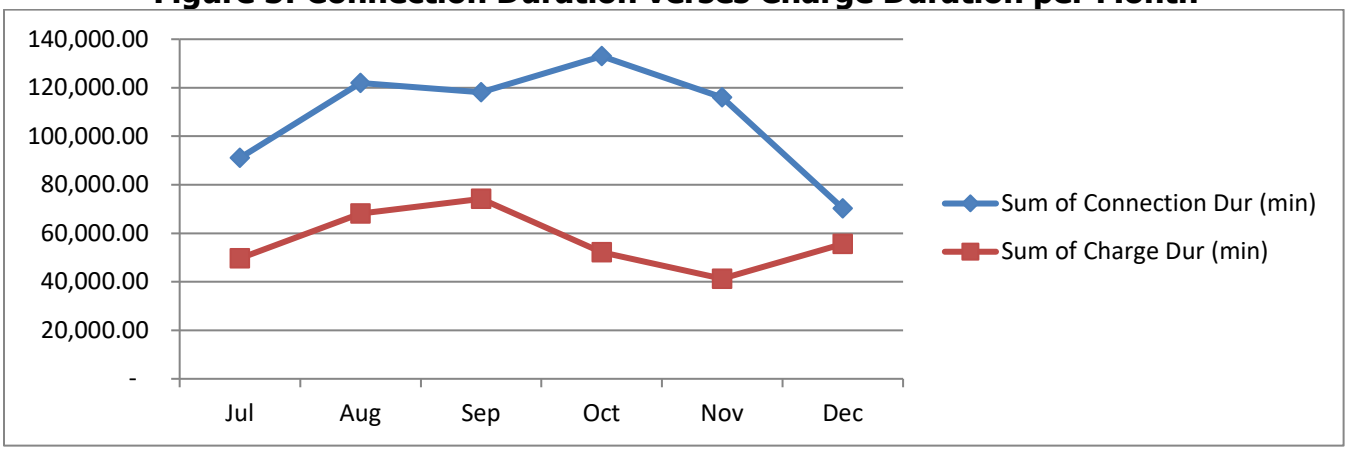


Source: Data provided to SJVAPCD from EV Connect, Inc. https://www.evconnect.com/about-us/

Figure 5 below shows the number of charging sessions per month and the amount of kWh provided per month. It was interesting to note that during the month of September, the length of time the vehicles were connected to chargers decreased even though the amount of time the vehicles were actually charging increased. In reviewing Figure 4 (previous page), the sum of the power provided also increased in September, which is what would be expected considering the actual charging duration increased. However, the opposite trend occurred during the month of October, where the length of time that vehicles were connected to

chargers increased, and the amount of time the vehicles were actually charging decreased. Figure 4 (previous page) also shows that the amount of power provided in October was less than September. In reviewing Figure 3, we can see that because the connection duration and charge duration were close to the same amount, December is when the chargers were used most efficiently at 79 percent, compared to the previous month when the chargers were only charging 36 percent of the time that they were actually plugged in. The average charging efficiency over the six-month period was 52 percent.

Figure 5: Connection Duration verses Charge Duration per Month



Source: Data provided to SJVAPCD from EV Connect, Inc. https://www.evconnect.com/about-us/

CHAPTER 4: Conclusion

The main goal of this project was to increase the adoption of plug-in electric vehicles among employees and the general public in order to improve air quality by constructing and expanding the necessary charging infrastructure at more utilized locations, such as charging at workplaces. To achieve this goal, two main objectives were identified. The first objective was to increase ownership of plug-in electric vehicles by removing as many barriers to that outcome as possible. The second objective was to re-ignite interest in workplace charging at the SJVAPCD, and more broadly, to other workplaces. The district has accomplished the objectives and found practical solutions to the underlying barriers and reached the goal of the project as described below.

One consistent barrier to the ownership of PEVs by employees has been the high cost associated with the newer technology. SJVAPCD employees will be able to offset some of the costs from other incentive opportunities, but it was only in the last few years that the district was able to accommodate, with non-public funds, an employee version of its popular and successful "Drive Clean!" rebate Incentive program. The incentive would help to offset purchasing costs up to $3,000.00. This has greatly increased the feasibility of vehicle ownership. As of the compilation of this report, and subsequent to the execution of the agreement with the Energy Commission on July 10, 2014, 29 employees have purchased PEVs as documented by their participation in the SJVAPCD's sponsored incentive program. The new owners represent an increase of 123 percent [7]. Prior to the agreement to install the Level 2 EVCSs, there were only two charging points at the district's Fresno office, and the usage capacity was already rapidly being reached. In partnership with the Energy Commission through the funding provided, the upgraded infrastructure at the Fresno office and the added capacity at the regional offices, have been able to support the current usage demands with excess capacity to support future growth. The announcement of the partnership and the proposed project may account for the noteworthy increase in employee PEV ownership. It may also have been the deciding factor for those who were concerned about the charging capacity of the existing infrastructure if they were to purchase a PEV.

As mentioned, the SJVAPCD's "Drive Clean!" rebate incentive program has been very successful in displacing polluting vehicles in the San Joaquin Valley with more air friendly alternatives, however, the district's commitment to advancing the adoption of PEVs and reducing air pollution does not stop there. To support the additional PEVs that are on state roadways as a result of the district's efforts, this project has provided relevant cost and administration data for consideration in the creation of the SJVAPCD's new "Charge Up!" incentive program. The program is currently accepting applications and will provide funding to help install level 2 chargers at public agencies and business locations that will be accessible to employees and the public.

[7] Employee PEV Ownership: ((29 (Subsequent to the Agreement) – 13 (Prior to the Agreement))/13) x 100
http://valleyair.org/drivecleaninthesanjoaquin/rebate/

Although the SJVAPCD has put forth reasonable efforts to find and implement solutions to incentivize PEV adoption, some barriers can only be overcome by advancements in technology. Two specific barriers are in regard to travel range limitations and long charging times. The travel range can be reasonable and acceptable when the distance considered is between an individual's residence and their workplace, but when considered across larger areas, such as taking a trip out of state, it then becomes more of a concern, especially if there is a lack of charging infrastructure along the route. One possible solution to this issue that is being considered by researchers is in the area of swappable batteries. If extending the range of PEVs were as simple as swapping out a depleted battery, PEVs may become more accepted. Another barrier that technology is more apt to overcome is in reducing charging times, or at least make it more convenient to charge. The U.S. Department of Energy website has made reference to the Chevy Spark and the BMW i3 as having ports that can interface with Level 1/2 AC and Level 2 direct current (DC) charging equipment[8]. This can be an industry shift that speeds up adoption of PEVs because Level 2 DC charging has been estimated to be able to obtain a 50 to 70 mile range in about 20 minutes of charging as compared to level 2 AC of 10 to 20 miles in about an hour of charging.[9] It will also promote compatibility between the more common Level 2 AC charging infrastructure and the likely future standard of Level 2 DC charging. As an alternative to corded charging, researchers are developing induction charging, or wireless charging, which could be enough of a convenience for some to purchase a PEV.

[8] U.S. Department of Energy, PEV Reference, "Developing Infrastructure to Charge Plug-In Electric Vehicles http://www.afdc.energy.gov/fuels/electricityinfrastructure.html

[9] U.S. Department of Energy, Charging Time Reference, "Developing Infrastructure to Charge Plug-In Electric Vehicles http://www.afdc.energy.gov/fuels/electricityinfrastructure.html

GLOSSARY

ALTERNATING CURRENT (AC)—Flow of electricity that constantly changes direction between positive and negative sides. Almost all power produced by electric utilities in the United States moves in current that shifts direction at a rate of 60 times per second.

CALIFORNIA ENERGY COMMISSION (CEC)—The state agency established by the Warren-Alquist State Energy Resources Conservation and Development Act in 1974 (Public Resources Code, Sections 25000 et seq.) responsible for energy policy. The CEC's five major areas of responsibilities are:

1. Forecasting future statewide energy needs.

2. Licensing power plants sufficient to meet those needs.

3. Promoting energy conservation and efficiency measures.

4. Developing renewable and alternative energy resources, including providing assistance to develop clean transportation fuels.

5. Planning for and directing state response to energy emergencies.

DIRECT CURRENT (DC)—A charge of electricity that flows in one direction and is the type of power that comes from a battery. Electric Vehicle (EV)

ELECTRIC MILES PER CHARGE (EMPG)—An energy efficiency metric that was introduced by the Environmental Protection Agency (EPA) in 2010 to compare the amount of energy consumed by alternative fuel vehicles to that of traditional gas-powered cars.[10]

ELECTRIC VEHICLE (EV)—A broad category that includes all vehicles that are fully powered by electricity or an electric motor.

ELECTRIC VEHICLE CHARGING STATION (EVCS)— An electric vehicle charging station is equipment that connects an EV to a source of electricity to recharge electric cars, neighborhood electric vehicles and plug-in hybrids

KILOWATT-HOUR (kWh)—The most commonly used unit of measure telling the amount of electricity consumed over time, means one kilowatt of electricity supplied for one hour. In 1989, a typical California household consumed 534 kWh in an average month.

PLUG-IN ELECTRIC VEHICLE (PEV)—A general term for any car that runs at least partially on battery power and is recharged from the electricity grid. There are two different types of PEVs to choose from—pure battery electric and plug-in hybrid vehicles. Plug-in Hybrid Electric Vehicle (PHEV)

[10] Electric Miles Per Charge https://cars.usnews.com/cars-trucks/what-is-mpge

SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT (SJVAPCD)—A public health agency whose mission is to improve the health and quality of life for all Valley residents through efficient, effective, and entrepreneurial air quality management strategies. Its core values have been designed to ensure that its mission is accomplished through commonsense, feasible measures that are based on sound science. The San Joaquin Valley Air Pollution Control District is made up of eight counties in California's Central Valley: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and the San Joaquin Valley Air Basin portion of Kern County.94 Society of Automotive Engineers (SAE)