



San Joaquin Valley Plug-In Electric Vehicle Coordinating Council

Date: Thursday, May 2, 2013
Time: 10:00 a.m. – 12:00 p.m.
Location: SJVAPCD Fresno Office
1990 E. Gettysburg Ave.
Fresno, CA 93726

Teleconference information: Call-in: 646-364-1285 Access Code: 6619701

Video Teleconferencing at the following locations:

<u>Modesto</u>	<u>Bakersfield</u>
4800 Enterprise Way	34946 Flyover Court
Modesto, CA 95356	Bakersfield, CA 93308

May 2, 2013 Meeting Agenda (+ next to an item indicates an attachment)

1. Welcome and Introductions (Nhia Vu, SJVAPCD)
2. Announcements and Public Comments (All)
- +3. Summary of April 4, 2013 Meeting (Tyler Petersen, CCSE)
 - A. Climate Action Plan, Sustainability Action Plan & Adaption Plan follow up
 - B. Lack of Public Knowledge of PEV and EVSE
 - o Update on education and outreach presentation
- +4. Commercial Permitting (SJVPEVCC members and Tyler Petersen, CCSE)
 - o Review ZEV Readiness Guidebook: "Retail and Public Sector Charging" document
 - o SJV PEVCC member feedback and discussion
- +5. Regional PEV Readiness Plan Development (SJVPEVCC members and Tyler Petersen, CCSE)
 - A. Workplace Charging
 - o Review ZEV Readiness Guidebook: "Workplace Charging" document
 - o SJV PEVCC member feedback and discussion
 - B. Updating Building Codes for EVSE
 - o Review *San Joaquin Valley Readiness Assessment* results and recommendations
 - o SJV PEVCC member feedback and discussion
- +6. Barrier topics for June 6, 2013 meeting (SJVPEVCC members and Tyler Petersen, CCSE)
 - A. EVSE at Multi Unit Dwellings (MUDs)
 - B. EVSE Installations

The next SJV PEVCC meeting will take place on **June 6, 2013 from 10:00 a.m. - 12:00 p.m.**

Climate Action Plan (CAP), Sustainability Action Plan (SAP) & Adaptation Plans

Organization Name:	Do you currently have a CAP, SAP or Adaptation Plan?	Is a CAP, SAP or Adaptation Plan currently being developed?	Does your CAP, SAP or Adaptation Plan have any specific language that benefits EVSEs or Electric Vehicles? (e.g. EV fleets)
City of Visalia		Yes. As of 4/5/13, completing a CAP and it is in the final draft format	
City of Tracy	Yes, SAP		<p>Measure T-17: Increased Use of Low Carbon Fueled Vehicles Conduct the following to promote the use of low carbon fueled vehicles:</p> <ol style="list-style-type: none"> a. Use the Zoning Ordinance to allow no/low carbon fueling stations as part of the “gas and service station” land use category. b. Amend the Zoning Ordinance or City Standards to require new projects to provide parking spaces reserved for hybrid or electric vehicles (EVs), carpool, or car share vehicles. c. Require dedicated parking spots for alternative fuel, hybrid, carpool, or car share vehicles in City parking lots and consider installing charging connections. d. Encourage employers to create vanpool or shuttle programs for employees. e. Encourage the use of hybrid and electric construction equipment and the use of alternative fuels for construction equipment. f. Convert the municipal automotive fleet to cleaner fuels and lower emissions. Convert the municipal non-automotive fleet to cleaner fuels and lower emissions where technologically possible. <p>To date (4/4/13), we have not completed updates to the Zoning Ordinance to implement the Plan measures, and I do not yet have specific Municipal Code language to share.</p>
City of Stockton		Yes. As of April, completing draft CAP which should go out for public review in May	

PLUG-IN ELECTRIC VEHICLE (PEV) BEST PRACTICES

San Joaquin Valley Local Government Action Plans: PEV Policies & Language

Compiled by the California Center for Sustainable Energy (CCSE)

Climate Action Plans

City of Oakdale (<http://www.ci.oakdale.ca.us/gp/Links/pdfs/oakdale-cap-20120720.pdf>)

Climate Action Plan (2011) is committed to developing a fuel-efficient vehicle replacement policy by 2020.

- *Strategy TLU.3.1: Reduce Traffic Speeds and Increase Safety in Sensitive Areas.*
 - This includes lowering the speed limit to 35mph in many streets to allow for the expanded use of Neighborhood Electric Vehicles. (p. 5-21)
- *Strategy TLU.4.1: Implement Preferred Parking Policy.*
 - The City wants to use parking policy to discourage driving and/or encourage the use of more fuel-efficient vehicles. (p. 5-22)
- *General Plan Policy EV-2.8*
 - Reduce emissions associated with transport of goods and services to municipal operations.

City of Merced

Climate Action Plan (2011) "Build a Green Fleet" program which supports converting city fleet with cleaner vehicles.

Tulare County

Climate Action Plan (2010, draft) is establishing targets for transportation-related greenhouse gas emissions for regions throughout California and pursuing such policies in conjunction with SB 375.

- Convert fleet vehicles by replacing diesel engines with electric motors. (p. 52)
- Building Energy Efficiency/Green Building Design strategy. (p. 11) [could include EVSE "pre-wiring" language]
- Under "Needing Additional Information", provide the necessary facilities and infrastructure to encourage the use of low or zero-emission vehicles. (p. 260)

Sustainability Action Plans

City of Tracy (http://www.ci.tracy.ca.us/documents/Sustainability_Action_Plan.pdf)

Sustainability Action Plan (2011) includes measures to encourage the use of EVs in our community. Please feel free to share this with others. The specific language in the Plan is as follows:

Measure T-17: Increased Use of Low Carbon Fueled Vehicles

Conduct the following to promote the use of low carbon fueled vehicles:

- Use the Zoning Ordinance to allow no/low carbon fueling stations as part of the "gas and service station" land use category.
- Amend the Zoning Ordinance or City Standards to require new projects to provide parking spaces reserved for hybrid or electric vehicles (EVs), carpool, or car share vehicles.

- Require dedicated parking spots for alternative fuel, hybrid, carpool, or car share vehicles in City parking lots and consider installing charging connections.
- Encourage employers to create vanpool or shuttle programs for employees.
- Encourage the use of hybrid and electric construction equipment and the use of alternative fuels for construction equipment.
- Convert the municipal automotive fleet to cleaner fuels and lower emissions. Convert the municipal non-automotive fleet to cleaner fuels and lower emissions where technologically possible.

Note: To date, the City of Tracy has not completed updates to the Zoning Ordinance to implement the Plan measures.

General Plan Updates

City of Arvin (http://www.arvin.org/downloads_pdfs/Final-Arvin-GP-IS%20%28July-12-2012%29.pdf)

General Plan Update (2012) Appendix A, the Plan listed additional goals to be included.

- *Conservation and Open Space Element*
 - **Goal 7:** Improve air quality in the Arvin area by controlling emissions from stationary and mobile sources.
 - **Goal 9:** Improve Energy Efficiency of all new construction in the Arvin area.
- *Air Quality Element*
 - **Goal 1:** To the greatest feasible extent, integrate air quality, land use and transportation planning and policy to reduce the emission of criteria pollutants and greenhouse gases from mobile sources.
 - **Goal 2:** Encourage the use of low-emissions vehicles in City operations and in the larger community.
- *Policy AQ-2.1:* Replace City fleet vehicles with low-emission technology vehicles wherever possible.
- *Policy AQ-2.2:* Provide preference to contractors using reduced-emission equipment for City construction projects, as well as for City service contracts.
- *Policy AQ-2.3:* Encourage developments and street systems that accommodate the use of neighborhood electric vehicles (NEVs) for local travel.

City of Patterson

General Plan Update (2010) includes the following language:

- *Implementation Measure T-2:*
 - City should maintain a Street Master Plan and should be regularly updated to indicate the necessary right-of-way to be acquired or dedicated. (applicable to on-street parking EVSE installations)
- *Implementation Measure T-9:*
 - City shall implement the Downtown Physical Design Plan. (CCSE recommendation: possibly include adding EVSE “pre-wiring” requirements)

Retail and Public Sector Charging

Introduction: Most PEV charging occurs at home, followed by charging at the workplace. However, the proliferation of plug-in hybrid electric vehicles (PHEVs) has increased the demand for more sporadic charging outside of home or work. To maximize their electric miles driven, many PHEV drivers find it valuable to charge when visiting retail and government-owned destinations. Public charging is available in several locations, including: public parking lots, retail chains such as Kohl's and Walgreens, tourist destinations, entertainment venues, and airports.

Background: The cost to install EV charging infrastructure for retail or public sector charging varies widely, depending on a multitude of factors. These factors include: charging level, type of charger, facility characteristics, desired location of charging stalls at the property, and installation cost. Charger hardware cost will largely be dictated by choices of features and preference for design or brand, similar to the range of pricing for automobiles and other consumer technology.

A much wider range of cost will be attributable to the cost of installing the hardware. Charging stations that can be installed near to an electrical panel with existing space and capacity will cost the least. Those that require long conduit runs, trenching, and panel upgrades will cost much more.

All commercial electric vehicle charging station installations will require a permit. In general, only a building or electrical permit will be required. However, if extensive landscape, parking lot, electrical or structural alterations are involved, the services of an engineer and/or architect, as well as electrical design consultant, may be necessary. In these cases, additional permits may be required covering the appropriate project elements.

Recommended Actions:

- **Permitting agencies should be available to answer questions about retail and public sector charging early in the planning process** to help ensure the timely installation of chargers.
- **Permitting agencies should create a similar or duplicate permitting applicant for workplace and retail charging installations** since both types of charging impacts have overlapping similarities.
- **Local Governments can provide information about payment and financing options for retail charging.** Some of these options include:
 - **Free, or Free with Restrictions:** This system may be beneficial for short-term stays, such as two hours or less. Appropriate signage posted at the charger indicates hours and days of operation. Many site hosts choose to provide free charging, viewing it as an amenity to their patrons, as well as a lower-cost alternative to expensive networked installations. Research shows that EV drivers quickly learn the whereabouts of free stations and seek them out. They also frequently reward site hosts by shopping at their businesses and suggested that fellow drivers do the same.

- **Advertising Supported:** A charging station owner or operator may provide charging for free, or for a nominal fee, offsetting the cost of the station installation and its operation through advertising revenue. Advertising may be displayed at the charging station electronically or through display graphics conforming to sign codes or site host standards and policies.
- **Adopt a Charger:** Businesses or philanthropic organizations may choose to fund some or all of the expenses associated with the installation and operation of a charger. EV drivers would then enjoy free or subsidized charging. Chargers are being installed in national and local parks under this scheme by the non-profit [Adopt a Charger](#) organization.
- **Point of Sale Billing:** Stations support credit card payment, radio frequency identification (RFID) card access, or both. Some stations additionally provide a toll-free number that users can call to arrange payment and initiate charging. In the case of networked charging stations, charger availability and (possibly) reservation status may be determined remotely using mobile devices or the internet. Site hosts receive monetary proceeds directly or indirectly through a service provider.
- **Membership or Subscription Plan:** The EV owner participates in a monthly or annual plan with the charger manufacturer or a third-party service provider. Station owners can log into the networked system, configure access preferences and rates, post advertisements (if supported) and track usage history and electrical consumption. Plans vary widely among providers, as payment schemes and business models are still evolving.
- **Fee Bundling:** EV drivers are provided unique access codes to use the charger. Codes are entered via a keypad or card reader. The fee for charging is added to the customer's account with the site owner or operator.
- **Valet Charging:** This system may work well for businesses like restaurants or hotels where valet parking services already exist. Valet staff, park, charge, and return EVs as requested by the owner. If a fee is collected, it may be added to the parking fee, room fee, and other transactions on the customer's account. The valet EV charging model is in operation at a number of hotels in Hawaii and on the mainland.
- **EV Car Sharing:** A car sharing company pays the property owner for the right to park and charge EVs in the business owner's or manager's parking lot. The car sharing company handles all financial transactions and reimburses the property owner or operator based upon an agreed set of terms.

Featured Resource: TBD.

Workplace Charging

Introduction: Workplaces present a significant, and largely untapped, opportunity for PEV charging. After residences, they are the single most important environment for electric refueling. Vehicles are generally parked at workplaces for several hours every weekday, making it possible for them to completely recharge before the commute home and dramatically increasing electric miles traveled for PHEVs. The ability to charge at work may also encourage PEV adoption by those for whom residential charging is cost-prohibitive or logistically difficult, particularly residents of multi-unit dwellings.

Background: Implementing EV workplace charging is easiest where a business/organization is in complete control of their entire campus. With singular control of the key pieces of real estate parking area, building, and electrical service it is a straightforward process to establish an EV charging opportunity for employees. The situation can easily become much more complicated, especially in dense urban situations. For employers or employees at companies with a more complex building ownership/parking arrangement at their site, a modified approach will be needed.

The vehicles' lengthy stays in parking lots allow them to recharge using slower, lower-voltage, less expensive Level 1 charging from common, often available outlets. But the ability to charge several cars at once using multiple cords on Level 2 equipment would also make faster charging a potentially feasible option.

The permitting process for workplace charging is one of many variables that employers may have to consider when installing workplace charging. Some of the other considerations include:

- Cost (installation, maintenance, operation, etc.)
- Developing an internal policy regarding charging vehicles (i.e., determining protocol for plug-sharing among employees)
- Liability issues
- Choosing the appropriate EVSE, vendor, and electrical contractor
- Buy-in from senior management
- Compliance with the Americans with Disabilities Act
- Obtaining approval from property or parking garage owners
- Getting employees interested in using the system
- Understanding IRS rules regarding employee benefits as it relates to workplace charging
- Evaluating future infrastructure needs during the initial installation
- Pricing of electricity provided at the worksite to employees

Case Study: At Google's Mountain View, CA, headquarters you'll find perhaps the world's largest workplace charging program. Google's parking lot features Level 2 charging stations managed by the ChargePoint Network as well as Level 1 charging spots. The charging stations are used by employees and by the company's growing car sharing program for their employees called GFleet. Google has a goal to make 5 percent of its campus parking EV-ready. Google does not charge its employees or guests to use these charging stations. [Learn more.](#)

- Understanding the federal grant process for the purchase and installation of EV charging stations – how to apply, what terminology to use?
- Apportioning charging spaces between employees and the public, and understanding the conditions when public access is required.

WHO OFFERS WORKPLACE CHARGING?



Recommended Actions: Successful efforts to establish a workplace charging opportunity for PEV owners depend on the employee, employer, and/or building owner being fully informed about the challenges and benefits. Local governments can play a key role in helping share information about workplace charging with interested employers and helping guide them through the permitting process.

- **Share Information with Interested Employers about Installation Guidelines.** The following information can be shared with employers in your community:
 - Determine recharging site(s) at your business
 - Closer to existing electric utility equipment is cheaper, adding new circuits and conduit can increase capital costs significantly
 - 40A branch circuit: \$10-\$11/linear ft
 - 200A feeder circuit: \$17 – \$28/linear ft
 - Concrete patch: \$14 - \$15/square ft
 - Asphalt patch: \$10-\$11/square ft
 - Review traffic, pedestrian flow, parking requirements, and applicable ADA compliance issues
 - Determine additional retrofit needs, including landscaping
 - It is strongly advised to install extra conduit to allow for future expansion during your initial installation – this will save future trenching costs
 - Estimate the electrical load at site(s)
 - Determine whether to use Level 1 or 2 charging
 - Obtain charger requirements from vehicle and charger suppliers
 - Determine the appropriate number of EVSE units
 - Consider purchasing a Load Management System that automatically sequences multiple EVSE or chargers without human intervention (It is estimated that costs for a complete

More Info: If you are a business that wants to offer your customers or your employees the benefit of charging, please check out the Plug-In Vehicle Collaborative resources for [businesses](#).

- system could range from \$5,000 to \$13,000 depending on the number and charge.)
- Estimates should include the number of employee vehicles to be added over the next three to five years, with special attention to the availability of federal and state incentives and changing technologies.
 - Contact EVSE suppliers
 - Confirm charging needs, types, and costs
 - Level 2 EVSE is most common – average install cost \$2,000 to \$3,000 without trenching or service upgrades
 - Identify any other special considerations for the specific equipment
 - Contact Utility
 - Assess existing electricity supply - is it adequate?
 - If no, determine necessary electrical service upgrades
 - Consider installing extra circuits and additional electrical capacity during initial upgrade to minimize future costs
 - Sub-panel upgrade (200A, 120/240 VAC single phase): ~\$1,900.00
 - Review metering requirements and elective options
 - Time-of-Use meter, demand response meter (can add costs)
 - Determine the impacts of rates on choosing charging times and frequencies
 - Contact pertinent permitting agencies and obtain all pertinent building and use permits.
 - Identify special local fire, construction, environmental, or building requirements
 - Obtain all applications
 - Determine additional permitting costs
 - Determine site plan requirements
 - Hire the prime contractor and verify contractor subcontractor credentials.
 - Local governments should help employers to easily identify any special local fire, construction, environmental, or building requirements that may be needed.
 - Local governments should provide an easy-to-fill out application for workplace permitting.

Featured Resource: The California Plug-In Electric Vehicle Collaborative is currently working on a Workplace Charging Guidelines publication which will be available for use in summer 2013. The Guidelines will also include workplace charging decision-making guides. Once completed, this resource will be posted to the [DriveClean](#) website.

SECTION 7: BUILDING CODES

This section focuses on building code requirements for the installation of residential and nonresidential electric vehicle charging stations (EVSE) in the San Joaquin Valley. The first part leverages results of the building code section of the San Joaquin Valley regional PEV readiness survey to identify policy gaps and areas of improvement. This part also highlights the variations in the length of time for building codes to be adopted into local municipal codes throughout the region. The next part provides a summary of the actions taken to date to address barriers to PEV deployment with respect to building codes in the San Joaquin Valley. The final part provides suggested recommendations regarding PEV-friendly building code policies for jurisdictions throughout the San Joaquin Valley.

Policy Gaps and Areas of Improvement: Building Codes

Jurisdictional representation in the building code section of the PEV readiness survey was much lower than

compared to the previous sections. Thirteen jurisdictions in the San Joaquin Valley region completed the building code survey. This is only 20% of the 64 cities and counties that were included in the survey. Despite the low participation rate, based on the results in this section, none of the jurisdictions responding has adopted building code requirements for EVSE installations, nor does any jurisdiction have unique EVSE building code requirements for new construction and existing buildings. Furthermore, over 63% of the jurisdictions responded that their agency requires further information to create building code requirements for EVSE. The following table highlights the results.

Participating Jurisdictions in the San Joaquin Valley: **Tracy, Visalia, Fresno, Tulare, Lodi, Kingsburg, Orange Cove, Sanger, McFarland, Newman, Modesto, Turlock** and the **County of San Joaquin**

Note: The **City of Visalia** had three and the **City of Tulare** had two individuals provide separate responses for their

Assessing Building Code Requirements for EVSE

Percent*	Agency Assessment
0%	Agency has already adopted requirements for EVSE that we feel would be a best practice example for the state of California
13%	Agency is in the process of adopting requirements for EVSE (Tracy, Sanger)
13%	Agency is looking at other agencies' requirements for EVSE to determine what is best for their jurisdiction (Tulare, County of San Joaquin)
19%	Agency requires further information to determine requirements for EVSE (Visalia, Fresno, Lodi)
19%	Agency has only started to consider how to adapt requirements for EVSE (Visalia, Turlock)
38%	Agency has not started to look at how to adapt requirements for EVSE (Tulare, Kingsburg, Orange Cove, McFarland, Newman, Modesto)

*All percentages are rounded to the nearest whole number; as a result, the total percentage may not equal 100%

jurisdiction, all were credited. This information is based on surveys conducted in 2012, some cities may have begun working on PEV readiness since the survey was implemented but this will not be reflected in the section below.

All jurisdictions stated that it would be helpful to have other city or agency building code best practices available for reference. This highlights the need for best practices to be distributed throughout the region. **San Joaquin County** indicated that they are in the process of developing their requirements using internal staff and have consulted with other agencies. Furthermore, the **City of Turlock** reported that they have looked at the City of San Jose’s EVSE requirements for guidance for creating their own codes for EVSE.²¹

Regional Variation in Timeline and Administrative Processes for Adopting New Building Code Requirements

The formal decision-making process for adopting EVSE-friendly building codes into local municipal codes and associated timelines needs to be clearly understood for each jurisdiction. This is evident in the survey results where the majority of agencies were unsure of the timetable for the adoption of new building code requirements. However, five of the jurisdictions polled provided more detail on the timelines and processes necessary for updating these codes. The following paragraph provides a brief summary of their responses.

The **City of McFarland** stated that any new building codes would take six months from conception to adoption. First, the staff needs to create a report on the specific code language and include research materials that address specific issues. In this case, CCSE can support this effort by providing PEV and EVSE educational materials to city staff. From there, the staff report is sent to the city attorney for review, and then it is sent to the planning commission for a final vote. On the other hand, the **City of Orange Cove** indicated that no required building codes for EVSE would be adopted any time soon, unless EVSE specific codes are required by the state. Cities such as **Newman** and **Turlock** specified any adoption to take two to three months. Meanwhile, the **City of Modesto** stated that for any formal

change in the municipal code, including EVSE building code requirements, would take up to a year. However, staff from Modesto also stated that city policy changes that include EVSE code requirements would be implemented immediately.

Addressing Policy Gaps and Areas for Improvement

The following section describes the regional adoption of California Green Building Codes (CALGreen) that require designated parking for low-emission vehicles. In addition, the section discusses the EVSE supply and prewiring requirements that are required for single-family residences in a housing subdivision located in the **City of Tracy**.

Adoption of CALGreen Building Codes

California has existing building code provisions that regulate all construction projects throughout the state. Within these provisions the state has also established CalGreen, a more stringent building code that requires new buildings and renovations in California meet certain sustainability and energy efficient standards through mandatory and voluntary measures.²² A few of the jurisdictions surveyed have adopted only the basic voluntary CALGreen building codes requirements that designate 10% parking be set aside for all alternative fuel and low-emission vehicles in public spaces. These include the cities of **Orange Cove**, **Modesto**, and **Turlock**.

In addition, CALGreen includes advanced voluntary provisions to encourage local communities to take further action to green their buildings and thereby reduce greenhouse gas emissions. These voluntary provisions include “prewiring” building codes specific for EVSE. None of the jurisdictions in the San Joaquin Valley have adopted these specific EVSE codes. The **City of Visalia** and the **City of Fresno**, however, reported that they have adopted the 2010 National Electrical Code Article 625, which covers safety requirements for PEV charging stations.²³

²¹ In the *City of San Jose’s Green Vision 2011 Annual Report*, it states that the in the Envision San Jose 2040 General Plan was achieved with the council adoption of an ordinance to revise the zoning code to align better with the Envision General Plan, with key changes including allowing higher density development in a multifamily residential district, installation of electric vehicle charging stations and other sustainability measures. http://www3.sanjoseca.gov/clerk/Agenda/20120320/20120320_0303att.pdf

²² <http://www.califiving.com/title24-energy/index.php/green-building-programs/9-what-is-calgreen->

²³ Underwriters Laboratory summary of EVSE Safety Requirements <http://www.ul.com/global/documents/corporate/aboutul/publications/newsletters/electricalconnections/November10.pdf>

City of Tracy Mountain House Plan Includes EVSE 240V Requirement in New Homes

The Mountain House community is located five miles from the City of Tracy and is an exurb of the San Francisco Bay Area. Located next to major transportation corridors, and 20 minutes from the Easy Bay, the Mountain House Community Services District (MHCSD) uses “a variety of innovative technologies to provide environmentally friendly services and amenities,” as quoted on their website.

The Mountain House Master Plan includes a chapter on air quality compliance and transportation-demand management policies and implementation measures that are to be incorporated into the community’s building systems, construction practices and transportation management programs. A copy of the chapter is located in the building codes section of the Appendix.

This chapter (10.6 HOUSES AND BUILDINGS) includes the objective to reduce air emissions from Mountain House residences, with the following EVSE building code required as a condition of tentative map approval:

240-volt electrical outlets for recharging electric automobiles shall be provided in each garage. Electrical outlets shall be located on the outside of single-family homes to accommodate electric lawn maintenance equipment and electric barbecues.

The 240-volt electrical outlet will provide sufficient “prewiring” capacity to support a Level 2 residential EVSE in a garage. Furthermore, the requirement to have electrical outlets located on the outside of single-family homes will provide appropriate infrastructure for charging PEVs using 120-volt outlets.

Recommendations for Regional Next Steps

Based on feedback from the PEV readiness survey, we have identified that jurisdictions in the region do not have specific building codes for EVSE. However, jurisdictions across the region are interested in receiving information on how other agencies have developed building codes. In addition, there is uncertainty regarding the process each jurisdiction has to update building codes.

Through the lessons learned in the San Joaquin Valley and a review of national and state best practices, we have

identified the following four recommendations for the San Joaquin Valley. These recommendations focus on understanding building code processes and potential barriers as well as prewiring for new construction. The final recommendation establishes a strategy that utilizes the San Joaquin Valley Plug-in Electric Vehicle Coordinating Council (SJV PEVCC) to review and prioritize national and state best practices and identify how these will be implemented in the region. Furthermore, the recommendations in this section are organized into actions jurisdictions should take in the near to long term. A complete list of best practices reviewed in preparation for this document is in the building code section of the Appendix.

We recognize that many of the cities in the San Joaquin Valley do not have the resources to update building codes. As a result, we have provided specific language that can be directly inserted into existing municipal codes to assist local governments and streamline this process. In addition, CCSE is working with several stakeholders on the state level to establish similar EVSE policies throughout California, which will provide further guidance for local governments.

Understanding Building Code Timelines and Processes

Recommendation: Leverage SJV PEVCC members and additional local government stakeholders to prepare a building code review to gain a better understanding of potential barriers to PEV deployment. As part of this review, develop a clear outline of the processes, decision-makers and timelines associated with updating building codes in each of the 64 jurisdictions across the San Joaquin Valley.

Benefits: Having a better understanding of building code processes and potential barriers will help in developing proposed solutions. This review will assist in making difficult decisions, such as whether it is a better strategy to modify existing building codes or adopt new building codes in each jurisdiction.

Modify Existing Use/Discretionary Permitting Processes to Include EVSE

Recommendation: As a near-term goal, incorporate standardized project condition language that defines where or how to incorporate EVSE in project design and planning processes. Installation of EVSE should be identified as a greenhouse gas mitigation strategy per the

California Environmental Quality Act (CEQA). Leverage existing major use and discretionary permitting processes in the region to accomplish this by utilizing the following recommended language:

For NONRESIDENTIAL AND RESIDENTIAL PROJECTS, *include a space dedicated in the electrical panel for a circuit for plug-in electric vehicle charging; and a label stating "PEV CAPABLE" shall be posted in a conspicuous place at the service panel or subpanel and next to the raceway termination point.*²⁴

For NONRESIDENTIAL PROJECTS, *ensure each parking space required in the table below, provide panel capacity and dedicated conduit for one 208/240 V 40 amp circuit terminating within 5 feet of the midline of each parking space.*²⁵

Total Number of Parking Spaces	Number of Required PEV Spaces
1 – 50	1
51 – 200	2
201 and over	4

For RESIDENTIAL PROJECTS (e.g. planned subdivisions), *provide a minimum number of 208/240 V 40 amp, grounded AC outlet(s), in both single-family and multifamily unit dwellings. The outlet(s) shall be located in the parking area and have a minimum of the following:*

- **Single-Family Dwellings:** 1 per unit
- **Multifamily Unit Dwellings:** 5% of parking capacity

Benefits: Incorporating this language into the conditions associated with the use/discretionary permitting processes allows municipalities to promote EVSE through existing methods. In addition, this language provides another option for developers to meet the additional requirements such as those under the CEQA. Further, prewiring during the construction of a building significantly reduces the cost associated with EVSE installation.

²⁴ Language adapted from County of San Diego and CALGreen Voluntary Building Code A4.106.6.1.1

²⁵ Language adapted from CALGreen Voluntary Building Code A5.106.5.3.1

²⁶ Language adapted from County of San Diego and CALGreen Voluntary Building Code A4.106.6.1.1

²⁷ Language adapted from CALGreen Voluntary Building Code A5.106.5.3.1

Adopt/Update Prewiring for EVSE in Residential and Nonresidential New Construction

Recommendation: As a long-term goal, update current building codes in each jurisdiction across the San Joaquin Valley with the following language modified from the current voluntary CALGreen building code language (A5.106.5.3.1) as mandatory in ALL new nonresidential and residential construction.

Note: This is the same language as the previous recommendation but would update the building code and apply to all new construction; thus is a longer-term goal for the region.

For NONRESIDENTIAL AND RESIDENTIAL PROJECTS, *include a space dedicated in the electrical panel for a circuit for plug-in electric vehicle charging; and a label stating "PEV CAPABLE" shall be posted in a conspicuous place at the service panel or subpanel and next to the raceway termination point.*²⁶

For NONRESIDENTIAL PROJECTS, *ensure each parking space required in the table below, provide panel capacity and dedicated conduit for one 208/240 V 40 amp circuit terminating within 5 feet of the midline of each parking space.*²⁷

Total Number of Parking Spaces	Number of Required PEV Spaces
1 – 50	1
51 – 200	2
201 and over	4

For RESIDENTIAL PROJECTS (e.g. planned subdivisions), *provide a minimum number of 208/240V 40 amp, grounded AC outlet(s), in both single-family and multifamily unit dwellings. The outlet(s) shall be located in the parking area and have a minimum of the following:*

- **Single-Family Dwellings:** 1 per unit
- **Multifamily Unit Dwellings:** 5% of parking capacity

Benefits: Uses an existing policy mechanism already endorsed by the State of California and the City of Los Angeles. Prewiring during the construction of a building significantly reduces the cost associated with the installation of EVSE.

Utilize the SJV PEV Coordinating Council (PEVCC) to Identify, Prioritize and Implement Building Code Best Practices to Regional Stakeholders.

Recommendation: Leverage SJV PEVCC members and the list of existing best practices collected by CCSE to identify and prioritize additional EVSE building code best practices that will assist in promoting PEVs through policies and processes that are relevant to the San Joaquin Valley. Once these best practices have been prioritized, work with SJV PEVCC members to disseminate and develop appropriate implementation plans on either the regional or the jurisdictional level.

Benefits: Working with SJV PEVCC members will help to ensure regional support for building code best practices and thereby greater likelihood of implementation. In addition, leveraging the members of SJV PEVCC's extensive network of regional contacts allows for a more efficient way to direct best practices and other resources to municipalities with the greatest needs.

Progress on Regional PEV Barriers

Barriers/Solutions Being Addressed by the SJVPEVCC		
Barriers in Order of Priority	Progress on Solutions – Preparation of Guidance Materials	Action Items
<p>1. Lack of Public Knowledge of PEV and EVSE Municipal outreach to Local Residents and Businesses</p>	<ul style="list-style-type: none"> • Barrier identified in SJVPEV Readiness Plan (pg. 43 – 47) • During the February 7, 2013 meeting, this barrier was voted as the highest priority in the Valley. • During the March 7, 2013 meeting, the coordinating council (CC) provided recommendations for education and outreach avenues. The CC requested a presentation be created and distributed to the group • Draft presentations provided to the CC for review during April 4, 2013 meeting as well as the compiled education and outreach recommendations 	<ul style="list-style-type: none"> • Make presentation revisions requested by the CC and make the requested updates to the education and outreach recommendations
<p>2. Zoning and Parking Rules Lack of standard regional ordinances that facilitate the installation and access to publicly available charging infrastructure.</p>	<ul style="list-style-type: none"> • Barrier identified in SJVPEV Readiness Plan (pg. 19 – 24) • During the February 7, 2013 meeting, this barrier was voted as the second highest priority in the Valley • During the March 7, 2013 meeting, the CC agreed that zoning and parking rules are important and next steps need to be taken however the PEVCC highlighted the importance of educating local officials and the public before lobbying for ordinance changes. 	<ul style="list-style-type: none"> • To be discussed again at a future meeting
<p>3. Training and Education for Municipal Staff and Electrical Contractors Lack of knowledge about PEVs and EVSE</p>	<ul style="list-style-type: none"> • Barrier identified in SJVPEV Readiness Plan (pg. 39 – 42) • During the February 7, 2013 meeting, this barrier was voted as the third highest priority in the Valley • During the March 7, 2013 meeting, the coordinating council (CC) provided recommendations for training and education avenues. • The compiled education and outreach recommendations were provided to the CC for review during the April 4, 2013 meeting. 	<ul style="list-style-type: none"> • To be discussed again at a future meeting

Progress on Regional PEV Barriers

Barriers/Solutions Being Addressed by the SJVPEVCC		
<p>4. Permitting/Inspection Lack of streamlined permitting and inspection processes and inconsistent (high) costs across jurisdictions.</p>	<ul style="list-style-type: none"> Barrier identified in San Joaquin Valley Plug-In Electric Vehicle (SJVPEV) Readiness Plan (pg. 25 - 32) Residential permitting/inspection guide presented to the CC for review during the April 4, 2013 meeting. The CC agreed that non-residential permitting/inspection process is a higher priority 	<ul style="list-style-type: none"> Staff to prepare a non-residential permitting/inspection fact sheet
<p>5. On Peak Charging – TOU Utility Rates and Grid Impacts A. Need to discourage charging when electricity supplies are in high demand and cost more. Support of time of use (TOU) pricing. B. High demand charges that impact EVSE host utility bills. Expensive metering options to access TOU rates.</p>	<ul style="list-style-type: none"> SCE & City of Lodi Electric Utility gave presentations to the CC during the April 4, 2013 meeting 	<ul style="list-style-type: none"> Post SCE presentation on Plug-in & Get Ready website
<p>6. Workplace Charging Lack of understanding regarding benefits and approaches to understanding workplace charging.</p>	<ul style="list-style-type: none"> To be updated as project develops 	<ul style="list-style-type: none"> To be discussed at the May 2, 2013 meeting
<p>7. Building Codes Lack of standard building codes that accommodate charging infrastructure or dedicate circuits for charging infrastructure in new construction and major renovations.</p>	<ul style="list-style-type: none"> Barrier identified in SJVPEV Readiness Plan (pg. 33 – 38) To be updated as project develops 	<ul style="list-style-type: none"> To be discussed at the May 2, 2013 meeting

Barriers/Solutions Being Addressed by the SJVPEVCC		
Barriers in Order of Priority	Progress on Solutions – Preparation of Guidance Materials	Action Items
<p>8. EVSE at Multi Unit Dwellings (MUDs) Consumer lack of knowledge regarding EVSE installation in these buildings. Need to educate and work with HOAs to identify and find solutions to unique building challenges.</p>	<ul style="list-style-type: none"> To be updated as project develops 	<ul style="list-style-type: none"> N/A
<p>9. Regional Planning for Public EVSE Siting Regional land use and transportation plans served as a basis to identify optimal public EVSE sites.</p>	<ul style="list-style-type: none"> To be updated as project develops 	<ul style="list-style-type: none"> N/A
<p>10. Public Agency EVSE Installations Providing local jurisdictions with knowledge of PEV market development. Need to identify barriers and find solutions.</p>	<ul style="list-style-type: none"> To be updated as project develops 	<ul style="list-style-type: none"> N/A
<p>11. Promotion of PEVs in Government Fleets Procurement justification needed for local public fleets. Need to describe PEV benefits, including role in reducing municipal GHGs for Climate Action Plans.</p>	<ul style="list-style-type: none"> To be updated as project develops 	<ul style="list-style-type: none"> N/A

Barriers/Solutions Being Addressed by the SJVPEVCC		
Barriers in Order of Priority	Progress on Solutions – Preparation of Guidance Materials	Action Items
<p>12. Leveraging Renewable Energy in PEV Charging Educate on the use of renewables in order to provide the fuel to power an EV</p>	<ul style="list-style-type: none"> To be updated as project develops 	<ul style="list-style-type: none"> N/A

Additional Barriers Identified at February 7, 2013 Meeting

<p>13. Lack of Developed Policy, Liability and Management Documents Creating guidelines for municipal management regarding public and workplace operations and maintenance relating to EVSEs.</p>	<ul style="list-style-type: none"> Barrier was identified during the February 7, 2013 meeting 	<ul style="list-style-type: none"> N/A
<p>14. PEV and EVSE Incentives In the early stages of development, incentive programs should be made available and the necessary outreach must be conducted to notify the public about the existence of these programs</p>	<ul style="list-style-type: none"> Barrier was identified during the February 7, 2013 meeting 	<ul style="list-style-type: none"> N/A
<p>15. PEV Friendly Policies in RTP Identify and/or create PEV friendly policies that can be implemented by all regions</p>	<ul style="list-style-type: none"> Barrier was identified during the February 7, 2013 meeting 	<ul style="list-style-type: none"> N/A

Barriers/Solutions Being Addressed by the SJVPEVCC		
Barriers in Order of Priority	Progress on Solutions – Preparation of Guidance Materials	Action Items
<p>16. Training and Education for Car Dealerships Car dealerships have direct contact with new car buyers so it is important that they are knowledgeable and trained about EVs</p>	<ul style="list-style-type: none"> Barrier was identified during the February 7, 2013 meeting 	<ul style="list-style-type: none"> N/A
<p>17. Interoperability Create the ability of diverse EVSE networks to work together</p>	<ul style="list-style-type: none"> Barrier was identified during the February 7, 2013 meeting 	<ul style="list-style-type: none"> N/A