



**CALIFORNIA  
ENERGY COMMISSION**



California Energy Commission  
Clean Transportation Program

## **FINAL PROJECT REPORT**

# **CALSTART San Joaquin Valley Clean Transportation Center**

**Prepared for: California Energy Commission**

**Prepared by: CALSTART**

**Gavin Newsom, Governor**

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# California Energy Commission

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# PREFACE

Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007) created the Clean Transportation Program, formerly known as the Alternative and Renewable Fuel and Vehicle Technology Program. The statute authorizes the California Energy Commission (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-14-606 to fund projects that develop a new center or expand an existing center for alternative fuels and advanced vehicle technologies in Central California. In response to PON-14-606, the recipient submitted an application which was proposed for funding in the CEC's notice of proposed awards March 18, 2015 and the agreement was executed as ARV-14-061 on June 23, 2015.



# ABSTRACT

The CALSTART San Joaquin Valley Clean Transportation Center was established in September 2015 using funding from the California Energy Commission and Southern California Gas Company. The mission for the San Joaquin Valley Clean Transportation Center is to accelerate the use of clean vehicles and fuels and help the region more quickly meet its air quality targets. The San Joaquin Valley Clean Transportation Center provides technical assistance, project development expertise, and support with acquiring funding for San Joaquin Valley vehicle fleet owners, local governments, businesses, and residents. Its work is designed to expand the use of zero-emission vehicles, clean trucks, and high-efficiency non-road equipment. The San Joaquin Valley Clean Transportation Center has two office locations in the San Joaquin Valley; one in Fresno and one in Stockton. The [San Joaquin Valley Clean Transportation Center website](http://www.sjvcleantransportation.org) is at [www.sjvcleantransportation.org](http://www.sjvcleantransportation.org). The San Joaquin Valley Clean Transportation Center has two CALSTART staff members dedicated to the daily operations; Director Joseph Oldham in Fresno and Project Manager Thomas Paddon in Stockton.

Since 2015, the San Joaquin Valley Clean Transportation Center has helped bring over \$17.6 million in new projects to the San Joaquin Valley and helped add capacity to regional partners engaged in promoting clean transportation technology and improving air quality. The San Joaquin Valley Clean Transportation Center has provided a channel of engagement between Valley stakeholders and the 180+ CALSTART member companies and facilitated projects that range from deployment of advanced solar powered electric vehicle charging stations to helping develop new incentive programs for natural gas trucks to deployment of the first production electric aircraft in the United States.

**Keywords:** CALSTART, San Joaquin Valley, San Joaquin Valley Clean Transportation Center, electric vehicles, electric vehicle infrastructure, electric vehicle bus

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# EXECUTIVE SUMMARY

The San Joaquin Valley is a region of California surrounded on three sides by mountain ranges that covers over 27,000 square miles, contains sixty-two incorporated cities, has population growth running twice the State average, relies on agriculture as the top industry, has the most disadvantaged communities in California, and some of the worst air quality in the nation. With two major highways and two transcontinental rail lines running the length of the region, transportation contributes about 80 percent of the emissions that create the poor air quality impacting the health and quality of life for residents. The San Joaquin Valley Air Pollution Control District is the lead agency tasked with improving air quality in the region, but it is unable to regulate mobile sources and must rely on creative incentive programs to encourage vehicle owners to switch to cleaner fuels and technology. For decades, the San Joaquin Valley Air Pollution Control District has relied on collaboration with various non-profit organizations to help them achieve their air quality goals.

The CALSTART San Joaquin Valley Clean Transportation Center was established in September 2015 using funding from the California Energy Commission and Southern California Gas Company with the mission to accelerate the use of clean vehicles and fuels and help the region more quickly meet its air quality targets. The San Joaquin Valley Clean Transportation Center provides technical assistance, project development expertise, and support with acquiring funding for San Joaquin Valley vehicle fleet owners, local governments, businesses, and residents. Its work is designed to expand the use of zero-emission vehicles, clean trucks, and high-efficiency non-road equipment. The San Joaquin Valley Clean Transportation Center has two office locations in the San Joaquin Valley; one in Fresno and one in Stockton. [The San Joaquin Valley Clean Transportation Center](http://www.sjvcleantransportation.org) website is at [www.sjvcleantransportation.org](http://www.sjvcleantransportation.org). The San Joaquin Valley Clean Transportation Center has two CALSTART staff members dedicated to the daily operations; Director Joseph Oldham in Fresno and Project Manager Thomas Paddon in Stockton.

Since 2015, the San Joaquin Valley Clean Transportation Center has helped bring over \$17.6 million in new projects to the San Joaquin Valley and brought added capacity to regional partners engaged in promoting clean transportation technology and improving air quality. Through the existing relationships of Valley native, Director Joseph Oldham, the San Joaquin Valley Clean Transportation Center provided a channel of engagement between Valley stakeholders and the 180+ CALSTART member companies and facilitated projects that range from deployment of advanced solar-powered electric vehicle charging stations to helping develop new incentive programs for natural gas trucks to deployment of the first production electric aircraft in the United States.

Besides projects, the San Joaquin Valley Clean Transportation Center engaged in active outreach within the communities in the region to share the opportunities that cleaner transportation fuels and technology bring to residents and businesses. Opportunities that extend beyond cleaner air, but also result in lower costs and greater reliability have resonated with attendees at the two San Joaquin Valley Clean Transportation Summits held since 2016 and various meetings with elected officials. Through a monthly newsletter, the San Joaquin Valley Clean Transportation Center has been able to reach over 1,000 interested subscribers with news about new funding programs, vehicle deployments, new products and vehicles, and events showcasing advanced clean transportation technology.

The San Joaquin Valley Clean Transportation Center has validated important lessons about how to engage residents and businesses in the region with some of the highlights being:

- Engage and respect the local perspective on the needs for and usefulness of clean transportation technology,
- Seek out and support local “champions”, and
- Partner with local agencies to help them achieve their vision for their communities.

By adhering to these core principles for engagement in the San Joaquin Valley, the San Joaquin Valley Clean Transportation Center has achieved significant results in bringing advanced clean transportation technology to a region that has often been slow to adopt change.

# **CHAPTER 1:**

## **The San Joaquin Valley; A Critical and Challenging Region for Clean Transportation Adoption**

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### **1.1 San Joaquin Valley Context**

#### **1.1.1 Geography and Challenges with Air Quality**

The San Joaquin Valley covers 27,000 square miles, has eight counties, and 62 incorporated cities, plus numerous unincorporated communities.<sup>1</sup> It is surrounded on three sides by mountain ranges and this geography sets the perfect atmospheric conditions for an inversion layer to be present most days of the year (Figure 1 shows inversion during the summer and Figure 2 shows inversion during the winter). The inversion layer traps air pollutants generated by mobile and stationary sources in the region creating some of the worst air quality conditions in the United States for residents. Both particulate matter 2.5 and ozone pollution exceed federal Clean Air Standards on many days out of the year and the San Joaquin Valley Air Pollution Control District (SJVAPCD) is the regional agency tasked with improving the air quality through various incentive programs for mobile sources and regulation of stationary sources. The SJVAPCD is unable to regulate mobile sources and must rely on regulatory policy from the state and federal governments to control these sources. However, the SJVAPCD works closely with both state and federal regulatory agencies around mobile source emissions and has been creative in developing incentive programs for mobile sources to help get greater mobile source emission reductions faster than state and federal regulation will achieve. In many cases, SJVAPCD incentives can be added to state and federal incentives to make the business case for clean transportation technology very attractive for truck, bus, and automobile owners.

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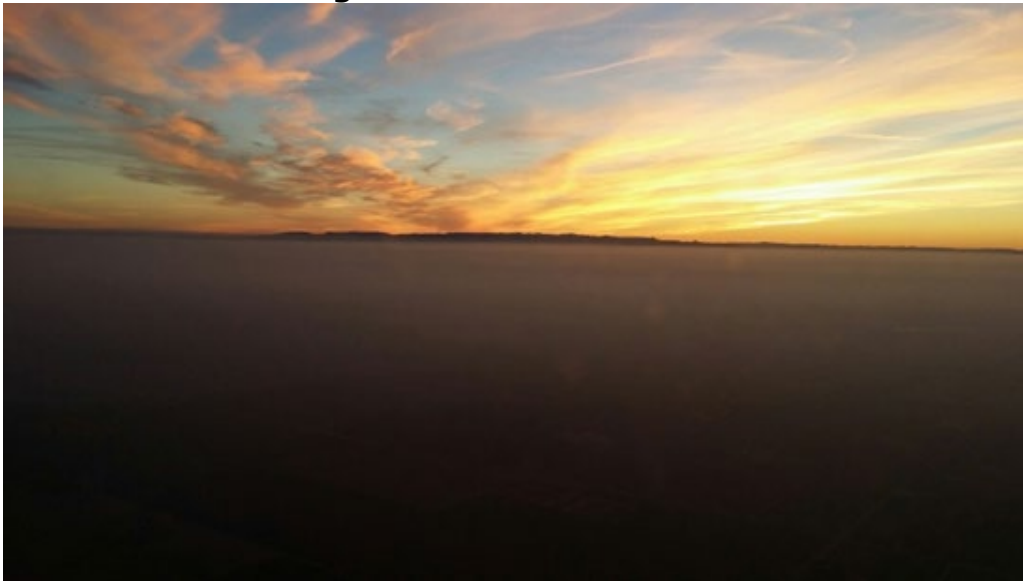
<sup>1</sup> San Joaquin Valley Air Pollution Control District. [Chapter 2: San Joaquin Valley Air Quality](https://www.valleyair.org/Workshops/postings/PriorTo2008/2004/08-12-04/chp%202.pdf). (https://www.valleyair.org/Workshops/postings/PriorTo2008/2004/08-12-04/chp%202.pdf).

**Figure 1: Inversion Summer**



Source: Joseph Oldham

**Figure 2: Inversion Winter**



Source: Joseph Oldham

### **1.1.2 Population Growth Twice the State Average**

The San Joaquin Valley has about four million residents and is one of the fastest population growth areas in California; growth rates running about twice the state average. This rapid growth of population places stress on housing resources following the Great Recession and

many people commute more than 20 miles from home to work.<sup>2</sup> Figure 3 below shows Highway 99, a popular route in North Fresno.

**Figure 3: Highway 99 – North Fresno**



Source: Joseph Oldham

### **1.1.3 Political and Cultural Aspects**

In general, the region is more conservative politically than the urban centers in the Bay Area or Los Angeles, making adoption of new transportation technology challenging in the face of a strong bias toward what has been used in the past. There is a strong sense of independence that makes people in the region skeptical of outside influencers. The region has often been referred to as having a “mid-western” feel.

The region is highly diverse in terms of ethnicity, cultures, and languages. This makes communication about complex or new technology more difficult, especially when combined with some cultural biases to distrust outsiders.<sup>3</sup>

### **1.1.4 Primary Industries and Transportation Infrastructure**

The number one industry is agriculture (illustrated in Figure 4), but there are other prominent industries in the region such as petroleum, and warehouse operations for national retail store chains (Figure 5).

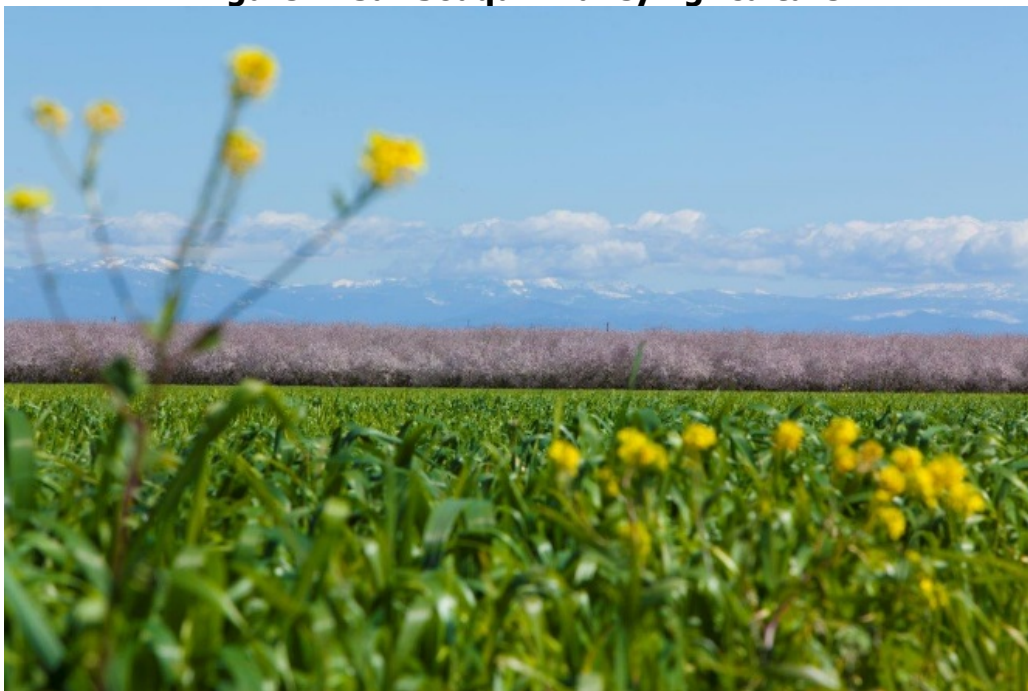
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<sup>2</sup> Alexander, Kurtis. [Valley project to lead state's growth in 2060](http://www.bakersfield.com/news/valley-projected-to-lead-state-s-growth-into/article_b400b647-c950-5322-bfa0-b2f43f4885ee.html). The Fresno Bee. Available at (http://www.bakersfield.com/news/valley-projected-to-lead-state-s-growth-into/article\_b400b647-c950-5322-bfa0-b2f43f4885ee.html).

<sup>3</sup> Ellis, John. [The San Joaquin Valley is California's hottest political spot](http://www.fresnobee.com/news/politics-government/election/article19523793.html). The Fresno Bee. (http://www.fresnobee.com/news/politics-government/election/article19523793.html).



**Figure 4: San Joaquin Valley Agriculture**



Source: San Joaquin Valley Air District

**Figure 5: Warehousing and Trucking**



Source: Joseph Oldham and San Joaquin Valley Air District

Transportation is primarily focused on two major highways and two rail lines that go from north to south through the region connecting the Bay Area and the Los Angeles basin. Figure 6 shows the Union Pacific Main Line, where the two rail lines meet in Fresno. Both modes of



transportation are major sources of mobile pollutants, with Class 8 trucks being number one at 142.83 tons of nitrous oxide and 6.13 tons of particulate matter per day.<sup>4</sup>

**Figure 6: Union Pacific Main Line**



Source: San Joaquin Valley Air District and Joseph Oldham

## **1.2 San Joaquin Valley Clean Transportation Center's Role in Promoting Clean Transportation Technology**

### **1.2.1 Lessons Learned**

#### **1.2.1.1 Trust, Respect, and Relationships are Essential to Get Projects Done**

CALSTART sought out a native from the San Joaquin Valley to be the first Director of the new San Joaquin Valley Clean Transportation Center in 2015. This was due to their understanding of the need to have someone with local connections and reputation for successfully implementing projects in the region to lead the new office. This decision was critical to the early success of the Center at getting project work moving since the new Director could use his existing relationships and trust within the region to add credibility to the new Center and its mission. This is a valuable lesson learned for other regions of the state.

#### **1.2.1.2 Networks Are Critical**

Leveraging an existing network of connections was another critical component for the success of the new Center. Because the new Director had worked for decades with regional stakeholders on clean transportation, air quality improvement, renewable energy, and energy efficiency, he was able to tap into resources quickly as the need arose to get projects started, help overcome barriers that arose, and get projects completed on time.

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<sup>4</sup> California Air Resources Board. [2015 Estimated Annual Average Emissions: San Joaquin Valley Air Pollution Control District](https://www.arb.ca.gov/app/emsmcat_query.php?F_YR=2015&F_DIV=-4&F_SEASON=A&SP=2009&F_AREA=DIS&F_DIS=SJU#7). ([https://www.arb.ca.gov/app/emsmcat\\_query.php?F\\_YR=2015&F\\_DIV=-4&F\\_SEASON=A&SP=2009&F\\_AREA=DIS&F\\_DIS=SJU#7](https://www.arb.ca.gov/app/emsmcat_query.php?F_YR=2015&F_DIV=-4&F_SEASON=A&SP=2009&F_AREA=DIS&F_DIS=SJU#7)).

#### **1.2.1.3 Leverage of Resources Needed**

Leverage of resources does not only mean leverage of financial resources; it also means leverage of local agency staff resources. For the first two years of the Center's existence, the Director was the only employee of CALSTART in the region. To get projects developed and implemented required using existing relationships with local stakeholders, strengthening those relationships by making sure there was mutual alignment of goals and objectives with a focus on assistance to the stakeholder, and then using the team that was developed to get the project completed. The primary focus had to be on how the project would bring value to local stakeholders or, in other words, being a servant to help fulfill the community needs.

A prime example of staff resource leverage was the Electric Vehicle Autonomous Renewable Charger (EV ARC) deployment in all thirteen rural cities in Fresno County led by Fresno County Rural Transit Agency (FCRTA). The Director for the SJVCTC brought the Envision Solar EV ARC technology to the attention of the General Manager for FCRTA and together they explored how the EV ARC units could be used to support the electrification of FCRTA's intra-city transit service while at the same time helping to bring the first public electric vehicle supply equipment to rural Fresno County cities. Envision Solar engineers worked out the details to install dual Level 2 chargers on each unit so that they could provide both public and transit vehicle charging. The San Joaquin Valley Air Pollution Control District added the EV ARC to their list of approved electric vehicle supply equipment that qualified for incentives under their Charge-Up program. FCRTA worked with the Director of the SJVCTC to get site locations identified at all thirteen rural cities. FCRTA General Manager Moses Sites then worked with each of the thirteen cities to get permission to place the EV ARC units on their property at city halls, community centers, and libraries. Finally, it took engaging each city public works department director to make sure the EV ARCs were placed properly. Without the staff resource help and support from the community of stakeholders, the project would not have happened.

#### **1.2.1.4 Good Project Management and Attention to Detail is Essential to Succeed**

No detail of a project is too small to ignore. It is details that make or break projects and, sometimes the so-called "small ones" create a challenging situation that requires creativity to overcome for success. A good example of this was also associated with the EV ARC project.

The 13 EV ARC units were ready for delivery by Envision Solar by December 2016 and the company had, and still has, just one delivery driver and delivery trailer for the units. As the Christmas and New Year holiday approached, there were six EV ARCs that needed to be delivered before the driver went on vacation with his family, but the six cities that were to get the EV ARCs were not ready to receive them. FCRTA and CALSTART did not have the facilities to store the units for the estimated two months it was to take to get all six city locations worked out. Fortunately, the Director for the CALSTART SJVCTC made arrangement ahead of time, anticipating something of this nature may occur, with a local non-profit organization to store the six EV ARCs at no cost while the city locations were finalized, and the holiday season passed. Had a contingency plan for the delivery locations not been thought out ahead of time, the project would not have proceeded smoothly and this "small detail" with the delivery of the EV ARCs could have created serious delay.

#### **1.2.1.5 Success Breeds More Success**

Once projects get implemented and others in the region see what was done, people come forward and opportunities for more project work increases significantly. Many times, this occurs with the same agency where one success encourages them to take another step.

### **1.2.1.6 Overview of Grant Funding the Center Facilitated Getting Awarded to Projects in the Valley**

The following list of projects is not in chronological order but does show the breadth of project work completed by the CALSTART San Joaquin Valley Clean Transportation Center starting September 2015 to the present.

Fresno County Rural Transit Agency was awarded \$78,000 from the San Joaquin Valley Air Pollution Control District "Charge Up" Program to help fund deployment of 13 Envision Solar EV ARC solar powered Level 2 electric vehicle charger units in 13 rural Fresno County cities (Figure 7 shows the grand opening for one of the electric vehicle charging units).

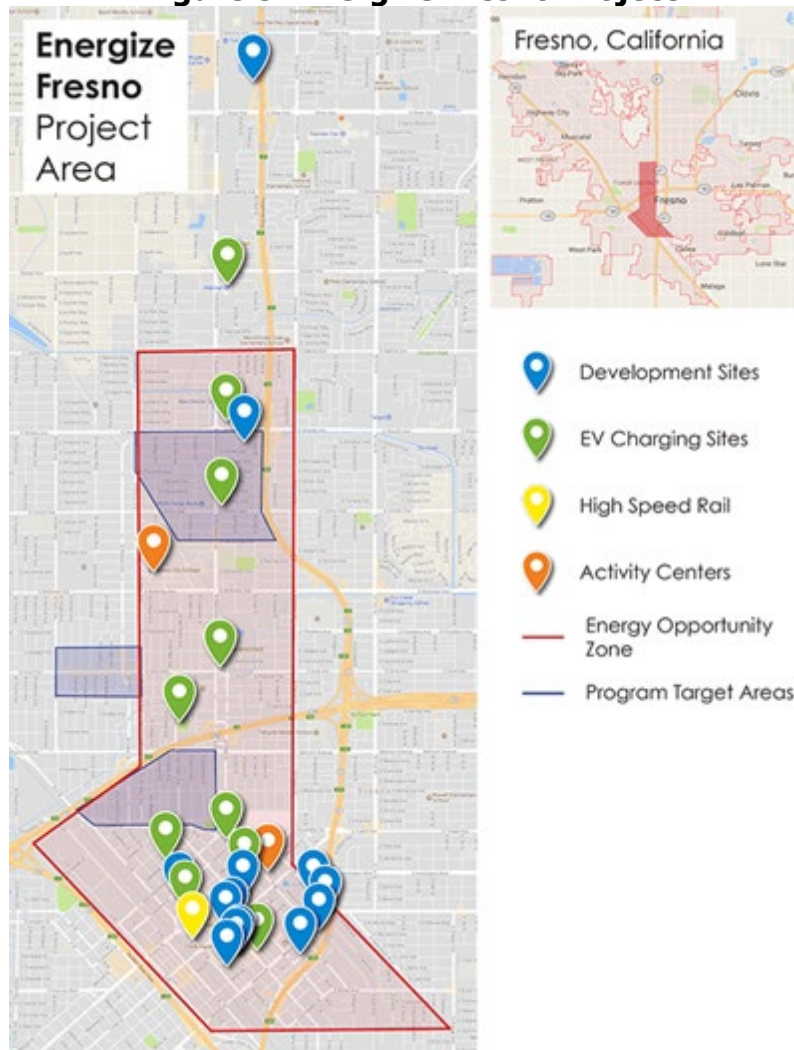
**Figure 7: EV ARC Project**



Source: Joseph Oldham

The Local Government Commission and the City of Fresno were awarded \$1,500,000 in funding through the Electric Program Investment Charge program to Accelerate Deployment of Advanced Energy Communities (Figure 8). The SJVCTC provided technical assistance on transportation related aspects of the project.

**Figure 8: Energize Fresno Project**



Source: Fresno Metro Ministry

Fresno County Rural Transit awarded \$2,538,000 in funding through Fresno Council of Governments New Technology Grant Program to purchase and deploy two battery electric transit buses from Build Your Dreams Motors for new express bus/rail connector service in Fresno County (Figure 9). Project includes funding for two Envision Solar "Solar Tree" direct current fast charge units for bus charging (Figure 10). The project will reduce greenhouse gas emissions by 123.4 tons and criteria pollutants by 0.1587 tons annually once fully deployed.



**Figure 9: Build Your Dreams K7 Bus**



Source: Build Your Dreams Bus Company

**Figure 10: Solar Tree Direct Current Fast Solar**



Source: Envision Solar

City of Mendota and City of Reedley was awarded \$1,071,000 in funding through the Fresno County Transportation Authority Measure C New Technology Reserve Grant Program to purchase and deploy four battery electric training aircraft and charging infrastructure at up to four Fresno County regional airports (Figure 11). This will be the first deployment of production electric aircraft in the United States and the first network of airports with charging infrastructure to support electric aircraft operations in the Western Hemisphere. The aircraft

will reduce greenhouse gas emissions by 92 tons and criteria pollutants by 0.998 tons annually once flight training operations begin.

**Figure 11: Pipistrel Alpha Electros in Fresno**



Source: D.F. Sisk

The San Joaquin Valley Air Pollution Control District was awarded \$7,125,515 in funding through the California Air Resources Board's Zero Emission Bus and Truck Pilot Commercial Deployment Demonstration to deploy 20 battery electric walk-in-van linen delivery vehicles and infrastructure as part of the Green On-Road Linen Delivery Project to be used by Ameripride Linen Service in Bakersfield, Stockton, Merced, and Fresno (pictured in Figure 12 and Figure 13). The SJVCTC provides project management assistance for the project. The project will reduce greenhouse gas emissions by 358.29 tons and criteria pollutants by 2.87 tons annually.

**Figure 12: Outside of Ameripride Electric Vehicle Trucks in Fresno**



Source: CALSTART

**Figure 13: Inside of Ameripride Electric Vehicle Truck in Fresno**



Source: CALSTART

The San Joaquin Valley Air Pollution Control District was also awarded \$4,555,670 in funding through the California Air Resources Board's Zero Emission Bus and Truck Pilot Commercial Deployment Demonstration to deploy 15 zero-emission battery electric United States Postal Service mail delivery step vans and associated charging infrastructure as part of the United



States Postal Service Zero-Emission Mail Delivery Project at Postal Service hubs in Stockton and Fresno. The SJVCTC will provide project management assistance for the project. This project is just getting underway and no photos are currently available. The project will reduce greenhouse gas emissions by 247.9 tons and criteria pollutants by 0.22 tons annually.

CALSTART was awarded \$750,000 in funding to develop a pilot hybrid demand-response subscription service called "Bolt to College" for Fresno City College students living in western Fresno County using all-electric Chevrolet Bolt electric vehicles to travel to and from classes (Figure 14). The SJVCTC will provide project management service for the project.

**Figure 14: "Bolt to College"**



Source: CALSTART

#### **1.2.1.7 Outreach and Engagement Channels**

Because the region is vast in terms of land area, outreach and engagement is difficult. The CALSTART SJVCTC used various methods for engagement and together they proved effective. However, it is important to note that engagement must remain steady and consistent to get results.

##### *1.2.1.7.1 SJVCTC Newsletter Development and Success*

The SJVCTC Newsletter was developed to initially provide updates to subscribers every two months about clean transportation topics and news. Thirteen issues of the SJVCTC newsletter were produced, beginning in May 2016 and ending in April 2018. The free version of MailChimp was used to produce and send the newsletter via email, as well as to input and maintain the subscriber list.

The editor Brenda Turner worked with SJVCTC Director Joseph Oldham to establish the content for each newsletter, with Project Clean Air President Linda Urata also suggesting article ideas. Nearly all of the articles were written by the editor, who frequently traveled to attend events and workshops, or compiled by the editor through telephone interviews with sources and information generated through online research and email correspondence. The editor also took photos at events to include in the newsletter. Some photos and other graphic



images were submitted by article sources, with the editor providing coordination and then formatting them for use in MailChimp. Mr. Oldham wrote his director's message, which was reviewed by the editor and inserted into MailChimp's template. The editor was responsible for all design and layout of each issue. Project Clean Air staff and President assisted with proofreading the newsletters for content and clarity along with spelling and other errors.

An initial mailing list of 1,062 individuals was identified from various sources, but 100 emails were not able to be delivered, decreasing the initial list to 962 recipients with valid and current email addresses. By the time the final newsletter email was sent in April 2018, the mailing list had increased to 1,199, with successful deliveries to 1,195 subscribers, exceeding our goal of reaching 1,130 individuals. From an initial list of 962 to a final list of 1,195 valid addresses, the number of subscribers increased by 233 individuals, which was an increase of nearly 25 percent over the two-year period.

Overall, the list average open rate for the newsletter was 23.1 percent for each email. This compares to MailChimp's stated industry average for nonprofits of 20.2 percent. The newsletter's list average click-through rate, which is when a link is clicked to another site, was 1.9 percent for each email. This is just under the nonprofit average of 2.1 percent. In looking at total readership for the 13 issues, considering that most issues were emailed twice as described above, the average reach was 32.95 percent per issue or nearly a third of the total email list.

In addition to the newsletters, special emails were sent to promote events and provide other timely information to the newsletter subscriber list. Topics included the two SJVCTC Summits, Compressed Natural Gas Listen and Learn Sessions, the CarbonBLU Brief fleet assessment, and various funding opportunities, webinars and workshops. In total, another 30 of these types of emails were sent to the entire subscriber list or a segment of the list.

Twenty total emails were sent out for the 13 newsletter issues on due to several issues being sent first to the entire list, then sent a second time to those who had not opened the first email. With the 20 newsletter emails and 30 special emails, a total of 50 emails were distributed to the newsletter email list or a segment of the list. That amounts to approximately two per month, or about one every two weeks.

#### *1.2.1.7.2 Website Development and Success*

Initially the SJVCTC website was a static site in Hypertext Markup Language format that did not allow for easy upgrade. Originally intended to be more resistant to hacking, it was actually more vulnerable to hackers and constantly being hijacked. In December 2017, the website was reformatted to WordPress and placed on a more secure server. The reformatting allows for easy upgrades and now the website is very useful for hosting information about events, projects, links to grant funding, etc. Monthly traffic on the site has seen a steady increase to over 1,200-page views leading up to the March 2018 summit and, since the summit, has only declined slightly to about 1,000-page views per month.

#### *1.2.1.7.3 Collaboration and Partnership with Project Clean Air and San Joaquin Valley Clean Cities Coalition*

Since its inception in 1991, the goal of Project Clean Air, Inc. has been to work with residents, local businesses and public agencies to seek solutions to improving air quality and educating people about the connection between poor air quality and increased respiratory and heart

health problems. They develop cooperative joint ventures that help businesses and member agencies meet challenges in a cost-effective manner.

Project Clean Air manages the San Joaquin Valley Clean Cities Coalition. The San Joaquin Valley Clean Cities Coalition is part of the United States Department of Energy's Clean Cities Program. Through the San Joaquin Valley Clean Cities Coalition, Project Clean Air has organized several partnerships: The San Joaquin Valley Electric Vehicle Partnership and the San Joaquin Valley Natural Gas Partnership. The SJVCTC contracted with Project Clean Air to provide the newsletter services and participates in both the partnerships and coordinates on events. Great examples have been the two Clean Transportation Summits in 2016 and 2018 where Project Clean Air played a key role organizing both events.

Because Project Clean Air is based in Kern County, the SJVCTC works closely with Project Clean Air on communication and project development so that there is no duplication of services or efforts; both organizations have the same goal to improve air quality for residents in the San Joaquin Valley through use of clean transportation technology.

#### *1.2.1.7.4 San Joaquin Valley Air Pollution Control District Support for the Center*

The SJVAPCD has been a strong supporter and partner on many projects that the CALSTART SJVCTC has developed. In addition, the SJVCTC has advised and supported the Air District on new programs and air quality plans. A great example of this cooperation and support was the last Proposition 1B solicitation issued by the District in the Spring of 2017 and subsequent development of a new truck incentive program for 2010 and newer diesel truck replacement with ultra-low nitrous oxide natural gas trucks. Another example are the several projects funded by the California Air Resources Board where the SJVAPCD is the prime applicant on the grant and CALSTART is a subcontractor and co-administrator for the project. The Green On-Road Linen Delivery and United States Postal Service projects funded by the California Air Resources Board are good examples of how this partnership has brought over \$11 million in funding and 35 all electric trucks to the region.

#### *1.2.1.7.5 Growing Partnerships with Various Valley Agencies and Stakeholders*

The CALSTART San Joaquin Valley Clean Transportation Center has grown partnerships with multiple organizations to promote clean transportation technology across the region. Many of these relationships are in the form of support by providing referrals for people seeking information or resources; some of the relationships have been to include local stakeholders in projects where funding is channeled to them for their unique expertise; and others have been where the SJVCTC has provided advice and guidance for local groups seeking to understand how to bring clean transportation technology to their community. A partial list of the organizations and examples of the interactions are listed in Table 1 below.

**Table 1: SJVCTC Engagement Partners**

<b>Organization and Contact Information</b>	<b>Type of Engagement</b>
Fresno Metro Ministry Keith Bergthold, Executive Director (559) 485-1416	Contract partner, community outreach channel

<b>Organization and Contact Information</b>	<b>Type of Engagement</b>
Fresno State Office of Community and Economic Development Ismael Herrera, Executive Director (559) 278-0721	Contract partner, community outreach channel, event logistics coordinator
Fresno County Economic Opportunities Commission Monty Cox, Transit Systems Director (559) 263-8004	Contract partner, community outreach channel
Fresno Council of Governments Moses Stites, General Manager for Fresno County Rural Transit Agency (559) 233-6789	Community engagement partner, advocate with local governments
Stockton Mayor's Office Max Vargas, Senior Policy Advisor to Mayor Michael Tubbs (209) 937-8386	Community engagement partner, project developer, community advocate
Project Clean Air Linda Urata, Executive Director (661) 635-2904	Contract partner, community engagement channel and partner, community advocate
Fresno State Transportation Institute Dr. Aly Tawfik, Director (559) 278-4240	Contract partner, technology research partner and resource
State Center Community College District Dr. Carole Goldsmith, President of Fresno City College (559) 489-2212	Community engagement partner, project beneficiary
Fresno Unified School District Tara Loll, Business Engagement Coordinator (559) 248-7489	Community engagement partner
Central Valley Air Quality Coalition Genevieve Gale (559) 272-4874	Community advocate, engagement advisor
Clovis Veterans Memorial District Lorenzo Rios, CEO	Event host, community advocate

<b>Organization and Contact Information</b>	<b>Type of Engagement</b>
(559) 299-0471	
Fresno Business Council Mike Betts, Chairman-CEO Betts Spring Company (559) 540-8335	Business engagement advisor, community advocate
Center for Climate Protection LaTisha Harris, Community Outreach Specialist (559) 367-6587	Community advocate and engagement partner
San Joaquin Valley Air Pollution Control District Todd DeYoung, Incentive Program Manager (559) 230-5800	Contract partner, community advocate, and project funder
Fresno Workforce Development Board Blake Konczal, Executive Director (559) 490-7102	Community advocate and engagement partner
Fresno County Economic Development Corporation Lee Ann Eager, CEO/President (559) 476-2513	Community advocate and engagement partner
Merced County Association of Governments Stacie Dabbs, Interim Executive Director (209) 723-3153	Community advocate and engagement partner
San Joaquin Valley Clean Cities Coalition Linda Urata, Chairperson (661) 635-2904	Community engagement partner and advocate

Source: CALSTART

## CHAPTER 2:

# Infrastructure Projects

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For clean transportation technology and vehicles to be deployed, there must first be established the supporting infrastructure. In this chapter, we will discuss the various new infrastructure projects that were developed by the CALSTART San Joaquin Valley Clean Transportation Center and how those were connected to new vehicle deployments.

### **2.1 Solar-Powered Envision Solar EV ARC Deployments in Fresno County Rural Cities**

The project started with a focus by the SJVCTC on assisting FCRTA to deploy electric vehicle charging infrastructure in all thirteen rural incorporated cities that they serve to facilitate conversion of their rural transit fleet to zero emission vehicles.<sup>5</sup> The project originally looked at grid-tied Level 2 chargers and what it would take to get thirteen of them installed at the respective city hall sites in each city. FCRTA was also interested in making the chargers available to residents in each city to encourage expansion of the numbers of electric vehicles owned by residents in these cities.

Some early challenges to getting the project to work using grid-tied chargers were who would pay for the electricity for each site and were electrical connections readily available to support grid-tied chargers? Another question was if the chargers be used by the public at city hall sites and what would happen if they weren't? As the SJVCTC began to evaluate the various sites to answer these questions, it became apparent that the cost and challenges using grid-tied chargers were growing and FCRTA was considering not pursuing the project.

The Director for the SJVCTC had heard of the Envision Solar EV ARC solar powered (electric vehicle supply equipment) electric vehicle supply equipment through conversations with Linda Urata, chairperson for the San Joaquin Valley Clean Cities Coalition, and reached out to Envision Solar to get more information and explore how the EV ARCs could work for FCRTA. Following several conversations with Envision Solar staff and learning that the EV ARC product could support vehicles as large as the Class 3 all electric passenger vans being ordered by FCRTA from Zenith Motors for intra-city transit service, the concept of using the EV ARCs as a substitute for grid-tied chargers was proposed to FCRTA's General Manager Moses Stites.

Once all the factors of cost for installation, electrical system capacity, payment of electrical costs, and permitting were considered, FCRTA decided to move ahead with acquiring 13 EV ARC units; one for each incorporated city in Fresno County. Site selection was led by the SJVCTC working with Envision Solar with final approval from FCRTA and each city. Concurrent with site selection, the SJVCTC engaged staff at the San Joaquin Valley Air Pollution Control District to add the Envision Solar EV ARC units to their approved list of electric vehicle supply equipment that qualified for their Charge-up incentive program. The District added the EV

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<sup>5</sup> California Transit Association. [Sustainable Transit: California Solar Projects Heat Up for Transit Agencies](https://caltransit.org/news-publications/publications/transit-california/transit-california-archives/2017-editions/july/sustainable-transit/). (https://caltransit.org/news-publications/publications/transit-california/transit-california-archives/2017-editions/july/sustainable-transit/).

ARCs to their list and FCRTA was then able to get a \$6,000 incentive per EV ARC that helped reduce the cost for the project.

The final step for the project has been to get FCRTA registered with the California Air Resources Board Low Carbon Fuel Standard credit banking program. The SJVCTC is now working with California Air Resources Board to get a solar powered electric vehicle charger pathway approved for the program so that FCRTA can begin generating carbon credits for all the vehicles that are charged using the EV ARCs. FCRTA is recording the kilowatt-hour usage at each EV ARC monthly and then will be reporting that usage to the California Air Resources Board quarterly. The California Air Resources Board will be converting the kilowatt-hour usage to carbon credits and FCRTA will then be able to monetize those credits based on their value within the Low Carbon Fuel Standard program. Below is a chart showing the amount of energy produced and the amount of kilowatt-hour of charging completed by each EV ARC in Fresno County through February 22, 2018 (Table 2).

**Table 2: Fresno County EV ARC Statistics as of February 2018**

<b>Location</b>	<b>Solar (Energy Producing) Kilowatt-hour</b>	<b>Load (Charged) Kilowatt-hour</b>
Huron	1,829.3	339.8
Coalinga	1,343.2	170.0
Firebaugh	3,171.3	1,855.7
Fowler	1,521.7	332.9
Kerman	2,932.8	1,587.7
Kingsburg	4,613.8	3,161.4
Mendota	1,733.3	628.6
Orange Cove	1,859.3	835.6
Parlier	1,122.0	202.2
Reedley	535.2	259.3
San Joaquin	1,331.4	38.2
Sanger	5,207.9	4,347.3
Selma	2,912.4	1,674.9
<b>Total</b>	<b>30,113.6</b>	<b>15,433.6</b>

Source: CALSTART

## **2.2 FCRTA Electric Bus/Rail Connector Service with Solar Powered Level 3 Chargers Using Envision Solar “Solar Tree Direct Current Fast Charger”**

As part of the conversion of Fresno County Rural Transit Agency’s fleet of buses to zero emission technology, they worked with the SJVCTC to develop a proposal for funding the addition of two new express bus routes using all-electric buses and charging those buses using renewable electricity from Envision Solar “Solar Tree” direct current fast charge units. The idea of using the “big brother” of the EV ARC to charge 35-foot transit buses was a direct result of the success of the EV ARC project some months earlier. The proposal was developed and submitted for funding through the New Technology Reserve grant program administered by Fresno County Transportation Authority and funded through Measure C. The project was selected for funding with the buses and solar chargers ordered in late 2017 for delivery in the third quarter of 2018.<sup>6</sup>

The buses require 40-kilowatt Level 3 chargers to operate and the Envision Solar “Solar Tree” direct current fast charger can supply 250 kilowatt-hours of storage to support up to a 50-kilowatt Level 3 charger. This makes the Solar Tree suitable to support charging for the electric buses used in the project since the maximum amount of energy recharge after each route will be 135 kilowatt-hours. The project has not been implemented as of this publication, so actual data is not available.

## **2.3 FCRTA Zenith Van Deployment with eMotorswerks 18-Kilowatt Level 2 Chargers**

The SJVCTC provided technical assistance for Fresno County Rural Transit Agency to acquire and install 18-kilowatt Level 2 chargers to support deployment of four Zenith Motors all-electric passenger vans for intra-city demand response transit service in the rural cities. The SJVCTC evaluated various electric vehicle supply equipment units and advised FCRTA about their options. The SJVCTC also identified several electrical contractors that did electric vehicle supply equipment installation work and provided FCRTA with contacts to get quotes. Following evaluation by FCRTA of their options and in consultation with the SJVCTC, FCRTA purchased five eMotorwerks JuiceBox 75 ampere units and had them installed at their maintenance facility in west Fresno (Figure 15).

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<sup>6</sup> Green Car Congress. [Fresno County unveils countywide solar-powered electric vehicle charging program using Envision Solar’s EV ARC](http://www.greencarcongress.com/2017/05/20170526-arc.html). (<http://www.greencarcongress.com/2017/05/20170526-arc.html>).

**Figure 15: FCRTA Shop Electric Vehicle Supply Equipment**



Source: Joseph Oldham

## **2.4 San Joaquin Regional Transit District Electric Bus Infrastructure Assessment**

The SJVCTC worked with the San Joaquin Regional Transit District to develop proposals for funding to deploy renewable energy and energy storage for support of their existing and expanding electric transit bus fleet. This work entailed evaluation of their current electric bus operations and analysis of their electricity usage for both their buildings and the electric bus chargers. None of the proposals for funding were awarded, but the analysis needed to develop the proposals has only strengthened the San Joaquin Regional Transit District in their plans to add renewable energy and storage to help off-set electric grid demand charges and provide increased energy security as they expand electric bus operations.<sup>7</sup>

## **2.5 Grid-Tied Electric Vehicle Supply Equipment Deployment and Policy Work**

The SJVCTC has worked since it opened in 2015 to expand electric vehicle supply equipment deployment in the region. However, because of limited staff resources, the Center had to rely on strategic collaboration to accomplish this task.

One of the primary collaborations to promote electric vehicle supply equipment deployment was through the San Joaquin Valley Electric Vehicle Partnership. Through engagement with this partnership of industry representatives, public agencies, and local governments, the Center was able to engage in many outreach events that promoted electric vehicles and charger infrastructure. The San Joaquin Valley Electric Vehicle Partnership also provided an added channel for engagement with the San Joaquin Valley Air District staff specifically focused on electric vehicle supply equipment deployment. It was through this engagement channel that

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<sup>7</sup> San Joaquin Council of Governments. [Solar Energy Project](http://www.sjcog.org/DocumentCenter/View/3947/RTD---Solar-Energy-Project). (<http://www.sjcog.org/DocumentCenter/View/3947/RTD---Solar-Energy-Project>).



the Center added its voice to others in the Partnership to encourage the District to revise its Charge-up incentive program to include workplace charging for businesses that were concerned about security if they had to provide public access charging.

To engage businesses directly in promoting electric vehicle supply equipment deployment, the SJVCTC worked with the City of Fresno Business Energy Tune-up Program funded by the California Public Utilities Commission through a contract with Pacific Gas and Electric Company. Business Energy Tune-up provided no-cost energy audits for businesses in Fresno county that included an analysis of the opportunity to add electric vehicle chargers. Once the business received their energy audit analysis from the Business Energy Tune-up Program, they were provided the contact information for the SJVCTC to pursue the electric vehicle charger deployment. The Center helped multiple businesses that used the Business Energy Tune-up program decide the type of charger that fit their needs, helped them file applications for incentives from the San Joaquin Valley Air District through their Charge-up program, and provided contacts for contractors that could do the installation work. The engagement with businesses through the Business Energy Tune-up provided valuable insight into the challenges of getting electric vehicle supply equipment deployed at businesses in the San Joaquin Valley even with incentive programs. The following factors were most often cited as reasons chargers were not deployed:

1. Concern over liability and security for public access.
2. Concern over cost for electricity to run the charger and how the business would get reimbursed.
3. Concern over costs that exceed the incentive amounts (businesses did not want to have out of pocket expense for chargers).
4. Concern about contract language in the air district incentive contract that stated the business must notify the District if the charger was out of service and other reporting requirements.
5. Concern about Americans with Disabilities Act of 1990 compliance issues with electric vehicle supply equipment and the costs associated with that compliance.

As of January 2018, the Business Energy Tune-up program was ended by the City of Fresno due to changes in requirements for the program from the California Public Utilities Commission. The collaboration with the SJVCTC was productive in terms of knowledge gained about deployment of public access electric vehicle charging at private businesses in the San Joaquin Valley. The actual number of chargers that were deployed through the collaboration was small due to the concerns listed above. However, the feedback of those concerns to the San Joaquin Valley Air Pollution Control District moved them to recently change their Charge-up electric vehicle supply equipment incentive program to include workplace charging that does not require public access. It is too early to evaluate if this change will be enough to get more businesses installing electric vehicle supply equipment because the other concerns listed are still relevant, but it is a move the right direction.

The SJVCTC promoted electric vehicle supply equipment deployment opportunities and incentives at both the 2016 and 2018 San Joaquin Valley Clean Transportation Summits. The events showcased electric vehicles, incentive programs for both vehicles and chargers, and provided opportunities for electric vehicle owners to network with prospective electric vehicle owners to learn about chargers and experiences owning electric vehicles.

## **2.6 Natural Gas Fueling and Renewable Natural Gas Development**

In the area of natural gas vehicles, the SJVCTC focused on renewable natural gas and ultra-low nitrous oxide natural gas truck engines as a way to lower the emissions of over-the-road Class 8 trucks which are the number one source of both ozone and particulate matter pollution in the San Joaquin Valley. The focus on renewable natural gas as a source for the natural gas that would be used in the ultra-low nitrous oxide natural gas trucks was due to the potential of the dairy industry in the San Joaquin Valley to become a huge source for renewable natural gas as they work to contain waste methane emissions. The ability to operate ultra-low nitrous oxide natural gas trucks using locally produced renewable natural gas from dairies could provide multiple economic, health, and environmental benefits for the dairy industry, truck fleets, and residents of the San Joaquin Valley.

The SJVCTC worked closely with the San Joaquin Valley Air Pollution Control District and Southern California Gas Company to promote the last solicitation for Proposition 1B funding in mid-2017 with an emphasis on getting truck fleets to replace old 2009 or older diesel trucks with clean natural gas units. One place where the SJVCTC had early engagement with Valley truck fleet owners about renewable natural gas and opportunities for natural gas trucks was at the 2017 World Agriculture Exposition where we shared booth space with Southern California Gas Company. The event provided the chance to talk with Valley fleet owners and dairy owners as they came by to see the Freightliner Class 8 natural gas truck that was on display in the booth. Valuable information about the willingness of fleets to consider natural gas as a fuel for their trucks was gained during the three-day event. Barriers such as weight penalty, lack of convenient fueling, and price of the fuel versus diesel were clearly communicated to SJVCTC staff and staff from Southern California Gas Company. The SJVCTC continued outreach with fleets through several Compressed Natural Gas Listen and Learn sessions held in Bakersfield and Kings County. These events were designed to be two-way learning tools to engage fleets about barriers and inform them about natural gas fuel opportunities. These face-to-face events were augmented by numerous articles and notices in the SJVCTC Newsletter.

The efforts paid off with over 200 applications for Proposition 1B funds coming from truck fleets to replace old diesels with clean natural gas trucks. The outreach also revealed that most of the larger trucking fleets that operate in the San Joaquin valley had trucks newer than 2009 model year and CALSTART's feedback with this information encouraged the SJVAPCD to revise their existing truck voucher program to provide up to \$100,000 incentives for trucks 2010 or new to be replaced with ultra-low nitrous oxide natural gas units. The program revision also allowed for the old 2010 or new truck to be used to replace an even older diesel truck, so that the emission benefits could be expanded beyond just a single truck replacement. The new incentive program was announced at the 2018 San Joaquin Valley Clean Transportation Summit on March 15, 2018. The revised incentive program is scheduled to be available sometime mid-2018.

The outreach and engagement for natural gas also produced feedback from truck fleets that the number of natural gas fueling stations in the San Joaquin Valley is not enough and/or they are not in the right locations to encourage fleets to convert from diesel to natural gas. Natural gas fuel pricing was also not low enough at most of the existing stations to make the economic case for conversion to natural gas.

This information has led the San Joaquin Valley Air Pollution Control District to move forward with new plans to provide more incentives for additional natural gas fueling stations and has

opened the door for some renewable natural gas fuel providers to lower their delivered price for renewable natural gas to \$1.00 per diesel gallon equivalent or less. One of these renewable natural gas fuel providers is Biorem Energy with a project they have on a large dairy in Chowchilla, California. They are offering truck fleets a price for delivered renewable natural gas of \$0.70 per diesel gallon equivalent using tube trailers to deliver the product to the fleets. The SJVCTC worked closely with Biorem early in their project development work and advised them on critical issues for truck fleets in the San Joaquin Valley.

## **2.7 “Energize Fresno” Project**

The Energize Fresno project was an Electric Program Investment Charge program grant funded \$1.5 million planning effort to implement advanced energy systems in existing buildings and new construction focused on downtown Fresno and along the Blackstone Ave. corridor to the north. As part of the project, the CALSTART San Joaquin Valley Clean Transportation Center was subcontracted to provide analysis and consultation for the project team related to advanced electric vehicle infrastructure needs and opportunities. The project team developed a community master plan for the study area that included installation of five Direct Current Fast Charge stations in downtown Fresno and deployment of five Envision Solar EV ARC solar powered portable electric vehicle charging stations at multiple locations along the Blackstone Avenue corridor. The locations that were selected are in areas of Fresno that have no public accessible electric vehicle charging currently. The planning grant was Phase 1 of a two-phase grant process and the Energize Fresno team plans to submit a proposal for Phase 2 funding that would implement the project work designed in the Phase 1 planning process.<sup>8</sup>

## **2.8 Sustainable Aviation Project**

The Sustainable Aviation Project is the first deployment of production electric aircraft in the United States and the first development of a network of electric aircraft chargers to support their operation. The concept behind the electric aircraft charger network as inspired by the efforts in California to deploy large scale electric vehicle supply equipment to support expansion of electric cars, buses, and trucks. Because all electric vehicles are constrained by battery energy storage, for these vehicles to be practical, they need a well-placed and accessible electric vehicle charger network. Electric propulsion in aircraft is just getting to the point that production electric aircraft are becoming available, so developing a charger network to support expansion of the technology is a logical step.

The Sustainable Aviation Project is deploying electric aircraft chargers at three municipal airports in Fresno County; Fresno Chandler Executive Airport, Mendota Municipal Airport, and Reedley Municipal Airport. Each of these airports are about 28 miles from each other and well within the range of the Pipistrel Alpha Electro aircraft deployed as part of the project. To date, the Sustainable Aviation Project has deployed chargers at two of the three airports and is working on getting the third charger location established. Aircraft operations are underway and will be covered in the next chapter.

The exciting opportunity that exists through the Sustainable Aviation Project is to combine electric vehicle supply equipment for ground vehicles with electric vehicle supply equipment for

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<sup>8</sup> Local Government Commission. [Energize Fresno](https://www.lgc.org/energize-fresno/). (https://www.lgc.org/energize-fresno/).

aircraft to make regional underutilized airports into zero-emission transportation hubs and expand connectivity for many regions of California that are currently not served by existing air carriers. These “Zero-Emission Vehicle-Hubs” could be a model and proving ground for how to integrate multiple transportation sectors with zero emission vehicle technology and renewable energy production.<sup>9</sup>

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<sup>9</sup> [Sustainable Aviation Project’s website homepage](https://sustainableaviationproject.com/). (https://sustainableaviationproject.com/).

# CHAPTER 3:

## Vehicle Projects and the Grants that Funded Them

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### 3.1 eTruck Projects

The San Joaquin Valley Clean Transportation Center was successful in getting two all-electric truck deployment projects in the San Joaquin Valley funded through the California Air Resources Board. Both projects were submitted by the San Joaquin Valley Air Pollution Control District as the prime applicant with the CALSTART SJVCTC acting as co-administrator and project manager. In total, the projects will deploy 35 battery electric Class 4-5 delivery trucks in four cities within the region; Stockton, Merced, Fresno, and Bakersfield. Combined the projects represent over \$11.6 million in new funding coming to the San Joaquin Valley. The following is a short breakdown of each project:<sup>10</sup>

Ameripride Green On-Road Linen Delivery Project (Figure 16)

Grant Award: \$7,125,515

- Deploy 20 battery electric walk-in-van delivery vehicles and infrastructure.
- Linen delivery vehicles deployed in Bakersfield, Stockton, Merced and Fresno.
- The SJVCTC will provide project management assistance for the project.
- Project will reduce greenhouse gas emissions by 358 tons and criteria pollutants by 2.78 tons annually.

**Figure 16: Ameripride Electric Vehicle Delivery Truck**



Source: CALSTART

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<sup>10</sup> California Air Resources Board. [New Technology Buyer's Guide](https://www.arb.ca.gov/msprog/newtech/project.htm). (https://www.arb.ca.gov/msprog/newtech/project.htm).

## United States Postal Service Zero- Emission Mail Delivery Van Project (Figure 17)

Grant Award: \$4,555,670

- Deploy 15 zero-emission battery electric United States Postal Service step vans and associated charging infrastructure.
- Vehicles and equipment deployed in Post Service hubs in Stockton and Fresno.
- The SJVCTC will provide project management assistance for the project.
- Project will reduce greenhouse gas emissions by 248 tons and criteria pollutants by 0.22 tons annually.

Both of these projects are currently underway and will be completed in early 2020.

**Figure 17: United States Postal Service Electric Vehicle Delivery Van**



Source: CALSTART

### 3.2 eBus Projects

The SJVCTC has assisted several transit properties with purchase and deployment of electric transit buses. Fresno County Rural Transit Agency was the first transit agency that engaged the SJVCTC for assistance in 2015 when the Center opened and has grown into a strong champion in the region for electric transit vehicles and infrastructure. One of the first projects that the SJVCTC worked on with FCRTA was the purchase and deployment of four Zenith all-electric passenger vans for use in FCRTA's intra-city demand response service in rural cities (Figure 18).



**Figure 18: FCRTA Electric Vehicle Transit Van**



Source: CALSTART

The passenger vans have about 100 miles range and are equipped with wheelchair lifts. The SJVCTC assisted FCRTA with electric vehicle supply equipment selection and installation, route testing and validation, and promotion of the service through the SJVCTC Newsletter. The vans are currently in service and FCRTA has ordered additional units with up to 145-mile range for longer routes. Funding for the electric transit vans came from California Department of Transportation, Fresno County Measure C, and the SJVAPCD Public Benefits grant program.

Fresno County Rural Transit Agency and the SJVCTC also worked on a grant proposal for funding from Fresno County Measure C New Technology Reserve funding to deploy two Build Your Dreams K9S 35 foot all electric transit buses in new intercity express bus and rail connector service in Fresno County. The project was successful at getting over \$2.5 million in funding and includes solar charging for the buses using Envision Solar's Solar Tree Direct Current Fast Charger units at the route origination points in Coalinga and Orange Cove (Figure 19). Currently, the buses and solar charging units are ordered with the installation of the solar charging units planned to start during the summer of 2018.<sup>11</sup>

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<sup>11</sup> Lilian, Betsy. [Fresno County Rural Transit Agency Orders BYD Electric Buses](https://ngtnews.com/fresno-county-rural-transit-agency-orders-byd-electric-buses). Next-Generation Transportation. (https://ngtnews.com/fresno-county-rural-transit-agency-orders-byd-electric-buses).

**Figure 19: Envision Solar Tree Direct Current Fast Charger**



Source: Envision Solar

The SJVCTC has also been assisting San Joaquin Regional Transit District and FCRTA with electric vehicle supply equipment planning ahead of the agency receiving delivery of Proterra all electric transit buses as part of a larger \$13.4 million project also funded through the California Air Resources Board. The Proterra buses require 480-volt, three-phase power and finding suitable locations and power is a challenge for the rural locations that will support the buses for FCRTA. The situation for the San Joaquin Regional Transit District is focused on finding renewable energy and storage solutions to mitigate electric service demand charges that have made the all-electric buses less cost-effective to operate than originally planned. In both cases, the SJVCTC is using all available resources to assist these agencies achieve their goals and deploy zero emission bus technology in the San Joaquin Valley.

### **3.3 Light Duty Electric Vehicles**

The SJVCTC has worked with the San Joaquin Valley Electric Vehicle Partnership and SJVAPCD since opening in 2015 to promote light duty electric vehicles. The efforts centered on hosting events such as the 2016 and 2018 San Joaquin Valley Clean Transportation Summits where light duty EVs, such as Tesla, Fiat 500e, Chevrolet Volt and Bolt electric vehicle, and Ford Focus electric vehicles, were showcased and advertising ride and drive events that were hosted by the San Joaquin Valley Electric Vehicle Partnership.

However, in 2017, the SJVCTC partnered with Fresno County Economic Opportunity Commission, the Fresno State Foundation, University of Colorado, Denver, and Fresno Metro Ministry to develop a pilot project to use Chevrolet Bolt electric vehicles in a new \$10 per month, subscription-based, door-to-door ride sharing service for college students attending Fresno City College called "Bolt to College". The service will use professional drivers and dispatch service through Fresno County Economic Opportunities Commission and have a custom ride share matching service provided for students by the Fresno State Transportation Institute under the Fresno State Foundation. The matching service will assure that students are matched based on class schedules and days of the week so that the Bolts are carrying full loads of passengers on each route. The service is scheduled to start August 1, 2018 and run



for two semesters. If successful, Fresno County Economic Opportunities Commission will evaluate continuing the program beyond the spring of 2019, but at a more sustainable subscription cost.<sup>12</sup> The project will reduce greenhouse gas emissions by 258 tons and criteria pollutants by 0.49 tons annually.

### 3.4 Sustainable Aviation Project

As mentioned in Chapter 2, the Sustainable Aviation Project was designed to bring the first production electric aircraft to the United States and demonstrate their capability in flight training operations. The aircraft used for the project are Pipistrel Alpha Electro trainers, the first production electric aircraft in the world (Figure 20).

The Pipistrel Alpha Electro uses a 60-kilowatt electric motor and 21 kilowatt-hour lithium ion battery pack to fly for up to an hour with a 30-minute energy reserve. Cruising speed is about 100 miles per hour and the range is around 60 nautical miles or about 70 statute miles. Charge time is about 1.5 hours using a proprietary 15 kilowatt, 240-volt, Level 2 charger designed and built by Pipistrel specifically for the aircraft operations.

**Figure 20: Pipistrel Alpha Electro Electric Aircraft**



Source: Joseph Oldham

Figure 21 below shows one of the chargers deployed at the project hangar at Reedley Municipal Airport. The chargers are portable, and operators can select different amperage rates to charge the aircraft depending on the circuit capacity. The circuits installed at the Reedley hangar location are 50 amp rated, but the charger can use up to 70 amp rated circuits.

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<sup>12</sup> Fresno City College. [Bolt to College Provides Green Transportation for West Fresno County Students](http://www.fresnocitycollege.edu/news/2018/bolt-to-college.html). (<http://www.fresnocitycollege.edu/news/2018/bolt-to-college.html>).

**Figure 21: Electric Aircraft Charger in Hangar**



Source: Joseph Oldham

The aircraft are equipped with advanced energy and battery management systems for the pilot to reference during flight operations. Figure 22 below is a photo showing a view of the cockpit during a recent flight west of Fresno.

**Figure 22: Pipistrel Alpha Electro Instrument Panel in Flight**



Source: Joseph Oldham

The EPSI570 monitor unit on the lower right side of the panel displays motor revolutions per minute, battery state of charge, instant kilowatt usage, temperatures for the motor, inverter, and battery, and has a location for warning messages on the lower right side of the screen. When this photo was taken the aircraft was flying at 5,680 feet, cruising at about 93 miles per hour, and using about 22 kilowatts of power. On descent from higher altitude with the throttle pulled back to zero kilowatts, the propeller turns into a wind generator and puts electrical charge back into the battery pack, just like an electric car using regenerative braking.

The Sustainable Aviation Project is funded by \$1,071,348 of Fresno County Transportation Authority Measure C New Technology Reserve funds and is designed to transform aviation flight training and lower cost through the use of zero emission electric propulsion aircraft. The aircraft and concepts in this project are the forerunners of a whole new era in aviation with revolutionary advances in electric propulsion and aircraft design that will have fundamental impacts on how people move about the planet. The project will reduce greenhouse gas emissions by 92 tons and criteria pollutants by one ton annually.

# **CHAPTER 4:**

## **Community and Regional Engagement**

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### **4.1 Value of Existing Network Connections**

The success of the CALSTART San Joaquin Valley Clean Transportation Center has been due in large part because of relationships. Many of these relationships were brought to the organization through Director Joseph Oldham, others were developed over time with other stakeholders that saw early project success, and some were relationships that existed through CALSTART. This chapter will discuss each of these areas from a subjective perspective because it is impossible to objectively quantify the value of human trust in achieving goals.

When CALSTART advertised for the position of Director for the SJVCTC in the spring of 2015, they specifically mentioned a preference for a native resident to take on the job. The current Director for the SJVCTC, Joseph Oldham, is a native of the San Joaquin Valley and has lived here over 60 years. While living in a region does not qualify a person to run a clean transportation center; having a “native” perspective does help when it comes to understanding how people in the region think about topics such as air quality, job creation, climate change impacts, and changing technology. This understanding has a direct translation into how new projects are presented to decision makers, businesses, and the general public.

Having a long and successful career history in a region also provides huge benefit because of the network of local connections and level of credibility that brings with it. Success builds more success and credibility is built on the authority a track record of success bestows on the project proponent or developer. For the CALSTART SJVCTC, the combination of the successful track records for CALSTART and the Director of the new center provided a high degree of credibility when discussing projects in the region, which led to the many early successes. Initially, CALSTART was not well known in the region, but the new Director for the Center was and vice versa outside the region where CALSTART was very well known and the new Director was making new connections through the relationship. This synergy has proven to be a good model for other regions and recent hires by CALSTART for directors of new offices in the Midwest and New York have followed this model.

Another important decision that CALSTART made in establishing the Center was the location of the offices. The initial office was established in Fresno, the center of the San Joaquin Valley and largest inland city in California. Even more strategic was the location of the office within the historic Terminal Building at Fresno Chandler Executive Airport in the southwest corner of the city near the intersection of Highway 99 and Highway 180. The location is less than two miles of downtown and the revitalization work focused on High Speed Rail and close to the industrial areas of Fresno south of downtown, making engaging transportation-focused decision makers easier. The second office location in Stockton was also within the airport terminal building in the south part of the city. Again, a strategic location near the massive warehouse and commodity hauling terminals in south Stockton with easy access to Highways 99 and I-5. Also, the location was within an area of the city being targeted by the mayor’s office for job creation opportunity and reduction of environmental hazards for residents. The idea of siting a clean transportation office there was in perfect alignment with the goals for the city and has resulted in a strong connection with Mayor Tubbs office. Following some early meetings with the mayor’s office staff and referrals from that office, Thomas Paddon, the

CALSTART Project Manager running the Stockton office, made connections with multiple stakeholders in the community. These connections have led to CALSTART being accepted as a valued partner in helping to improve the quality of life in the Stockton community and promise to bring future opportunities for projects in the northern part of the San Joaquin Valley. Both locations have proven very effective in helping to engage the communities around them.

The final component of CALSTART's strategic success with the SJVCTC was the over 180 companies that are members of CALSTART. The understanding that CALSTART gains about the capability of the technology through engagement with the member companies, provide CALSTART with the unique ability to be a "connector" between end users that seek out CALSTART's technical expertise for project development and the technology that is available through the various member companies. In addition, CALSTART is the administrator for the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Program funded through the California Air Resources Board that provides incentives to buy down the cost of advanced technology heavy duty vehicles such as all electric transit buses, ultra-low nitrous oxide natural gas engines, and fuel cell vehicles. The ability to connect customer to product and incentives to lower the cost of that product, makes CALSTART very effective at engaging end users for project development in the San Joaquin Valley.

## **4.2 Building a New Network Using Project Success to Drive Interest**

As previously mentioned, success drives more success and it also opens doors for expanding and developing new network connections. Two examples of how this works can be seen with the Envision Solar EV ARC project and the Sustainable Aviation Project (Figure 23).

The EV ARC project acted as a catalyst for engaging rural city governments in Fresno County around clean transportation by placing an EV ARC in each of the thirteen rural cities with many located at the city halls. By being the first electric vehicle charging units to be deployed in each of these cities, the project opened up a dialogue with the elected officials on how to expand electric vehicle charging in their communities and connected the name "CALSTART" with "innovation" in the minds of the staff for each jurisdiction.



**Figure 23: First EV ARC in Selma, California**

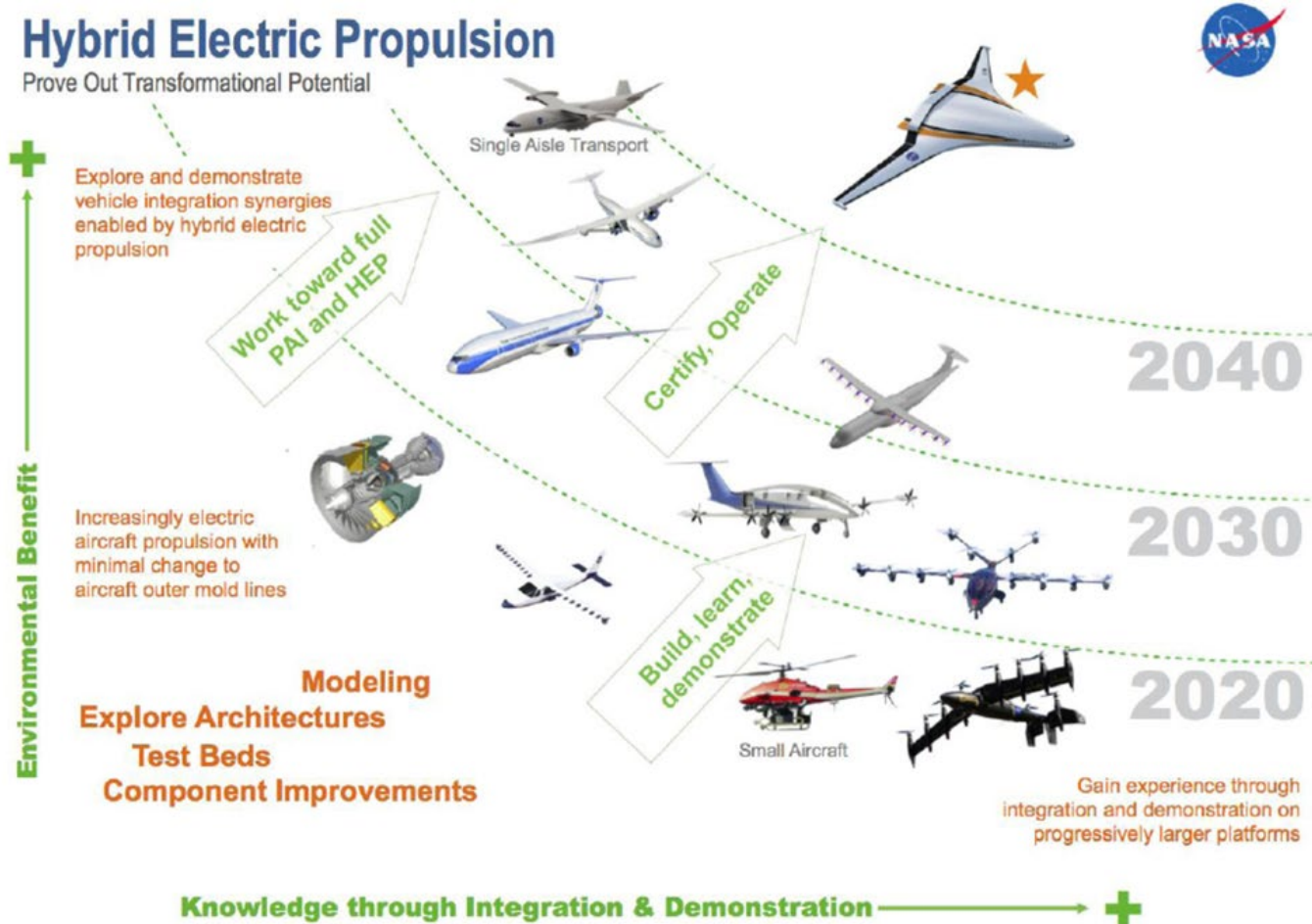


Source: Joseph Oldham

The new network of connections has continued to provide benefits as these rural jurisdictions are now asking for additional new electric vehicle chargers to be deployed in their cities and they are working on acquiring all-electric and/or plug-in hybrid electric vehicles for their fleets.

The Sustainable Aviation Project has excited the imaginations of people all over the United States and has drawn support in California from Sacramento to Los Angeles to the Bay Area. The project has broad support within Fresno County and has started a conversation about how to better use rural airports as connectivity hubs for the region. These conversations have started to interest the rural transit agency, FCRTA, in designing service that could support these rural airports and expand their use. Because electric propulsion in aircraft is 90 percent quieter than internal combustion engines, the potential for electric aircraft transform rural underutilized airports into Zero Emission passenger and freight hubs is feasible. Figure 24 below from National Aeronautics and Space Administration shows the expected progression in development of electric-dominant aircraft through 2040.

**Figure 24: Timeline for Electric Aviation Development**



Source: National Aeronautics and Space Administration

Several aircraft shown on this graphic are already flying as prototypes and progress on refining the technology is very rapid. The San Joaquin Valley with its abundant airports and great flying weather is the perfect location for early deployment of these advanced electric propulsion aircraft and the Sustainable Aviation Project has opened the door for the region to be transformed by this new technology.

### 4.3 Challenges and Successes Working in Disadvantaged Communities

The main challenges working in disadvantaged communities in the San Joaquin Valley is that most of them are rural, scattered over 27,000 square miles, and can be non-English speaking. To effectively engage these communities, the SJVCTC worked with various groups and organizations that were already working in these communities. Some of the groups that have helped connect the SJVCTC with disadvantaged communities are Fresno Metro Ministry through the Energize Fresno project and the Fresno State Office of Community and Economic Development through the Bolt to College project. Other connections with residents in disadvantaged communities have been made through local rural city governments as part of the EV ARC project and the Sustainable Aviation Project. In many cases the connections with residents are not direct but are with the organization that works in the disadvantaged community and information is spread through the efforts of the group.

The difference in working in a rural disadvantaged community versus and urban one in the San Joaquin Valley is mainly in the distance you must travel to engage in meetings and

events. The perspective of the people in these communities is remarkably similar in that they all share concerns about safety, jobs, environmental pollution and its health impacts, and education for their children. Clean transportation options can help with several of these issues and polls have shown air pollution to be a top concern among many demographic groups in disadvantaged communities.

One group of organizations that can be effective in getting connected in disadvantaged communities are through environmental justice groups. There are a number of organizations in the San Joaquin Valley that qualify as environmental justice groups, but the one that the SJVCTC has engaged with most is the Central Valley Air Quality Coalition. This coalition has various environmental justice organizations as members and air quality as a top focus, so alignment with the goals for the SJVCTC is very strong. The SJVCTC has connected project developers to Central Valley Air Quality Coalition to allow for information about projects to be clearly communicated to residents that would potentially be benefited by the project or in other ways impacted. These connections can prevent misunderstandings about project benefits from becoming an issue that stalls or prevents projects from moving forward.

School districts are another connection channel to residents in disadvantaged communities and from several levels. The Director for the SJVCTC was invited and participates in an advisory committee for Career Technical Education programs at Edison High School within the Fresno Unified School District. Edison is located in the southwest Fresno neighborhood and one of the most severely disadvantaged communities in California. Engagement with the Career Technical Education programs operating in the school provides the opportunity to inform the teachers about the latest in clean transportation technology as well as interface with their students and help shape their views of transportation options. It also provides an opportunity to get feedback from the future vehicle owners about what they are interested in and what technology excites them. This is valuable information and should be used by transportation planners to help shape the transportation systems of the future.

#### **4.4 Value of “Champions”**

“Champions” are those individuals that have a vision for the future and are committed to implement that vision. In the case of clean transportation technology, there are many “champions” in the San Joaquin Valley and the SJVCTC has worked very hard to find them, support them, and create new ones.

Finding the “champions” for clean transportation starts with knowing where to look and in the San Joaquin Valley those places are typically at events that focus on clean transportation technology such as our Summits, ride and drive events, air district workshops, Councils of Governments, and coalitions such as Clean Cities or the San Joaquin Valley Electric Vehicle Partnership. The SJVCTC participated and/or did presentations at all of these venues. The “champions” were easy to find, and they normally sought out contact with the SJVCTC.

Supporting the “champions” requires engaging with them around their project needs and the SJVCTC worked with various champions in the San Joaquin Valley such as Moses Stites, General Manager for FCRTA; Linda Urata, chairperson for the San Joaquin Valley Clean Cities Coalition; Mayor Michael Tubbs of Stockton; Keith Berghold, Executive Director for Fresno Metro Ministry; Dr. Aly Tawfik, Associate Professor of Engineering at California State University, Fresno; and many others. Support for each came in different forms from partnering on grants, to providing technical assistance on projects, to helping and presenting at events.



Some of the “champions” that were supported through the Center actually worked at the SJVCTC as either graduate fellows under the Civic Spark program through the Local Government Commission or worked as an intern for the Center. The Director for the SJVCTC acted as the regional supervisor for two cohorts of Civic Spark Fellows during the first two years of the Center’s operations. The fellows were assigned to work with local government agencies in the San Joaquin Valley to help support sustainability and climate change mitigation work. Some of the fellows worked on deployment of electric vehicle charging infrastructure which was in alignment with the mission of the Center. Others worked on Greenhouse Gas inventories and sustainability plans which also had alignment with the goals for the Center in that transportation is an important component of both. Several of the Civic Spark fellows that worked at the SJVCTC went on to get jobs working in California on clean transportation focused activities and have become new “champions” of a clean transportation future.

#### **4.5 Value of Clean Transportation Summits**

In 2016, the SJVCTC hosted the first San Joaquin Valley Clean Transportation Summit with over 140 attendees. The event was held at the Clovis Veterans Memorial District facility in downtown Clovis and was a one-day event (Figure 25). The venue had excellent facilities for the various break-out sessions and plenary sessions that day. There was plenty of space inside for various vendor displays, but the space outside was limited to on-street parking in front of the facility for vehicle displays and any ride and drive activity was challenging due to traffic coming in and out of the middle school across the street (Figure 26). In spite of the challenge with outside vehicle displays, the event was considered a success by attendees and presenters alike.

**Figure 25: Clovis Veterans Memorial District Facility**



Source: Joseph Oldham

**Figure 26: Advanced Vehicles at 2016 Summit**



Source: Joseph Oldham

The SJVCTC did not pursue doing another Summit until the spring of 2018 when it joined with the Fresno State Transportation Institute through the Fresno State Foundation to host the 2018 San Joaquin Valley Clean Transportation Summit at the Save Mart Center in Fresno. The event was held on March 14-15 of 2018 and the weather was somewhat unstable for day one. Attendance numbered about 220 over both days, but day two only saw about 100 people attend. The Save Mart Center venue had a large parking lot area that offered the potential for good ride and drive activities and the space available in the facility was huge (Figures 27-29). Our initial thoughts were that this venue would be far superior to the 2016 site, however the sheer size of the facility created other issues such as too much distance between the areas for the breakout sessions and the stairs leading down to the arena floor where the plenary sessions took place made access challenging and tiring for attendees. The event received some good television news coverage and attendees rated it as a success.

**Figure 27: Save Mart Center at California State University, Fresno**



Source: Joseph Oldham

**Figure 28: Outdoor Display at 2018 Summit**



Source: Fresno State Foundation

**Figure 29: Indoor Display at 2018 Summit**



Source: Fresno State Foundation

In general, both summits were successful, and lessons were learned on how to make future summits better. One suggestion that will be implemented was to not hold the events annually, but to do them every two years so that technology advancements are more evident. The other suggestion was to find a mid-sized venue with some outdoor parking, but more compact interior space; something like a hybrid of the year one venue and the second-year venue.

# CHAPTER 5:

## Conclusion

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### 5.1 What Does Success Look Like

Since 2015, the SJVCTC has been working to achieve a change in the mindset of residents in the San Joaquin Valley toward broad acceptance of clean transportation. Our work has “moved the dial” in several areas and, given the short time frame of 2.5 years, does qualify as a successful start. Many of the non-governmental organization stakeholders in the region, such as the San Joaquin Valley Clean Cities Coalition and Project Clean Air, have been working for many years toward changing the perspective of residents toward alternative fuels and clean transportation technology. The SJVCTC added more capacity to those efforts and is now starting to see requests for the new technology from multiple sectors. Good examples are requests from other areas to duplicate the EV ARC project in Fresno County, new natural gas fueling stations being requested by truck fleets, requests for electric vehicle charging infrastructure from private businesses and local governments, and growing numbers of car dealers increasing their inventory of electric and hybrid vehicles. The work is not finished and efforts to keep advances in clean transportation options affordable and practical for the region are essential to keep the momentum going, but the movement is in the right direction. Table 3 below is a recap of some of the project work that was facilitated by the SJVCTC:

**Table 3: SJVCTC Project Facilitation**

<b>Project Name</b>	<b>Description</b>	<b>Funding Level</b>	<b>Greenhouse Gas Emission Reductions</b>
Fresno County Rural Transit Envision Solar "EV ARC" Deployment	Deploy 13 Envision Solar EV ARC solar powered electric vehicle charging stations in Fresno County rural cities.	\$800,000	N/A
Energize Fresno planning project for Advanced Energy Community design	Planning grant to help design an advanced energy community district within the city of Fresno that incorporated renewable energy, energy storage, electric vehicle charging, energy efficiency, and advanced energy management systems on existing construction and new buildings.	\$1,500,000	N/A



<b>Project Name</b>	<b>Description</b>	<b>Funding Level</b>	<b>Greenhouse Gas Emission Reductions</b>
Ameripride Green On-Road Delivery Project	Deploy 20 battery electric Class 6 linen delivery trucks in four San Joaquin Valley cities.	\$7,125,515	358 tons/year
United States Postal Service Zero-Emission Mail Delivery Van Project	Deploy 15 battery electric Class 4 postal delivery vans in Stockton and Fresno.	\$4,555,670	248 tons/year
Fresno County Rural Transit Zenith battery electric van project	Deploy four Zenith battery electric transit vans in rural Fresno County	\$756,000	N/A
Sustainable Aviation Project	Deploy the first four production battery electric training aircraft in the United State and develop a charger network to support their operation at three airports in Fresno County	\$1,071,000	92 tons/year
Fresno County Bus/Rail Connector Project	Deploy two Build Your Dreams battery electric transit buses in express service for rail connection in Fresno. Charging will be done with two Envision Solar "Solar Tree" direct current fast charge units.	\$2,538,000	123 tons/year
Bolt to College Project	Deploy six Chevrolet Bolt electric vehicles in a subscription ride sharing service for western Fresno County community college students attending Fresno City College	\$750,000	258 tons/year
Totals	-	\$19,096,185	1,079 tons/year <sup>13</sup>

<sup>13</sup> Equal to removing 231 passenger cars per year from the road based on United States Environmental Protection Agency's [Greenhouse Gas Calculator](https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator) (<https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>)

## **5.2 What Worked and What Did Not**

Looking back on the work originally planned for the SJVCTC, some ideas worked better than others.

One of the ideas that did not work was the carbonBLU Blueprint Brief fleet assessments. CarbonBLU is a company based in Rocklin, California and provides fleet analysis services to help identify opportunities to replace older vehicles with newer, cleaner technology. The company had developed a service called the “Blueprint Brief” that was an entry level fleet assessment designed to give some basic information to fleet managers about potential new technology and examples of pay-back periods using the new vehicles compared to the existing fleet. The concept called for carbonBLU to engage San Joaquin Valley fleets under contract with the SJVCTC and offer the Blueprint Brief service at no-cost to the fleet. Once the fleet had received their Blueprint Brief, the idea was that the fleet operators would see the cost savings from investment in cleaner vehicles and replace the older units. To get the most accurate analysis, carbonBLU needed to get current fleet fuel use for each vehicle in the fleet to make the service relevant.

The problem with the Blueprint Brief service was that fleet operators were very suspicious of an unknown company from northern California coming to them offering a service that required them to divulge their fleet fuel use. Also, in some cases, the fleets did not have good tracking systems for their fuel use, and this discouraged participation. The final reason we believe the service was not accepted was, at the time, the cost of diesel fuel was cheap when compared to alternative fuels and fleet managers were not looking for an alternative. CarbonBLU was originally contracted to perform 48 Blueprint Briefs, but, in spite of good effort, was only able to get seven completed in nearly two years. CALSTART cancelled the contract for the service in the third quarter of 2017 and reallocated the remaining funds to expanding the SJVCTC Newsletter service to monthly.

Another idea that has not yet proven workable, but may in the future, was to form a stakeholder advisory committee for the SJVCTC that would help guide the Center’s operations. The basic problem with the idea was that potential members of such a committee needed advice on projects and were not informed enough about the new technology to provide advice. What is currently being considered is a project development committee that would have interested stakeholders engaged around learning about new technology and then working with the SJVCTC to develop projects. A similar type of committee was developed through the Energize Fresno project and stayed active for the eighteen-month period of the project because the members were receiving information that could help them develop their individual efforts. This is an entirely different focus than an advisory committee tasked with making recommendations.

One of the ideas that worked better than originally planned was the SJVCTC Newsletter service. The original proposal called for a newsletter to go out every other month to subscribers via email. Once the service started, the readership increased steadily and the volume of stories and information was coming so rapidly, that the newsletter editorial staff was having a challenge keeping up. The service first evolved to sending email blasts to subscribers when new funding or events were announced. Finally, the service was expanded to a monthly newsletter following the cancellation of the Blueprint Brief contract with

carbonBLU. The SJVCTC is now hoping to continue the newsletter under other funding sources so that the initial momentum of the service can continue.

Another idea that worked well was participating in the annual World Ag Expo in Tulare in 2017 and 2018. Both years, the presence of the SJVCTC provided a great opportunity for two-way learning from attendees about the issues the agriculture sector is facing as well as providing information back to attendees about the new technology, grants and incentives that are available, and where the funding could come from. Both years the SJVCTC partnered with other companies at the event to maximize interest for the attendees. Attendance at the World Agriculture Expo was not an idea that was originally proposed for the project but has been a successful strategy for getting recognition for the SJVCTC within the agriculture sector.

### **5.3 Final Thoughts from the Director**

Figure 30 is a letter from Joseph Oldham, Director of the CALSTART San Joaquin Valley Clean Transportation Center. Figure 31 is a picture of the United States' first Alpha Electro before its first flight.



### Figure 30: Final Thoughts from Joseph Oldham, Director

The CALSTART San Joaquin Valley Clean Transportation Center has made a significant impact in the region since it opened in September 2015 and the investment by the California Energy Commission and the Southern California Gas Company was a wise one in terms of helping move the Valley toward a cleaner future for transportation. The attitudes of the people in the Valley are changing to embrace new technology and you see evidence each day as more and more cleaner vehicles move about the region. It was not too long ago that travelers on Hwy 99 or I-5 would routinely follow Class 8 trucks with black smoke pouring from the exhaust pipes or follow older high polluting cars down the road with blue smoke belching from the exhaust at every stop. Today, those sites are rare or non-existent and you see more and more Teslas, Fiat 500es, Chevrolet Volts and Bolts, and other electric cars cruising the highways. Electric charging stations are becoming common, new compressed natural gas fueling stations for heavy trucks are being planned and built, there is a hydrogen station on I-5, and there are even electric aircrafts flying overhead. This is only the beginning and the CALSTART San Joaquin Valley Clean Transportation Center helped make a difference for the future.

When I came into this job as Director in September 2015, I hoped that the SJVCTC would help develop some innovative projects to inspire people toward a cleaner transportation future. The funding from the California Energy Commission was ideal for that task because it was not focused on implementing a single project or group of projects within a specific transportation sector. Instead, it focused on supporting the technical and creative project development assistance that is needed to get advanced technology projects designed, funded, and implemented. As a result, some very innovative projects have been developed in the Valley that will result in significant greenhouse gas and criteria emission reductions. It has been very gratifying to see these kinds of results and my plan is to continue the work going forward as best I can within the funding parameters CALSTART has available. My hope is that the SJVCTC continues its work for another 10 years at least and we have been engaging young people from the region and educating them regarding clean transportation technology as part of the Center's outreach. The plan is to grow new leadership and champions in the region to carry on the work once I retire.

My sincere thanks to the California Energy Commission, Southern California Gas Company, and CALSTART for the opportunity to serve the people of the San Joaquin Valley through the work of the San Joaquin Valley Clean Transportation Center; it has been a very rewarding time!

Joseph Oldham, Director

Source: Joseph Oldham

**Figure 31: First Alpha Electro in United States Before Its First Flight on March 23, 2018**



Source: Morris Garci

# GLOSSARY

**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 Energy Commission'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

**ELECTRIC VEHICLE AUTONOMOUS RENEWABLE CHARGER (EV ARC)**— The only rapidly deployed, transportable electric vehicle charging solution. It is grid independent and 100 percent sustainable. It deploys in minutes without permitting, construction or electrical work.<sup>14</sup>

**FRESNO COUNTY RURAL TRANSIT AGENCY (FCRTA)**— A rural transit agency that provides general public transit service to rural communities throughout Fresno County, keeping the San Joaquin Valley connected and allowing passengers to conveniently travel within their community and throughout the Central Valley.<sup>15</sup>

**SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT (SJVAPD)**— A government public health organization in the San Joaquin Valley responsible for monitoring toxic air emissions and provide regulations and policies to ensure healthy air quality for residents within eight counties from Stockton in the north to Bakersfield in the south.<sup>16</sup>

**SAN JOAQUIN VALLEY CLEAN TRANSPORTATION CENTER (SJVCTC)**— The center provides technical assistance, project development expertise, and support with acquiring funding for San Joaquin Valley vehicle fleet owners, local governments, businesses, and residents. The center will expand the use of zero-emission vehicles, clean trucks, and high-efficiency, non-road equipment.

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<sup>14</sup> Beam Global. [EV ARC](https://beamforall.com/wp-content/uploads/2020/09/BEAM-EV-ARC-2020-Info-Sheet-v1.1.pdf). (https://beamforall.com/wp-content/uploads/2020/09/BEAM-EV-ARC-2020-Info-Sheet-v1.1.pdf).

<sup>15</sup> [Fresno County Rural Transit Agency website homepage](https://www.ruraltransit.org/). (https://www.ruraltransit.org/).

<sup>16</sup> [San Joaquin Valley Air Pollution Control District website homepage](https://www.valleyair.org/Home.htm). (https://www.valleyair.org/Home.htm).

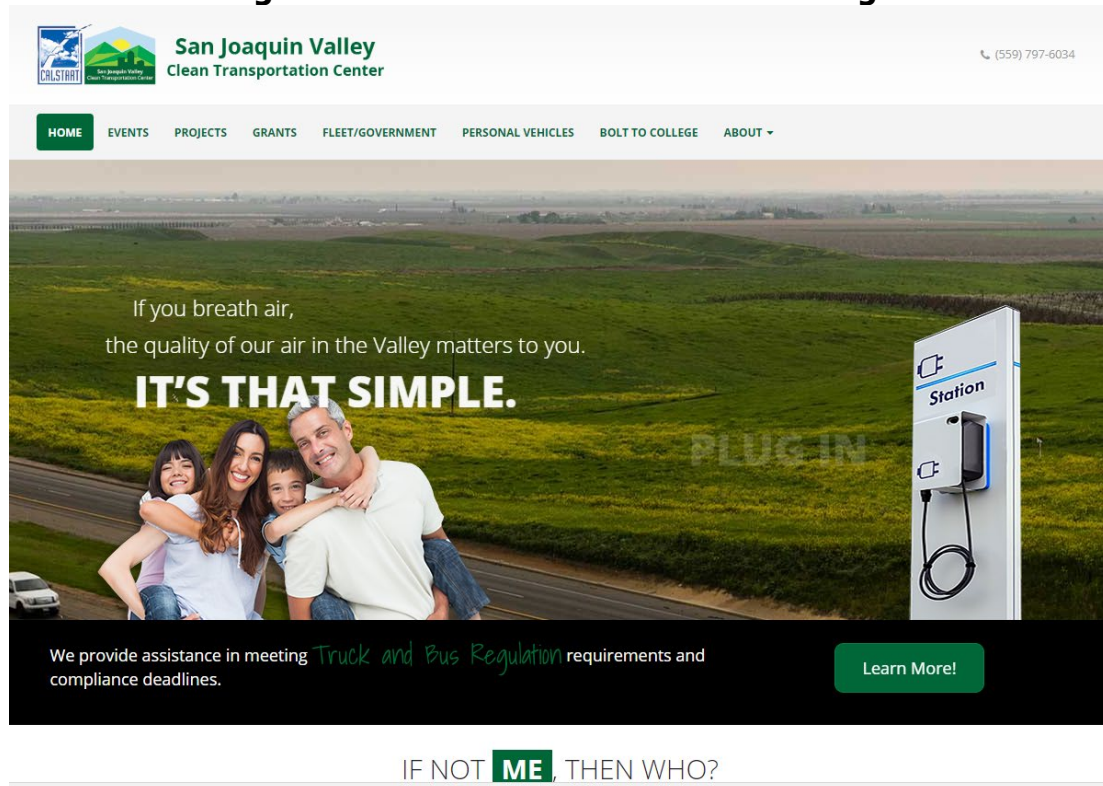
# APPENDIX A:

## Website and Event Images

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Figures A-1 through A-8 below show the website and event images from the San Joaquin Valley Clean Transportation Center website.

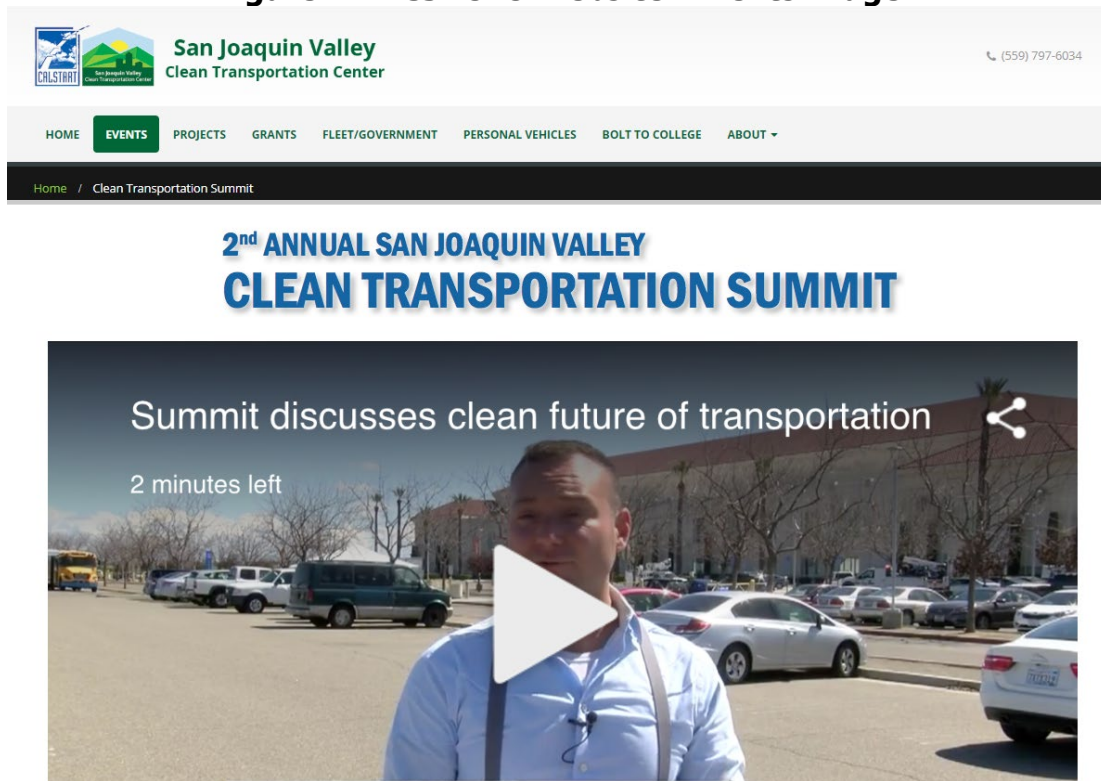
**Figure A-1: SJVCTC Website “Home” Page**



Source: Joseph Oldham

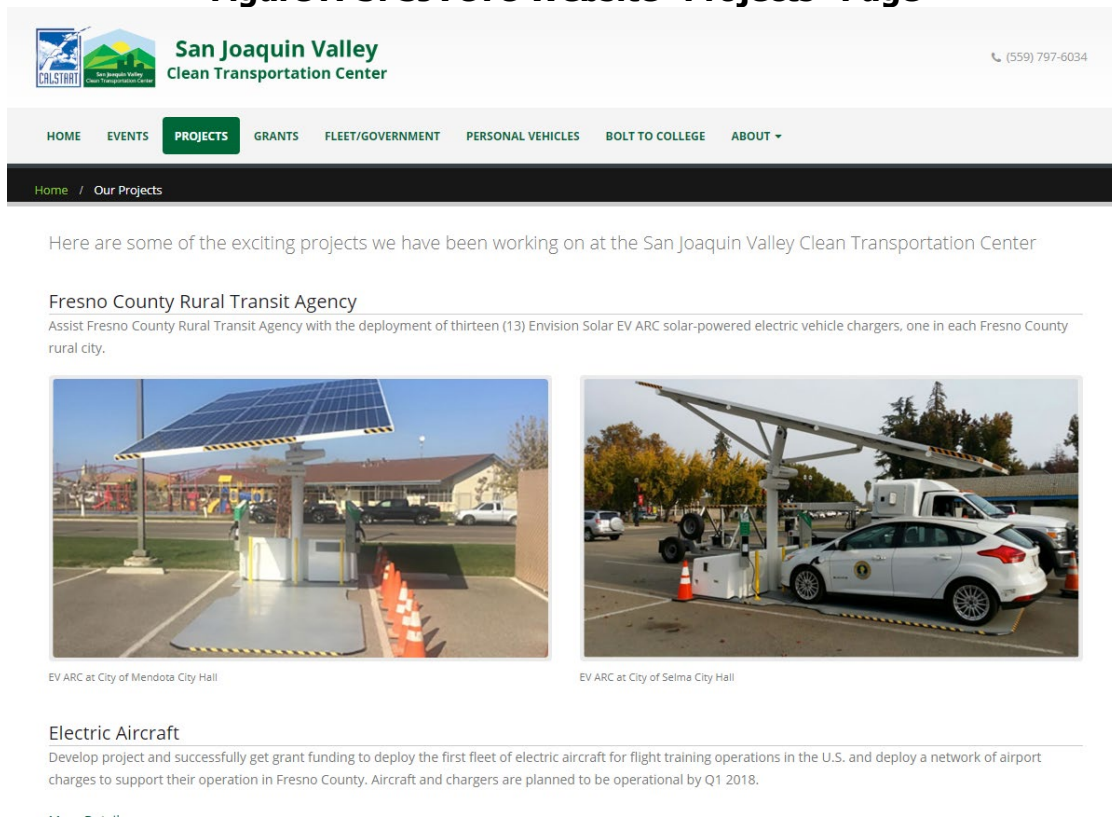


**Figure A-2: SJVCTC Website “Events” Page**



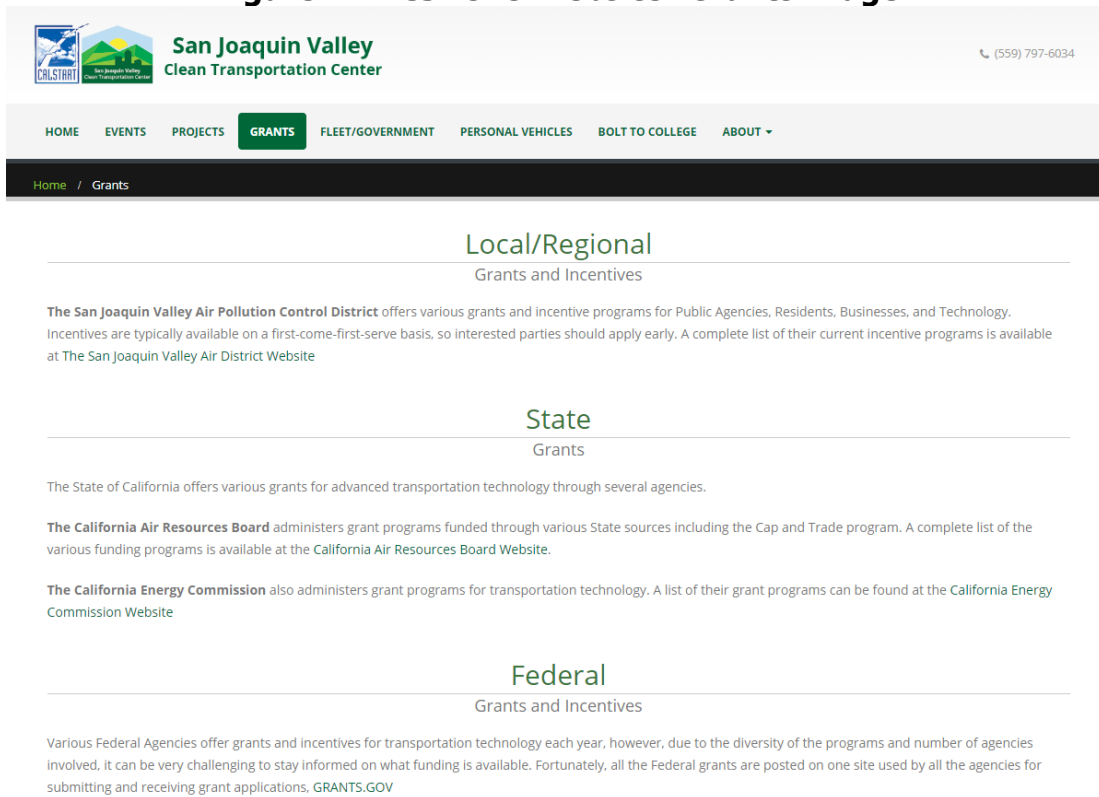
Source: Joseph Oldham

**Figure A-3: SJVCTC Website “Projects” Page**



Source: Joseph Oldham

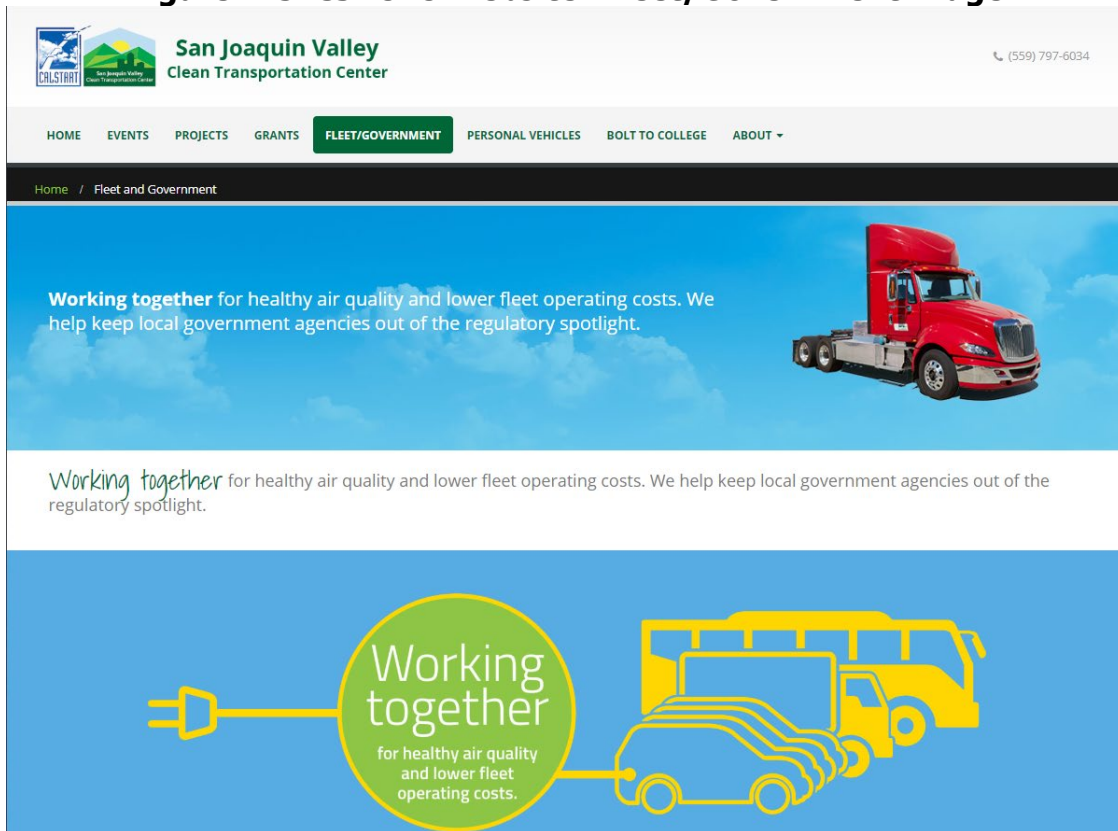
**Figure A-4: SJVCTC Website “Grants” Page**



Source: Joseph Oldham

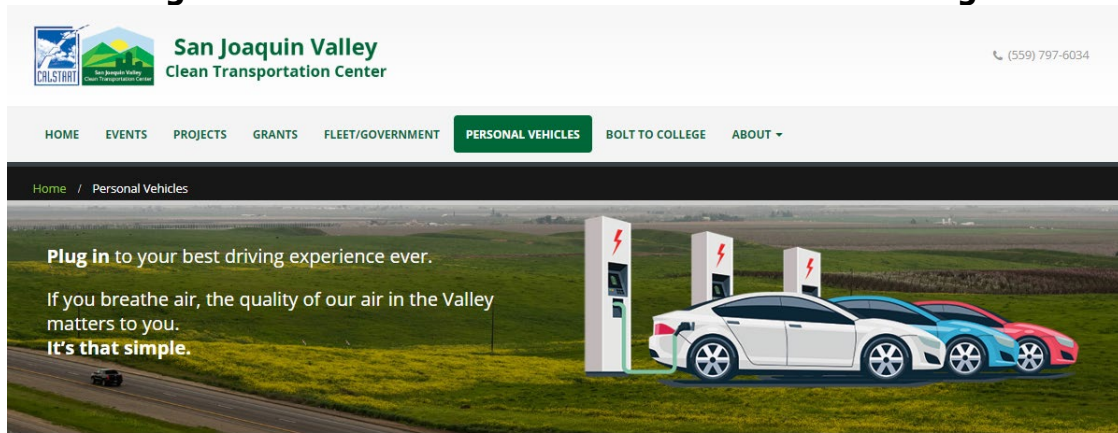


**Figure A-5: SJVCTC Website “Fleet/Government” Page**



Source: Joseph Oldham

**Figure A-6: SJVCTC Website “Personal Vehicles” Page**



Eliminate the hassle of oil changes, transmission maintenance, and endless trips to the gas station by switching to a Clean Air Electric Vehicle.

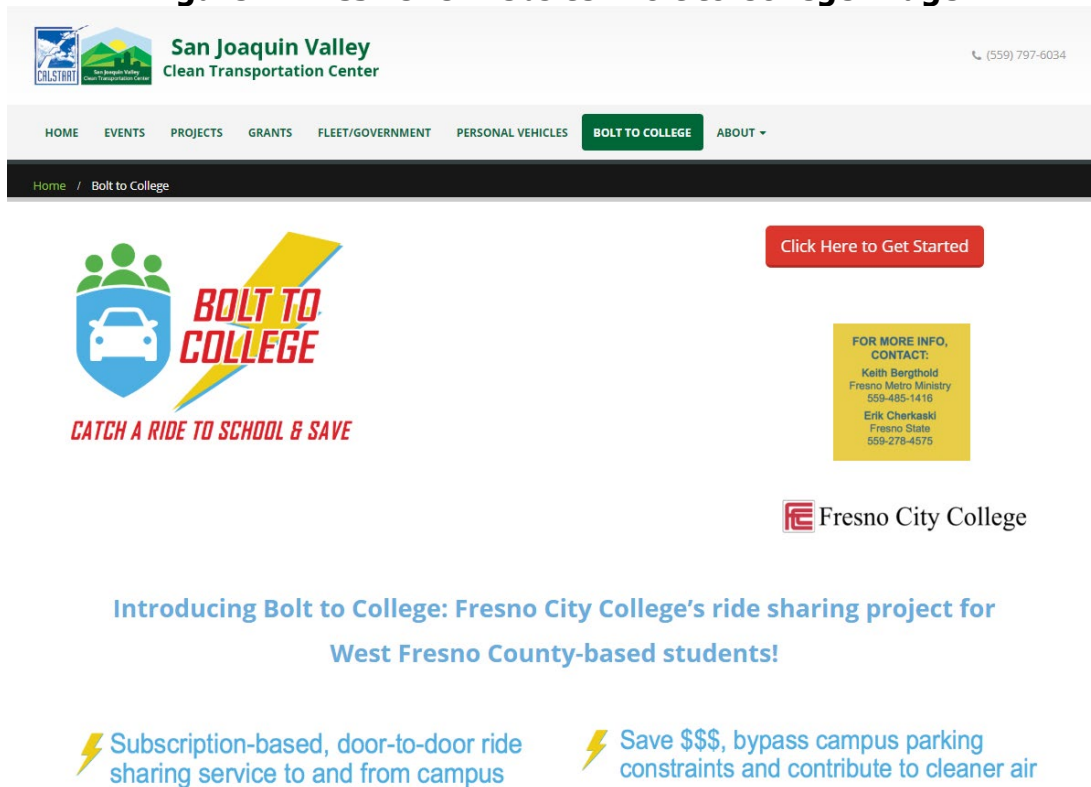


The San Joaquin Valley is essentially a big bowl; the mountains that surround us act as the rim of the bowl and trap air. When that air is polluted it has dire consequences for the health of our communities. Lung cancer, asthma, stroke, and acute respiratory diseases are all linked to air pollution. The



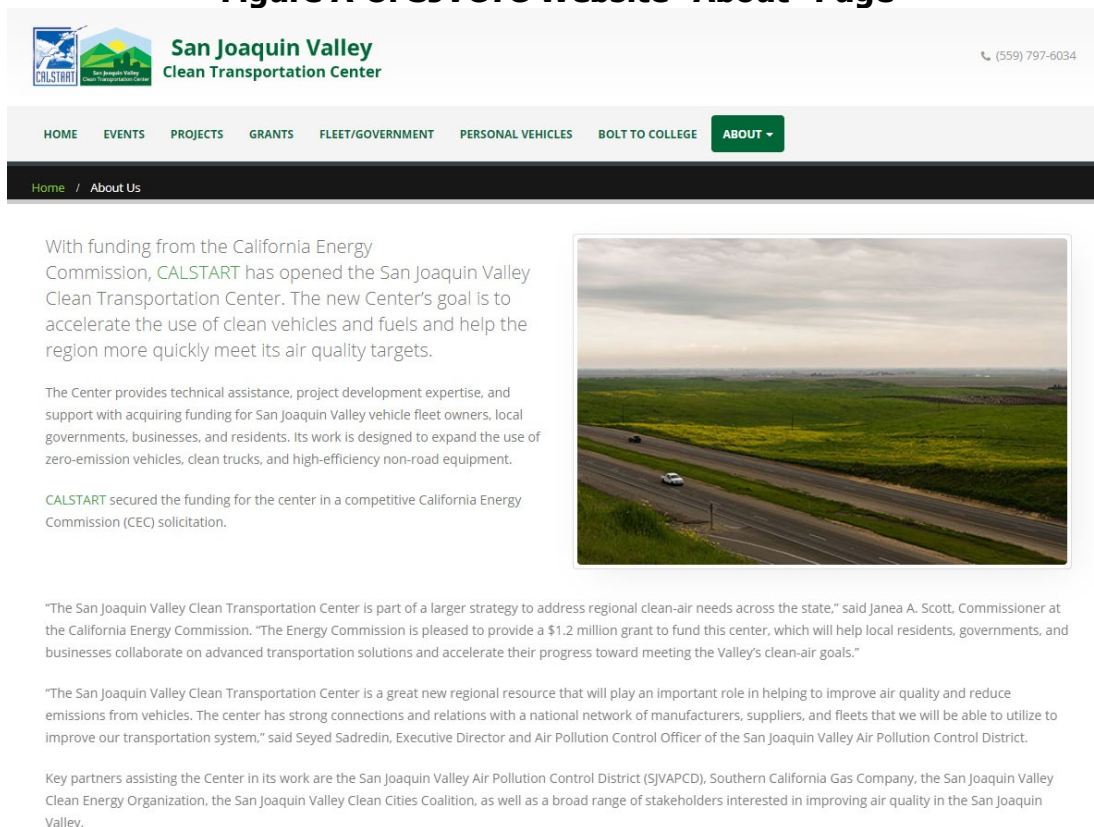
Source: Joseph Oldham

**Figure A-7: SJVCTC Website “Bolt to College” Page**



Source: Joseph Oldham

**Figure A-8: SJVCTC Website “About” Page**



Source: Joseph Oldham

# **APPENDIX B:**

## **San Joaquin Valley Clean Transportation Center Newsletter Final Report**

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### **Newsletter (April 2016 to April 2018)**

#### *Status of Project*

Thirteen issues of the SJVCTC newsletter were produced, beginning in May 2016 and ending in April 2018. The free version of MailChimp was used to produce and send the newsletter via email, as well as to input and maintain the subscriber list.

The editor Brenda Turner worked with SJVCTC Director Joseph Oldham to establish the content for each newsletter, with Project Clean Air President Linda Urata also suggesting article ideas. Nearly all of the articles were written by the editor, who frequently traveled to attend events and workshops, or compiled by the editor through telephone interviews with sources and information generated through online research and email correspondence. The editor also took photos at events to include in the newsletter. Some photos and other graphic images were submitted by article sources, with the editor providing coordination and then formatting them for use in MailChimp. Mr. Oldham wrote his director's message, which was reviewed by the editor and inserted into MailChimp's template. The editor was responsible for all design and layout of each issue. Project Clean Air staff and President assisted with proofreading the newsletters for content and clarity along with spelling and other errors.

An initial mailing list of 1,062 individuals was identified from various sources, but 100 emails were not able to be delivered, decreasing the initial list to 962 recipients with valid and current email addresses. By the time the final newsletter email was sent in April 2018, the mailing list had increased to 1,199, with successful deliveries to 1,195 subscribers, exceeding our goal of reaching 1,130 individuals. From an initial list of 962 to a final list of 1,195 valid addresses, the number of subscribers increased by 233 individuals, which was an increase of nearly 25 percent over the two-year period.

The editor was responsible for maintaining and updating the email list, with Mr. Oldham sometimes providing additional contacts to be added to the list. Much of the increase to the email list was generated when the editor attended events and brought back business cards from new contacts. In addition, Project Clean Air staff participated in many outreach events and created sign-up lists for event attendees to be added to the newsletter email list. Individuals also were able to subscribe to the newsletter online, either by viewing a newsletter that had been forwarded to them and clicking through to the subscription link or subscribing directly from the SJVCTC website when that option was added to the SJVCTC website in late 2017.

After a few issues were sent, an option in MailChimp became available that allowed the newsletter to be sent again to a segment of the email list. This enabled us to send the same issue of the newsletter a second time to those who had not opened the first email rather than sending it to the entire list for a second time. Beginning with the October/November 2016, issue, a segment of those who had not opened the issue initially was created and sent again several days later only to that group. MailChimp cautioned that this might increase the number

of individuals unsubscribing to the list, but that was not our experience when this targeted emailing was used. This actually proved to be a very successful strategy as an additional 10 percent or more of this segmented list generally opened the newsletter when it was sent a second time, boosting readership substantially.

Overall, the list average open rate for the newsletter was 23.1 percent for each email. This compares to MailChimp's stated industry average for nonprofits of 20.2 percent. The newsletter's list average click-through rate, which is when a link is clicked to another site, was 1.9 percent for each email. This is just under the nonprofit average of 2.1 percent. In looking at total readership for the 13 issues, considering that most issues were emailed twice as described above, the average reach was 32.95 percent per issue or nearly a third of the total email list.

In addition to the newsletters, special emails were sent to promote events and provide other timely information to the newsletter subscriber list. Topics included the two SJVCTC Summits, Compressed Natural Gas Listen and Learn Sessions, the CarbonBLU Brief fleet assessment, and various funding opportunities, webinars and workshops. In total, another 30 of these types of emails were sent to the entire subscriber list or a segment of the list.

Twenty total emails were sent out for the 13 newsletter issues on account of several issues being sent first to the entire list, then sent a second time to those who had not opened the first email. With the 20 newsletter emails and 30 special emails, a total of 50 emails were distributed to the newsletter email list or a segment of the list. That amounts to approximately two per month, or about one every two weeks.

### ***Newsletter Releases***

**April 2018** <https://mailchi.mp/b3431f3d8bd7/april-2018-sjvctc-newsletter>

Total reach was 387 out of 1,186, or 32.6 percent

- 4/4/2018 – second email of newsletter

[\*Read About New Funding for Truck Fleets, Electrify America Test Drives in Bakersfield & Stockton, and Electric Airplanes Taking Flight in Fresno\*](#)

12.7 percent or 118 unique and 217 total opens; 2.6 percent or 24 unique and 31 total clicks

- 4/2/2018 – first email of newsletter

*Read About New Funding for Truck Fleets, Electrify America Test Drives Coming to Bakersfield & Stockton, and San Joaquin Valley Clean Transportation Summit Summary*

22.7 percent or 269 unique and 853 total opens; 1.7 percent or 20 unique and 69 total clicks

**February/March 2018** <https://mailchi.mp/d5b36d1edfb9/februarymarch2018-2>

Total reach was 340 out of 1,190, or 28.6 percent

- 3/6/2018 – second email of newsletter
  - Don't miss the latest news from the San Joaquin Valley Clean Transportation Center: Millions coming to fund electric school buses, cow power to help clean SJV's air, Register Now for the San Joaquin Valley Clean Transportation Summit March 14-15

- 10.2 percent or 98 unique and 187 total opens; 2.7 percent or 26 unique and 40 total clicks
- 3/2/2018 – first email of newsletter
  - Read the latest news from the San Joaquin Valley Clean Transportation Center: Millions coming to fund electric school buses, cow power to help clean San Joaquin Valley's air, Register Now for the San Joaquin Valley Clean Transportation Summit
  - 20.3 percent or 242 unique and 518 total opens; 1.3 percent or 15 unique and 104 total clicks

**January 2018** <https://mailchi.mp/6516044ef421/jan-2018>

Total reach was 284 out of 1,140, or 24.9 percent

- 1/18/2018 – single email of newsletter
  - Read the latest news from the San Joaquin Valley Clean Transportation Center: Sonoma County EV Webinar Today at 1; EVs Made EZ Workshop in Stockton Tuesday – Sign Up Now!
  - 24.9 percent or 284 unique and 794 total opens; 0.9 percent or 10 unique and 27 total clicks

**December 2017** <https://mailchi.mp/47697504e3cf/dec20172nd>

Total reach was 401 out of 1,142, or 35.1 percent

- 1/10/2018 – second email of newsletter
  - Happy New Year from the SJVCTC! Did you miss reading our December Newsletter about new funding coming to the San Joaquin Valley in 2018?
  - 12.1 percent or 104 unique and 248 total opens; 0.8 percent or 7 unique and 29 total clicks
- 12/28/2017 – first email of newsletter
  - Happy New Year from the SJVCTC! Read our December Newsletter about new funding coming to the San Joaquin Valley in 2018
  - 26.0 percent or 297 unique and 867 total opens; 3.3 percent or 38 unique and 48 total clicks

**November 2017** <https://mailchi.mp/99e63964ae33/nov2017-2>

- Total reach was 378 out of 1,150, or 32.9 percent
  - 12/6/2017 – second email of newsletter
    - Are near-zero natural gas truck engines cleaner than electric? Is the Central Valley becoming a manufacturing mecca for electric vehicles?
    - 10.4 percent or 91 unique and 173 total opens; 0.2 percent or 2 unique and 2 total clicks
- 11/29/2017 – first email of newsletter
  - Valley Becoming Electric Vehicle Manufacturing Mecca? Electric Vehicle Airplanes Coming to Fresno County!



- 25.0 percent or 287 unique and 599 total opens; 2.7 percent or 31 unique and 72 total clicks

**August-October 2017** <https://mailchi.mp/e5ec2ef2594f/aug-oct-2017-newsletter>

Total reach was 210 out of 1,116, or 18.8 percent

- 10/11/2017 – single email of newsletter
  - Read the latest news from the San Joaquin Valley Clean Transportation Center: Fresno State Opens Transportation Institute, Compressed Natural Gas Listen and Learn November 3 at Harris Ranch
  - 18.8 percent or 210 unique and 368 total opens; 2.1 percent or 23 unique and 42 total clicks

**May-July 2017** <https://mailchi.mp/b4c392952731/may-june-2017-sjvctc-newsletter>

Total reach was 371 out of 1,105, or 33.6 percent

- 7/17/2017 – second email of newsletter

*Did you miss the latest news from the San Joaquin Valley Clean Transportation Center?*

- 12.1 percent or 105 unique and 226 total opens; 1.4 percent or 12 unique and 16 total clicks
- 7/10/2017 – first email of newsletter

*Funding for Compressed Natural Gas Engines, GreenPower Comes to Porterville, and More News from the San Joaquin Valley Clean Transportation Center*

24.1 percent or 266 unique and 792 total opens; 3.3 percent or 36 unique and 82 total clicks

**March/April 2017** <http://mailchi.mp/35c9281e78e4/march-april2017-993965>

Total reach was 392 out of 1,098, or 35.7 percent

- 5/4/2017 – second email of newsletter
  - Dairies Powering Big Rigs? Read about it in the Latest Issue of the San Joaquin Valley Clean Transportation Center Newsletter
  - 12.1 percent or 99 unique and 418 total opens; 0.5 percent or 4 unique and 7 total clicks
- 4/28/2017 – first email of newsletter

*Don't miss the latest issue of the San Joaquin Valley Clean Transportation Center Newsletter*

26.7 percent or 293 unique and 576 total opens; 0.8 percent or 9 unique and 40 total clicks

**January/February 2017** <https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=2193658da5>

Total reach was 330 out of 1,084, or 30.4 percent

- 2/9/2017 – single email of newsletter
  - New \$500 Pacific Gas and Electric Rebate for Electric Vehicle Drivers, Hybrid and Zero-Emission Truck and Bus Voucher Incentive Program Funding for Clean Trucks and Buses: Read the January/February 2017 SJVCTC Newsletter



- 30.4 percent or 330 unique and 863 total opens; 3.9 percent or 42 unique and 212 total clicks

### **October/November 2016**

<https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=4ee2774aa1>

Total reach was 475 out of 1,073, or 44.3 percent

- 11/30/2017 – second email of newsletter
  - Did You Miss the Latest SJVCTC Newsletter? Read about the Inaugural SJVCTC Summit, 238-Mile Electric Vehicle Chevy Bolt, Charging Coming to Rural Fresno County
  - 15.6 percent or 115 unique and 158 total opens; 2.0 percent or 15 unique and 16 total clicks
- 11/22/2017 – first email of newsletter

*Inaugural SJVCTC Summit, 238-Mile EV Chevy Bolt, Charging Coming to Rural Fresno County*

33.6 percent or 360 unique and 889 total opens; 1.7 percent or 18 unique and 46 total click

**August/September 2016** <https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=2193658da5>

Total reach was 260 out of 996, or 26.1 percent

- 8/30/2017 – single email of newsletter

*See Your August 2016 San Joaquin Valley Clean Transportation Center Newsletter*

- 26.1 percent or 260 unique and 611 total opens; 1.6 percent or 16 unique and 42 total clicks

**June/July 2016** <https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=45da09b424>

Total reach was 407 out of 964, or 42.2 percent

- 6/29/2017 – single email of newsletter
  - San Joaquin Valley Clean Transportation Center Newsletter - June 2016
  - 42.2 percent or 407 unique and 976 total opens; 4.4 percent or 42 unique and 66 total clicks
- 

**May 2016** <https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=87c8798961>

Total reach was 416 out of 962, or 43.2 percent

- 5/6/2017 – single email of newsletter

*First Issue of the San Joaquin Valley Clean Transportation Center Newsletter*

- 43.2 percent or 416 unique and 1,070 total opens; 4.7 percent or 45 unique and 73 total clicks

**The 30 special emails other than the newsletter included:**

4/11/2018 – [Register to Attend the Natural Gas Workshop & Planning Meeting April 27 in Hanford](#)

<https://mailchi.mp/3a6a1b6bee05/natural-gas-workshop-planning-meeting-april-27-in-hanford>

20.6 percent opens and 0.2 percent clicks

3/12/2018 – [LAST CHANCE to Register for the San Joaquin Valley Clean Transportation Summit March 14-15 at the Save Mart Center in Fresno](#)

<https://mailchi.mp/19c9738b04d3/last-chance-to-register-for-the-san-joaquin-valley-clean-transportation-summit-march-14-15-at-the-save-mart-center-in-fresno>

23.9 percent opens and 0.9 percent clicks

2/13/2018 – [Register NOW for the 2018 San Joaquin Valley Clean Transportation Summit](#)

<https://mailchi.mp/88e804d2350c/2018-sjvctc-summit-021318>

Segment of only those who did not open 2/8 email – 13.7 percent opens and 3.1 percent clicks

2/8/2018 – [Registration Now Open for the 2018 San Joaquin Valley Clean Transportation Summit](#)

<https://mailchi.mp/e827cebb9861/2018-sjv-clean-transportation-summit>

26.7 percent opens and 3.0 percent clicks

11/1/2017 – [Last Chance to Register for Friday's Compressed Natural Gas Listen and Learn Session at Harris Ranch](#)

<https://mailchi.mp/4e5e838e5c51/cnglistenandlearnharrisranch3>

Segment of list – 25.1 percent opens and 2.2 percent clicks

10/27/2017 – [RSVP NOW! One Week Until Compressed Natural Gas Listen and Learn Session at Harris Ranch](#)

<https://mailchi.mp/fe29bfbcf1e5/cngharrisranch2>

Segment of list – 21.8 percent opens and 2.0 percent clicks

10/23/2017 – [Join us Friday, November 3, at Harris Ranch for Compressed Natural Gas Updates and free Lunch](#)

<https://mailchi.mp/3e0b93cf6754/harris-ranch-cng-listen-and-learn>

23.9 percent opens and 2.0 percent clicks

10/17/2017 – [We want your opinion! Help evaluate the San Joaquin Valley Clean Transportation Center Newsletter](#)

<https://mailchi.mp/dec3fa299972/newsletter-evaluation>

25.0 percent opens and 2.7 percent clicks

9/20/2017 – [Free Renewable Natural Gas Workshop October 5 in Sacramento](#)

<https://mailchi.mp/45d65c3d9645/rng-workshop>

21.6 percent opens and 0.5 percent clicks

9/14/2017 – [Sept. 9-17 is National Drive Electric Week; Test Drive Electric Vehicles Saturday in Bakersfield at LiveSmart Fair](#)

<https://mailchi.mp/e2a25581a1cf/ndew>

23.9 percent opens and 2.3 percent clicks

9/13/2017 – [International Green Industry Hall of Fame 7th Annual Conference and Hall of Fame October 6 in Clovis, California](#)

<https://mailchi.mp/05b9872920be/igihof-conference>

24.8 percent opens and 1.8 percent clicks

8/30/2017 – [Alert! San Joaquin Valley Clean Transportation Center Website Hijacked](#)

<https://mailchi.mp/442edec12c90/website>

29.7 percent opens and 0.1 percent clicks

8/29/2017 – [Position Closing Soon! Job Opportunity with CALSTART at New Northern San Joaquin Valley Office](#) <https://mailchi.mp/397f6c8df999/calstartprojectmanager-1152381>

25.0 percent opens and 2.8 percent clicks

8/14/2017 – [Job Opportunity with CALSTART at New Northern San Joaquin Valley Office](#)

<https://mailchi.mp/3a08936483c1/calstartprojectmanager>

30.3 percent opens and 4.2 percent clicks

8/3/2017 -- [Don't Miss CALSTART's 25th Anniversary Symposium](#)

<https://mailchi.mp/8db0878fe34d/calstart25thanniversarysymposium>

23.0 percent opens and 2.0 percent clicks

7/18/2017 – [Don't Forget Wednesday's Compressed Natural Gas Listen and Learn Session - Call-In Info Included](#)

<https://mailchi.mp/c7aabde0b0e7/san-joaquin-valley-clean-transportation-center-newsletter>

24.0 percent opens and 2.0 percent clicks

7/14/2017 – [Compressed Natural Gas Listen and Learn Session Wednesday, July 19](#)

<https://mailchi.mp/b467efac7ec8/cng-listen-and-learn-session-wednesday-july-19>

Sent to Trucking Dealerships segment of list – 52.6 percent opens and 31.6 percent clicks

7/13/2017 – [Don's Miss Our Compressed Natural Gas Listen and Learn Session](#)

<https://mailchi.mp/b10a36a3a8da/cnglistenandlearn>

26.8 percent opens and 1.8 percent clicks

6/1/2017 – [APPLY NOW! Funds Available Through Valley Air District's Proposition 1B Program to Replace Heavy-Duty Diesel Trucks or Engines](#)

<https://mailchi.mp/7788e7652418/prop-1b>

35.0 percent opens and 3.9 percent clicks

5/23/2017 – [You're Invited! Join Us June 2 as GreenPower Breaks Ground on a New Electric Vehicle Bus Manufacturing Facility in Porterville](#)

<https://mailchi.mp/4b603f0a8c47/greenpower>

25.4 percent opens and 1.9 percent clicks

5/16/2017 – [Upcoming Webinars Offer Guidance for Fleets on Vehicle Cybersecurity and Cooperative Purchasing](#)

<https://mailchi.mp/e6e7f1545747/webinars>

24.2 percent opens and 1.6 percent clicks

3/31/2017 – [California Air Resources Board Mobile Source Training](#)

<https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=3fc38b156b>

31.4 percent opens and 1.2 percent clicks

03/28/2017 – [Learn About Dairies as a Key Energy Resource at Free Workshop April 5](https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=60e0198ad9)

<https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=60e0198ad9>

32.0 percent opens and 2.6 percent clicks

1/20/2017 – [Join Free Webinar Tuesday on Low- or No-Emission Bus Deployment](https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=5abcd5041b)

<https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=5abcd5041b>

28.6 percent opens and 1.5 percent clicks

10/27/2016 – [Deadline Soon! - School Bus Diesel Emissions Reduction Act Applications Due November 1](https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=b3d93cd08e)

<https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=b3d93cd08e>

Sent to School Districts segment of list – 38.2 percent opens and 15.7 percent clicks

9/23/2016 – [Register Now for the San Joaquin Valley Clean Transportation Summit October 19!](https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=465b2ba588)

<https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=465b2ba588>

35.0 percent opens and 4.2 percent clicks

9/19/2016 – [Don't Miss Out! SJVCTC Offering No-Cost Fleet Assessments](https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=168c9bb8dc)

<https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=168c9bb8dc>

32.0 percent opens and 0.8 percent clicks

8/17/2016 - [Save the Date - SJVCTC Summit October 19 - Registration Opens Next Week!](https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=b11e075e80)

<https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=b11e075e80>

41.0 percent opens and 0.8 percent clicks

08/12/2016 – [Making Electric Vehicles Affordable for Public Fleets](https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=135d797494)

<https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=135d797494>

Sent to Public Fleet segment of list – 44.7 percent opens and 11.8 percent clicks

7/14/2016 – [Fleet Operators - Get Your FREE carbonBLU Brief](https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=135d797494)

<https://us13.campaign-archive.com/?u=7575d43b59eba52c6cf5cf53e&id=2a171fde96>

31.3 percent opens and 1.0 percent clicks

Thomas Paddon of CALSTART's San Joaquin Valley Clean Transportation Center has administrative rights to the newsletter MailChimp account and is able to access any email lists, newsletter templates for the various issues and special emails, and any other documents or report statistics. Table 4 is a list of the costs associated with generating these newsletters from February 2016 to April 2018.

**Table B-1: Schedule of Fees (February 2016 to April 2018)**

<b>Activity</b>	<b>Quantity</b>	<b>Rate/Percentage</b>	<b>Total</b>
Linda Urata, President and Clean Cities Coordinator (Volunteer)	30.00 hours (In-Kind)	\$35.00/hour	\$1,050.00 (In-Kind)
Linda Urata, President and Clean Cities Coordinator	24.75 hours	\$35.00/hour	\$866.25
Brenda Turner, Program Specialist and Newsletter Editor	1,548.00 hours 19.00 overtime hours	\$25.00/hour \$37.50/hour	\$38,700.00 \$712.50
Courtney Velasco, Office Manager	29.00 hours	\$17.00/hour	\$493.00
Courtney Velasco, Office Manager	19.00 hours	\$25.00/hour	\$475.00
Interns: Paige Howard, Harneel Gill, Claire Urata	10.00 hours	\$16.63/hour	\$166.30
Admin OH	\$41,413.05 total labor	18.13%	\$7,508.19
MailChimp Setup	N/A	N/A	\$300.00
Event Registrations	N/A	N/A	\$740.92
Travel: Mileage	3,327.90 miles	IRS Standard Rate	\$1,718.96
Travel: Lodging	N/A	N/A	\$389.85
Travel: Miscellaneous	Parking	N/A	\$12.00
<b>TOTAL</b>			<b>\$52,082.97</b> <b>\$1,050.00</b> <b>(In-Kind)</b>

Source: Joseph Oldham



## **CLEAN TRANSPORTATION SUMMIT (November 2017 to April 2018)**

### ***Introduction***

Project Clean Air assisted with the event planning of the 2nd Annual San Joaquin Valley Clean Transportation Summit scheduled for March 13 - 14, 2018 in Fresno. Project Clean Air helped coordinate speakers and booth vendors. Coordination activities include identify topics, identify speakers and provide contact information, invite speakers, update planning documents, confirm speakers and provide logistic information (parking, nearby hotels, event schedule, Agenda), resolve scheduling conflicts, event day speaker check-in, thank speakers for participation.

- Coordinated more than 40 speakers and confirmed with support from CALSTART's SJVCTC and Fresno State's Transportation Institute
- Facilitated a vendor booth for Project Clean Air
- Provided a Fresno State zero electric motorcycle for display

Additionally, Project Clean Air provided the following resources:

- December site visit with planning committee
- Shared sponsorship packet with potential sponsors
- Developed mail list for invitees
- Promoted event through two email blasts (1,184 with almost 90 percent response rate; 879 with a 50 percent response rate)
- Researched breakout session topics and shared with committee
- Created speaker list and shared during planning meetings
- Traveled to California Air Resources Board's truck conference in January - promoted event and shared sponsorship information
- Contacted ride and drive participants
- Created event task list and managed during the pre-planning of the event
- Created and updated event agenda
- Supported registration of more than 200 attendees and provided on-site customer service

### ***Status of Project***

Project Clean Air participated in event-planning conference calls and emails beginning in the Fall 2017. The Program Specialist attended the site visit to Save Mart Center on December 6. On January 4, the Special Projects Coordinator joined the planning team and attended weekly planning conference calls. Each call included review of the agenda, breakout topics, speakers, venue, vehicle display, and ride and drive. There was a total of ten calls and a debrief call on March 21, 2018.

Registration information was available in mid-February. Project Clean Air promoted the event through the newsletter distribution list (962) and expanded the list to 1,184 (as of March 31, 2018). We also shared on our social media pages as well as our email lists to promote the event. In mid-February, we had a high participation rate of clicking on registration link or

sharing with others. Personal invitations were extended as opportunities arose. The Project Clean Air Board President distributed event information via Kern Council of Governments' email lists, directly to the Board of Directors and at Kern Council of Governments Transportation Technical Advisory Committee and Regional Planning Advisory Committee meetings.

Project Clean Air created an event task list to support the committee's efforts in the planning of this important event. We also drafted the working agenda and suggested workshop titles. Project Clean Air suggested creating a theme for each day to support the event tagline of Clean Air and a Healthy Economy.

Project Clean Air suggested speakers and shared speaker lists with the planning committee. Speaker confirmations began in late February as directed by Dr. Tawfik and Mr. Oldham. Mr. Cherkaski helped to facilitate speaker confirmations with our event coordinator as well. More than 45 confirmations were sent, and more than 75 communications were sent regarding speaker related confirmations and activities.

Project Clean Air also shared the information with various partners on January 23, 2018 at the California Air Resources Board's *MS530: Truck Regulation Information Session and Conference* in Sacramento, California. and the San Joaquin Valley Electric Vehicle Partnership's *Electric Vehicles Made EZ Workshop* in Stockton, California.

The 2018 San Joaquin Valley Clean Transportation Summit was held on March 13 - 14, 2018 in Fresno at the Save Mart Center. We had more than 269 registrations, 30 speakers and more than 40 on-site attendees and 65 no-shows, so about 200 attended the two-day event. Day two had about 30 attendees in each session. The reception had about 20 participants that included San Joaquin Valley Clean Transportation Center committee members, vendors and a few attendees.

Project Clean Air supported the registration table and greeted guests, exhibitors and speakers. We also guided guests to the vendor booths and Ride and Drive area. If needed, we provided guidance to speakers on their presentation needs.

We had five attendees at the event. Linda Urata, Brenda Turner, Susan Hopkins, Paige Howard, and Harneel Gill. They attended the main sessions, workshops and supported the various vendor booths.

Project Clean Air also provided an informational booth that included a Zero Electric Motorcycle from Fresno State Police Department. We received several compliments and inquiries on the motorcycle from attendees. Project Clean Air also brought the new San Joaquin Valley Electric Vehicle Partnership's informational kiosk during the summit.

Project Clean Air received many compliments on the event that included the workshop topics, speakers that presented and the amazing network opportunities. Table 5 shows the costs associated with generating these newsletters from November 2017 to April 2018.

**Table B-2: Schedule of Fees (November 2017 to April 2018)**

<b>Activity</b>	<b>Quantity</b>	<b>Rate/Percentage</b>	<b>Total</b>
Linda Urata, President and Clean Cities Coordinator (Volunteer)	36.50 hours (In-Kind)	\$35.00/hour	\$1,277.50 (In-Kind)
Brenda Turner, Program Specialist and Newsletter Editor	89.00 hours 4.50 overtime hours	\$25.00/hour \$37.50/hour	\$2,225.00 \$168.75
Courtney Velasco, Office Manager	23.00 hours	\$25.00/hour	\$575.00
Susan Hopkins, Special Projects Coordinator	191.00 hours 4.50 overtime hours	\$25.00/hour \$37.50/hour	\$4,775.00 \$168.75
Interns: Paige Howard, Harneel Gill	24.00 hours 8.00 overtime hours	\$16.63/hour \$24.95/hour	\$399.12 \$199.56
Admin OH	\$8,511.18 total labor	18.13 percent	\$1,543.08
Travel: Mileage	1,305 miles	IRS Standard Rate	\$742.15
Travel: Lodging	N/A	N/A	\$955.95
Travel: Meals	N/A	GSA.gov per diem	\$33.33
<b>Total</b>			<b>\$11,785.69</b> <b>\$1,277.50 (In-Kind)</b>

Source: Joseph Oldham

### ***Debrief Meeting Notes***

The Ride and Drive had at most, five participants. There was minimal participation to the EV ARC which did not charge any attendees' cars. The Chevrolet Volt had six rides. The weather was threatening rain on Wednesday, and that may have impacted the low participation in the vehicle area.

The value of the venue was the parking lots, but they did not give the return on the investment as there was very low vendor and attendee participation in the Ride and Drive.

Project Clean Air adds the recommendation that in the main hall and the breakout sessions that the facilitators announce the availability of the vehicle display and the opportunity to drive clean technology vehicles, and to visit the vendor tables.

The committee is considering a bi-annual schedule for next the Summit, if they can overcome the Central Valley bias. Table 6 below shows the SJVCTC contacts and engagement partners.

**Table B-3: San Joaquin Valley Clean Transportation Center Contacts and Engagement Partners**

<b>Organization and Contact Information</b>	<b>Type of Engagement</b>
Fresno Metro Ministry Keith Bergthold, Executive Director (559) 485-1416	Contract partner, community outreach channel
Fresno State Office of Community and Economic Development Ismael Herrera, Executive Director (559) 278-0721	Contract partner, community outreach channel, event logistics coordinator
Fresno County Economic Opportunities Commission Monty Cox, Transit Systems Director (559) 263-8004	Contract partner, community outreach channel
Fresno Council of Governments Moses Stites, General Manager for Fresno County Rural Transit Agency (559) 233-6789	Community engagement partner, advocate with local governments
Stockton Mayor's Office Max Vargas, Senior Policy Advisor to Mayor Michael Tubbs (209) 937-8386	Community engagement partner, project developer, community advocate
Project Clean Air Linda Urata, Executive Director (661) 635-2904	Contract partner, community engagement channel and partner, community advocate
Fresno State Transportation Institute Dr. Aly Tawfik, Director (559) 278-4240	Contract partner, technology research partner and resource
State Center Community College District Dr. Carole Goldsmith, President of Fresno City College (559) 489-2212	Community engagement partner, project beneficiary
Fresno Unified School District Tara Loll, Business Engagement Coordinator (559) 248-7489	Community engagement partner

<b>Organization and Contact Information</b>	<b>Type of Engagement</b>
Central Valley Air Quality Coalition Genevieve Gale (559) 272-4874	Community advocate, engagement advisor
Clovis Veterans Memorial District Lorenzo Rios, CEO (559) 299-0471	Event host, community advocate
Fresno Business Council Mike Betts, Chairman-CEO Betts Spring Company (559) 540-8335	Business engagement advisor, community advocate
Center for Climate Protection LaTisha Harris, Community Outreach Specialist (559) 367-6587	Community advocate and engagement partner
San Joaquin Valley Air Pollution Control District Todd DeYoung, Incentive Program Manager (559) 230-5800	Contract partner, community advocate, and project funder
Fresno Workforce Development Board Blake Konczal, Executive Director (559) 490-7102	Community advocate and engagement partner
Fresno County Economic Development Corporation Lee Ann Eager, CEO/President (559) 476-2513	Community advocate and engagement partner
Merced County Association of Governments Stacie Dabbs, Interim Executive Director (209) 723-3153	Community advocate and engagement partner
San Joaquin Valley Clean Cities Coalition Linda Urata, Chairperson (661) 635-2904	Community engagement partner and advocate

Source: Joseph Oldham

**Table B-4: San Joaquin Valley Clean Transportation Center Policy Maker and Elected Official Briefings**

<b>Date</b>	<b>Location</b>	<b>Topic or Focus</b>	<b>Elected Official/Representative</b>
11/6/2015	Fresno Council of Governments, Fresno	Introduction of the CALSTART San Joaquin Valley Clean Transportation Center and briefing on its mission	Mayors from all fifteen cities in Fresno County and Board Chair for Fresno County
11/17/2015	Fresno office for Assembly Member Henry Perea	Introduction of the CALSTART San Joaquin Valley Clean Transportation Center and briefing on its mission	Assembly Member Perea's chief of staff
12/22/2015	Fresno City Hall	Discuss possible grant project for downtown and along Blackstone Ave.	Danielle Bergstrom, Government Affairs Manager for Mayor Ashley Swearengin
1/28/2016	Fresno Council of Governments, Fresno	Discuss new project opportunities using advanced transportation grant funding from Measure C funds	City managers from all fifteen incorporated cities in Fresno County
2/23/2016	Mendota	Discuss developing zero emission aircraft project with City of Mendota	Mayor Robert Silva, City Manager Vince DiMaggio
6/14/2016	Mendota City Hall	Present to Mendota City Council re: Sustainable Aviation Project	Mendota City Council members, City Manager Vince DiMaggio, and public in attendance
6/23/2016	Capitol, Sacramento	Brief Valley representatives on SJVCTC projects and activities	Aides for State Assembly member Arambula, Gray, and Eggman
8/1/2016	Merced	Meeting to discuss electric vehicle deployment in Merced County	Hub Walsh, Supervisor for Merced County



<b>Date</b>	<b>Location</b>	<b>Topic or Focus</b>	<b>Elected Official/Representative</b>
9/9/2016	Fresno Council of Governments, Fresno	Provide testimony to support grant award for Sustainable Aviation Project	City managers from all fifteen incorporated cities in Fresno County
1/10/2017	Fresno City Hall	Brief Mayor on Energize Fresno project	Fresno Mayor Lee Brand
1/11/2017	SJVCTC office	Brief Fresno City Council member on Energize Fresno project	Council member for District 3, Oliver Baines
5/1-3/2017	Washington DC	Brief Valley Congressional representatives and White House staff on SJVCTC projects	Meet with Valley Congressional representatives as part of One-Voice Valley delegation from Fresno County. (Non-CEC travel)
5/31/2017	Modesto	Briefing for Congressman Denham's staff on SJVCTC projects and job training opportunities	Walker Barrett, aide to Congressman Denham
10/19/2017	Modesto	Brief California Transportation Commission on SJVCTC work and projects to date	California Transportation Commission staff and members
1/24/2018	Stockton City Hall	Brief Mayor Tubbs office staff on SJVCTC mission and project development	Max Vargas, Senior Policy Advisor to Mayor Tubbs

Source: Joseph Oldham