

APPENDIX

San Joaquin Valley

PLUG-IN ELECTRIC VEHICLE (PEV) READINESS PLAN

Phase One Regional PEV Assessment

APPENDIX

Plug-in Electric Vehicle (PEV) Readiness Planning Best Practices

Compiled by the California Center for Sustainable Energy (CCSE)

Zoning and Parking

Throughout California, the US and Canada, a number of cities have implemented electric vehicle supply equipment (EVSE) installation zoning ordinances in an effort to promote the deployment of PEVs and charging infrastructure. The following section provides a brief description of policies and mandates that other cities and states have implemented in regards to parking capacity regulations for PEVs and other alternative-fuel vehicles, parking enforcement procedures for spaces with electric vehicle infrastructure and accessibility standards for PEV parking.

Best Practices

Parking Capacity

Los Angeles County

Designated parking 8% for any combination of low emitting, fuel-efficient, and carpool/van pool vehicles. The parking provider must make available appropriate marking or signs.

California Green Building Standards Code

A5.106.6 Parking Capacity. Design parking capacity to meet but not exceed minimum local zoning requirements.

A5.106.6.1 Reduce parking capacity. With the approval of the enforcement authority, employ strategies to reduce on-site parking area by

- 1) Use of on street parking or compact spaces, illustrated on the site plan or
- 2) Implementation and documentation of programs that encourage occupants to carpool ride share or use alternate transportation.

California Green Building Standards Code

Nonresidential Mandatory Measures

5.106.5.2 Designated parking. Provide designated parking for any combination of low emitting, fuel-efficient and carpool/van pool vehicles, including PEVs for up to 10% of total designated parking spaces.

5.106.5.2.1 Parking stall marking. Paint, in the paint used for stall striping, the following characters such that the lower edge of the last word aligns with the end of the stall striping and is visible beneath a parked vehicle.

City of Vancouver, British Columbia, Canada

13.2.1. Electric Vehicle Charging

13.2.1.1. Parking Stalls

- 1) Each one of the 20% of the parking stalls that are for use by owners or occupiers of dwelling units in a multi-family building that includes three or more dwelling units, or in the multi-family component of a mixed use building that includes three or more dwelling units must include a receptacle to accommodate use by electric vehicle charging equipment.

State of Hawaii

Hawaii State Legislature passed Act 156, the "Hawaii State Plug-in Electric Vehicle Parking Requirement."

The law states:

All public, private, and government parking facilities that are available for use by the general public and that include at least one hundred parking spaces must designate at least 1% of the spaces specifically for EVs by December 31, 2011. The spaces designated for EVs will continue to increase by 1% for each additional 5,000 registered EVs until the percentage reaches 10%.¹

This law was revised in 2012 to Act 089 or SB 2747 to require that:

Places of public accommodation with at least 100 parking spaces available for use by the general public designate at least one space for the exclusive use of EVs, and are equipped with an EV charging system by July 1, 2012.²

Parking Enforcement

City of Santa Monica

3.12.835 Electric vehicle parking: The Director of Planning and Community Development, or his or her designee, is authorized to designate parking spaces or stalls in an off-street parking facility owned and operated by the City of Santa Monica or the Parking Authority of the City of Santa Monica for the exclusive purpose of charging and parking a vehicle that is connected for electric charging purposes. (Adopted at City Council Meeting 07/24/2012)³

Accessibility

The City of San Diego

Technical Policy 11B-1: Accessibility to Electric Vehicle Charging Stations: The City of San Diego requires public accommodations and services be made accessible to persons with disabilities. Technical Policy 11B-1 requires that a ratio of parking spaces with EVSE in existing or new construction be accessible. A full detail of the specifications for disabled accessible EV charging stations and requirements can be found below.

County of Sonoma

Electric Vehicle Charging Station Program and Installation Guidelines⁴

Existing Parking Facilities

The first charger may also be installed at an existing accessible parking space that is also part of the required number of accessible stalls for that parking lot; provided signage clarifies that this stall can be used for accessible parking and/or electric vehicle charging by vehicles displaying a DP placard or license plate.

New Buildings, Site Construction or Redevelopment

When EVSE are planned as part of a new building, a redevelopment or major site reconstruction at least one EVSE in ten (10) shall comply with the accessibility requirements in the C.B.C. Title 24 and A.D.A. The one in ten ratio is not an A.D.A. requirement, but one developed by the County of Sonoma "Permit and Resource Management Department." When equipped with card readers, the C.B.C. requires the first two EVSE to be accessible.

Signage for PEV Parking

U.S. Department of Transportation Federal Highway Administration (FHWA)

EV Charging General Service Symbol Sign: The United States FHWA adopted the General Service symbol at the request of the Oregon and Washington Departments of Transportation. The PEV Collaborative supports the use of standardized signs to minimize confusion and provide the greatest ease of use for PEV drivers. To this end, the Collaborative recommends that Cal Trans adopt the use of the candidate signs currently being tested in Oregon and Washington, and that local jurisdictions request the use of those signs during the test period with the expectation that they will ultimately be approved at the federal level and become the uniform standard nationally.

¹ Alternative Fuels & Advanced Vehicles Data Center. (2011 June 15). Hawaii Incentives and Laws for EVs. Retrieved from <http://www.afdc.energy.gov/afdc/laws/laws/HI/tech/3270>

² Ibid

³ <http://www.smgov.net/departments/council/agendas/2012/20120724/s2012072407-A-1.htm>

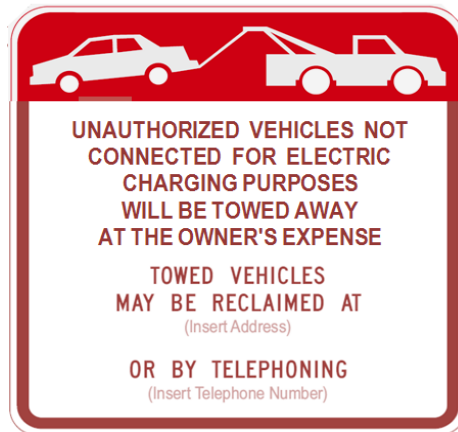
⁴ http://www.sonoma-county.org/prmd/docs/misc/ev_prog_guidelines.pdf

Proposal to the California Manual on Uniform Traffic Control Devices

The California Department of Transportation, Sonoma County Department of General Services, and, the California Plug-In Electric Vehicle Collaborative requested that the following 5 new signs, 2 updated sign codes for existing signs; and, optional pavement markings be considered for the *California Manual on Uniform Traffic Control Devices, 2012 edition (CA MUTCD)* for Electric Vehicle Charging Station locations. Examples of the new signs and updates are included below:

Regulatory Signs

PEV Tow-Away Symbol: This sign indicates that vehicles will be towed if not utilizing the available charging station (per CVC 21511). This sign will include the tow-away symbol with the following language "UNAUTHORIZED VEHICLES NOT CONNECTED FOR ELECTRIC CHARGING PURPOSES WILL BE TOWED AWAY AT THE OWNER'S EXPENSE . . ." with red text on a white background and be 24" x 24".



No Parking Symbol: This sign indicates no parking unless for charging a PEV. This will include the following language "EXCEPT FOR ELECTRIC VEHICLE CHARGING" with red text on a white background and be 12" x 18".



Permissive Charging Symbol: This sign indicates the time that charging will be available and will include the following language "[Electric Vehicle] __ HOUR CHARGING - __AM TO __PM" with green text on a white background and be 12" x 18".

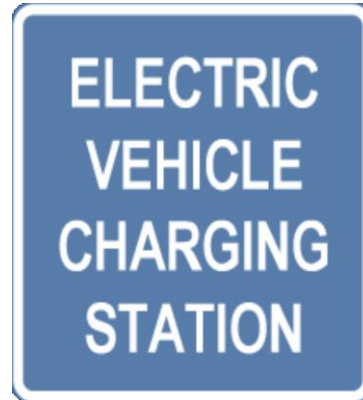


General Directional

Electric Vehicle Charging Station symbol and word message signs: These signs will assist in directing PEV drivers to charging stations from the freeway, local streets and at charging locations. The sign includes the EV charging station symbol (shown) or the following text "ELECTRIC VEHICLE CHARGING STATION" with white text on blue background. Sign sizes should be 30" x 30" for freeway or major arterial highway application, 24" x 24" for local streets, and 18" x 18" off-street parking application.



Electric Vehicle Charging Station
Symbol Sign

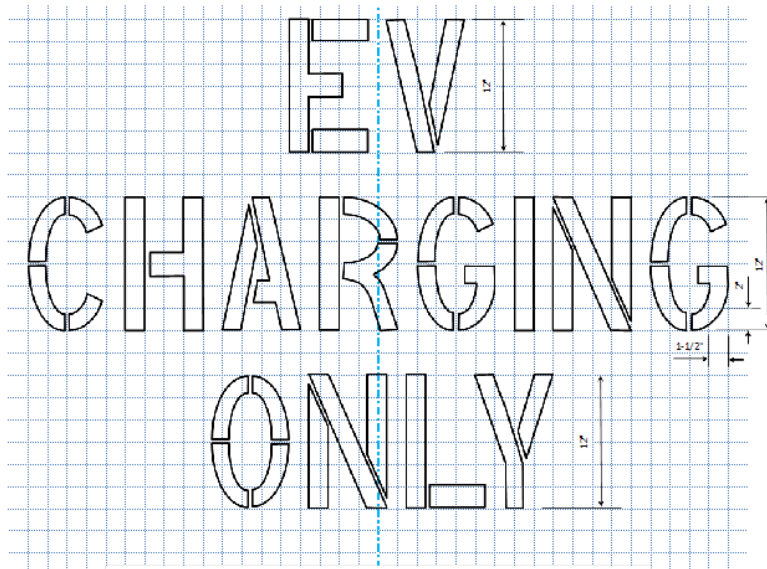


ELECTRIC VEHICLE CHARGING STATION
Word Message Sign

FAST Electric Vehicle Charging Station: This plaque indicates the charging station is capable of a charge in less than one hour (faster charge compared to a Level 2 station). The sign will include the language "FAST" in white text on a blue background and be 24" x 6" or 30" x 8". This plaque is for use only with the Electric Vehicle Charging station symbol and word message.



Optional EV charging Pavement Marking: This pavement marking will indicate a parking space is for EV charging only for on- and off-street electric vehicle charging station stalls. The pavement marking will include the following language "EV CHARGING ONLY" in white text



54" wide, by 44" deep optional
EV CHARGING ONLY Pavement Marking detail

City of San Diego Technical Policy 11B-1 Specifications and Requirements:

New Construction: The accessible EV charging station(s) must be located in close proximity (DSA recommends within 200 ft.) to a major facility, public way or a major path of travel on the site. This policy is in conjunction with new buildings or parking facilities such as surface parking lots or parking garages.

Existing Sites: An accessible path of travel connecting the accessible EV charging station to a major facility, public way or major path of travel on the site is required to the extent that the cost of providing such path does not exceed 20% of the cost of the EV equipment and installation of all EV charging stations at the site over a three-year period.

Number of Accessible EV Charging Stations Required: When the number of EV charging stations proposed exceeds 25, they shall be provided at a rate of one accessible EV charging station for every 25 stations proposed. Not more than a total of 4 accessible EV charging stations are required on the same site.

Identification for Accessible EV Charging Stations: To identify an accessible EV charging station an informational sign must be posted which reads, "Parking for EV Charging Only; This Space Designed for Disabled Access; Use Last." When an EV charging station is placed in conjunction with an accessible parking space this sign shall be omitted.

Dimensions for Accessible EV Charging Stations: The charging equipment, and when applicable card readers, must meet all applicable reach range provisions of CBC Section 1118B and Ch. 11C for a 30 by 48 inch wheelchair space used for side or front approach. (ii) A clear path of travel measuring not less than 36 inches in clear width shall be provided to access the charging equipment.

The EV charging station shall include a space to place the electric vehicle that is not less than 9 foot wide by 18 feet deep to accommodate the vehicle. The space shall also include a 5 ft. wide access aisle that extends the full depth of the vehicular space and located on the passenger side of the vehicle. Alternatively, the access aisle can be located between an accessible parking space and an accessible EV charging station. See figures 1, 2 and 3 for possible configurations.

Figure 1. Diagram of an EV charging station in an ADA accessible spot and a regular space.

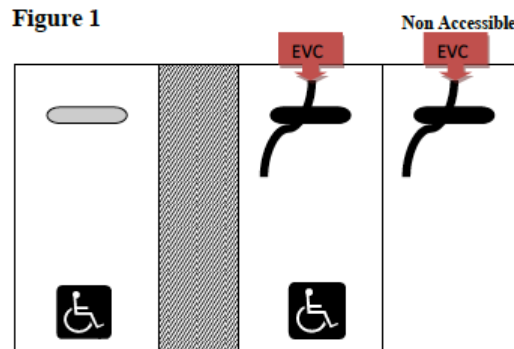


Figure 2. Diagram of an EV charging station installed in the ADA accessible spot, but with charging access in the ADA space and regular space.

Figure 2

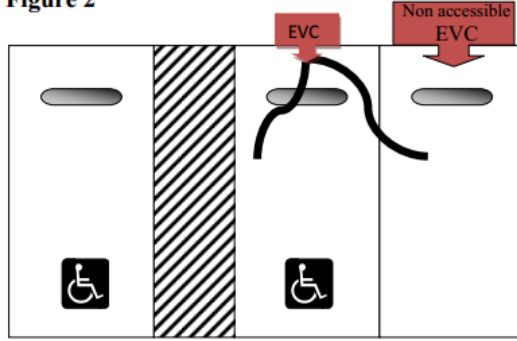
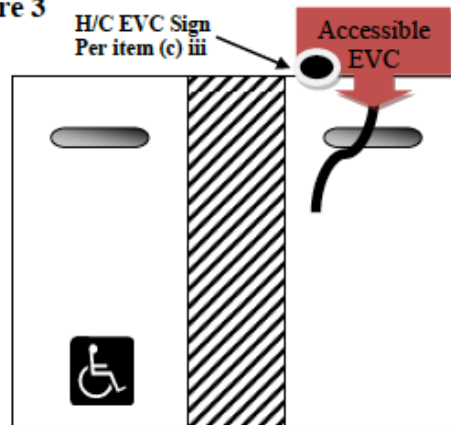


Figure 3. Diagram of one accessible EV charging station that is not designated as an ADA spot but designed to accommodate ADA requirements. In this case there needs to be signage that states "Parking for EV Charging Only; This Space Designed for Disabled Access; Use Last."

Figure 3



Issue Date: April 19, 2012

<http://www.sandiego.gov/development-services/industry/pdf/tpolicy11b1.pdf>

City of San Diego Development Services, Division of Building, Construction & Safety

Streamlining Permitting and Inspection

Throughout California and the US, a number of cities have implemented EVSE permitting and inspection requirements in an effort to streamline the installation process of EVSE. This section was designed to account for the entire permitting and inspection process and as a result, it is considerably longer than compared to the other sections. The following section provides a brief description of permitting and EVSE installation guidelines prepared by the **City of Turlock** and survey results for each of the jurisdictions that participated in this section.

Best Practices

The permitting requirements fact sheet for residential EVSE installations designed by the City of Turlock is included below:



BUILDING & SAFETY DIVISION

156 S Broadway, Suite 130

Turlock, CA 95380

Phone (209)668-5560 Fax (209)668-5107

Electric Vehicle Charging System in Single Family Residence Plan Review and Permitting Requirements.

There are two levels of electric vehicle (EV) charging system for single family residence (one and two family dwellings) installations: Level 1 (120 VAC, 15/20 A) and Level 2 (240 VAC, 40A). An electrical permit is required for all EV charging systems installed in a single family residence (SFR). The installation shall comply with article 625 of the current edition of the California Electrical Code. A mechanical permit is required when the manufacturer's installation guidelines require mechanical ventilation.

THE MANUFACTURER'S INSTALLATION INSTRUCTIONS/GUIDELINES ARE REQUIRED TO BE SUBMITTED WITH EACH APPLICATION.

ELECTRICAL PERMITS:

Electrical plans are required. Load calculations per California Electrical Code, Article 220 are required if the existing service panel is rated less than 200 amps. Electrical panel upgrades and electrical wiring shall be in conformance with the current edition of the California Electrical Code (CEC).

The following information is required on the plans:

- Specify the type of EV system: Level 1 or Level 2. Provide the UL listing number, or the listing number of another nationally recognized testing laboratory, in compliance with UL 2202: "Standard for Electric Vehicle Charging System Equipment".
- Specify the panel rating of the existing electrical service (e.g. 200 amp service) at the residence. Indicate the EV charging system load and circuit size.
- Specify the proposed location of the proposed EV charging system. EV charging system equipment shall be installed in accordance with the manufacturer's written guidelines and shall be suitable for its intended location (indoor/outdoor).

MECHANICAL PERMIT:

- When mechanical ventilation is required, mechanical plans are required to be submitted for review.
- Ventilation shall comply with the manufacturer's installation information and the current editions of the California Electrical code.

PEV Readiness Survey Results – Permitting and Inspection

The permitting and inspection section of the survey had fifteen participants. All percentages were always calculated by dividing by the total number of participants. Non-answers, or blank answers, were recorded as “no”. Answers were recorded during personal phone calls conducted by CCSE staff and an online survey sent to municipal staff in the San Joaquin Valley.

Permitting

How Jurisdictions Created Permit & Inspection Requirements for EVSE Installations

How EVSE Permit & Inspection Requirements Were Created	Jurisdiction
Developed requirements on own through staff	Fresno, Turlock
Consulted other agencies	-
Looked at other city or agency requirements	Turlock
Have not developed requirements for EVSE yet	Lemoore, Tracy, Tulare, Tulare, Patterson, Lodi, Kingsburg, Orange Cove, Sanger, McFarland, Newman, Modesto and the County of San Joaquin ¹

How Applicants Can Apply for a Permit by Jurisdiction*

Permit Application Methods	Jurisdiction
Online	Tracy, Sanger, Newman, Turlock
Over the phone	-
Over the counter	Tracy, Fresno, Tulare, Tulare, Lodi, Orange Cove, Sanger, McFarland, Newman, Modesto and Turlock and the County of San Joaquin
Mail in hard copy application	Lemoore, Tracy, Tulare, Tulare, Kingsburg
Other	Sanger – applicants can print out the permit application online, but must email or fax the completed application to the permitting office. Newman – applicants can fax their permit application to the permitting office.

*Jurisdictions may have more than one permitting method for applying for a permit for EVSE installations.

How Applicants Can Check the Status of a Permit by Jurisdiction*

Method to Check Status of Permit Application	Jurisdiction
Online	Tracy, Fresno, County of San Joaquin
Call the office	Lemoore, Tracy, Fresno, Tulare, Tulare, Patterson, Lodi, Kingsburg, Orange Cove, Sanger, McFarland, Newman, Modesto and Turlock and the County of San Joaquin
Informed by mail	Tracy, Tulare
Other	Orange Cove – applicants can email the office. McFarland – applicants can visit the office.

*Jurisdictions may have more than one method for checking the status of a permit for EVSE installations.

¹ County of San Joaquin stated that they currently use the standard building permit for EVSE installations

Costs of Permits by Type of EVSE Installation

Type of Installation	Permit Cost				
	<\$100	\$101-\$250	\$251-\$500	>\$501	Not Sure
Single Family Residence	Tulare, Tulare, Newman	Lemoore, Fresno, Patterson, Lodi, County of San Joaquin, Kingsburg, Modesto	-	Tracy, Orange Cove, Sanger	McFarland, Turlock
Commercial/Multi-Family Unit (12 respondents)	Tulare, Newman	Tulare, Lodi, County of San Joaquin, Kingsburg, Modesto	Fresno	Lemoore, Tracy, Patterson, Orange Cove, Sanger	McFarland, Turlock
Open Parking Lot (12 respondents)	Tulare, Tulare	Lemoore, Patterson, Lodi, County of San Joaquin, Kingsburg	Tracy, Fresno	McFarland, Modesto	Orange Cove, Sanger, Turlock
On-street Parking (9 respondents)	Lemoore, Tulare, Tulare	Tracy, Fresno, Patterson, Lodi, County of San Joaquin, Kingsburg	-	-	Orange Cove, Sanger, Turlock, McFarland, Newman, Modesto

The **City of Modesto** stated that on-street parking EVSE installations were not permitted.

Time to Issue Permits by Type of EVSE Installation

Type of Installation	Time to Issue Permit				
	Same Day	2-5 Days	6-10 Days	3-5 Weeks	>5 Weeks
Single-Family Residence	Modesto, Turlock	Newman, Sanger ²	Tracy, Fresno, Tulare, Tulare, Patterson, Lodi, County of San Joaquin, McFarland	Lemoore, Kingsburg, Orange Cove	-
Commercial/Multifamily Unit	Modesto	Turlock	Tracy, Fresno, Tulare, Tulare, Sanger ³	Lemoore, Patterson, Lodi, County of San Joaquin, McFarland, Newman	Kingsburg, Orange Cove
Open Parking Lot	-	Turlock	Tracy, Tulare, Tulare, Patterson, County of San Joaquin, Modesto	Lemoore, Fresno, Lodi, Kingsburg, Orange Cove, McFarland, Newman	Sanger
On-street Parking	-	-	Tracy, Tulare,	Lemoore,	Sanger,

² The permitting department advertises 3-5 weeks even though the actual time stated length is much shorter.

³ The permitting department advertises 3-5 weeks

			Tulare, Patterson, County of San Joaquin	Fresno, Lodi, Orange Cove	McFarland, Newman, Turlock
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The **City of Newman's** permitting department advertises 3-5 weeks for permit issuance for commercial and open parking EVSE installations, but technically, the time length is 10-15 days. The **City of Modesto** does not allow on-street EVSE installations.

Type of Permit by EVSE Installation*

Type of Installation	Type of Permit				
	Building	Electrical	Planning Entitlement	Building & Electrical	Other Type of Permit
Single-Family Residence	Tracy, Patterson, Lodi, McFarland, Turlock	Tracy, Lodi, Newman, Modesto	Lemoore, Tracy, Orange Cove	Lemoore, Tracy, Fresno, Tulare, County of San Joaquin, Kingsburg, Orange Cove, Sanger	Sanger (mechanical permit)
Commercial/Multifamily Unit	Tracy, Patterson, Lodi, Sanger	Tracy, Lodi, Modesto, Turlock	Lemoore, Tracy, Tulare, Patterson, Lodi, County of San Joaquin, Kingsburg, Orange Cove,	Lemoore, Fresno, Tulare, County of San Joaquin, Kingsburg, Orange Cove, Sanger, McFarland	Sanger (mechanical permit), Tulare (admin approval or planning commission)
Open Parking Lot	Patterson, Lodi, McFarland	Tulare, Modesto, Turlock	Lemoore, Tracy, Tulare, Patterson, Lodi, County of San Joaquin, Kingsburg	Lemoore, Fresno, Tulare, County of San Joaquin, Kingsburg, Newman	Tulare (admin approval), Orange Cove (grading permit from Engineering dept.), Sanger (grading permit), McFarland (grading permit, encroachment permit)
On-street Parking	Patterson, Kingsburg	Fresno, Tulare, Sanger	Lemoore, Tracy, Tulare, Patterson, Lodi, County of San Joaquin	Tulare, County of San Joaquin	Fresno (public works permit), Tulare (admin approval and encroachment permit), Orange Cove (encroachment permit), Sanger (public works permit), Newman (public works permit), Turlock (public works permit)

The cities of **McFarland** and **Modesto** do not require a permit for an on-street EVSE installation.

*Jurisdictions may have more than one type of permit for residential and public/commercial EVSE installations.

Inspections

Inspections Required for EVSE Installations

Type of Installation	Inspections Required					
	Plan Check Only	Pre-Inspection	Post-Inspection	Pre- & Post-Inspection	1+ Pre- & Post-Inspection	Intermediate & Post-Inspection
Single-Family Residence	Tracy, Fresno, Tulare, Patterson, Lodi, County of San Joaquin	Tracy	Tracy, Fresno	Lemoore, Patterson, Lodi, Kingsburg, Newman	-	Tulare, Tulare, County of San Joaquin
Commercial/Multi family Unit	Tracy, Fresno, Tulare, Patterson, Lodi	Tracy	Tracy, Fresno	Lemoore, Patterson, Lodi, Kingsburg	Patterson	Tracy, Tulare, Tulare, County of San Joaquin, Newman
Open Parking Lot	Lemoore, Tracy, Fresno, Tulare, Patterson, Lodi	Tracy	Tracy, Fresno, Tulare	Lemoore, Patterson, Lodi, Kingsburg	-	Tulare, County of San Joaquin, Newman
On-street Parking	Lemoore, Tracy, Tulare, Patterson, Lodi	Lemoore, Tracy	Tracy, Tulare	Fresno, Patterson, Lodi, County of San Joaquin	-	Lemoore, Tulare, County of San Joaquin

How Applicants Can Request an Inspection Date & Time for EVSE Installations*

How to Request an Inspection	Jurisdiction
Online	Tracy, County of San Joaquin, Sanger
Over the phone	Lemoore, Tracy, Fresno, Tulare, Tulare, Lodi, Kingsburg, Orange Cove, Sanger, McFarland, Newman, Modesto and Turlock and the County of San Joaquin
In the office	Lemoore, Tracy, Fresno, Tulare, Kingsburg, Orange Cove, Sanger, McFarland, Newman, County of San Joaquin
By mail	Tracy
Other	Orange Cove – by email

*Jurisdictions may have more than one method for requesting an inspection of EVSE installations.

How Many Business Days to Provide an Inspection After it is Requested

Days to Provide an Inspection	Jurisdiction
Same day	Tracy, County of San Joaquin
2-5 days	Lemoore, Fresno, Tulare, Tulare, Lodi, Orange Cove, Sanger, McFarland, Newman, Modesto, Turlock
6-10 days	-
3-5 weeks	-
More than 5 weeks	-
TBD (based on inspection/ranges)	Patterson, Kingsburg

*Jurisdictions may have more than one method for requesting an inspection of EVSE installations.

Inspector Checklist for EVSE Installations by Jurisdiction

Do you have an inspector checklist for EVSE installation?	Jurisdiction
Yes	Turlock
No	Lemoore, Tracy, Fresno, Tulare, Tulare, Lodi, Kingsburg, Orange Cove, Sanger, McFarland, Newman, Modesto and the County of San Joaquin

Building Codes

Many regions across California and Canada have implemented building codes that establish the make it easier to install EVSE in an effort to promote the deployment of PEVs and charging infrastructure. For the most part, these regions have focused on “pre-wiring” buildings for EVSE infrastructure. The following section provides a brief description of policies and measures that other regions have implemented in regards to building codes.

Best Practices

The City of Los Angeles Green Building Code has been recognized as a best practice for promoting EVSE-friendly policies, and this is no exception when discussing the EVSE building code requirements in L.A.’s municipal code. Also in Southern California, the City of Santa Monica has adopted requirements for electrical services meant for charging PEVs in new buildings or structures. The California Green Building Standards Code (CalGreen) has created mandatory measures for nonresidential structures that require local municipalities to adopt specific parking measures for low-emitting, fuel-efficient and carpool/van pool vehicles which include PEVs.

CalGreen also includes voluntary building code measures that are specific to EVSE requirements. In Northern California, the County of Sonoma has used California Building Code (Title 24) as a template to adopt A.D.A. requirements for EVSE. Internationally, the City of Vancouver, British Columbia has revised the City’s building bylaw to accommodate PEVs in new apartment buildings and other multi-family buildings.

Electric Vehicle Supply Wiring (“Pre-wiring Requirements”)

The City of Los Angeles

L.A. Green Building Code: 99.04.106.6:⁴ Effective as of January 1, 2011 which includes:

Non-Residential: Provide a minimum number of 208/240 V 40 amp, grounded AC outlet(s), that is equal to 5% of the total number of parking spaces. The outlet(s) shall be located in the parking area.

Single Family Dwellings: 1 per unit.

Multi-Family Unit Dwellings: 5% of parking capacity.

*California Green Building Standards Code*⁵

Cal Green Nonresidential Voluntary Measures

The measures here are not mandatory unless adopted by a jurisdiction, but provides measures that designers, builders and property owners may follow during design and construction.

A5.106.5.3 Electric Vehicle Charging: Provide facilities meeting Section 406.7 (Electric Vehicle) of the California Building Code and as follows:

A5.106.5.3.1 Electric vehicle supply wiring

- 1) For each space, provide one 120 VAC 20 amp and one 208/240 V 40 amp, grounded AC outlets or panel capacity and conduit installed for future outlets for up to 10% of total designated parking spaces for low-emitting and fuel efficient vehicles, which includes PEVs.

City of Vancouver, British Columbia, Canada

13.2.1. Electric Vehicle Charging

13.2.1.2. Electrical Room

- 1) The electrical room in a multi-family building, or in the multi-family component of a mixed use building, that in either case includes three or more dwelling units, must include sufficient space for the future installation of electric equipment necessary to provide a receptacle to accommodate use by electric charging equipment for 100% of the parking stalls that are for use by owners or occupiers of the building or of the residential component of the building

City of Vancouver, British Columbia, Canada

Office of Sustainability, Planning, Development Services and Engineering Services⁶

*Green Homes Program*⁷

The Vancouver City Council adopted the Green Homes Program which included a requirement within the building by-law to require provisions to accelerate EV charging infrastructure in all new single family dwellings. Specifically, the Green Homes Program states that a cable raceway be installed in new homes that runs from the building's electricity panel directly to the garage, to an empty outlet box.

Note: See the full recommendation from the City's Chief Building Office for the "Infrastructure Installation for Plug-in Electric Vehicles for New Dwellings"

EVSE and Designated Parking Requirements

The City of Santa Monica

9.04.10.08.050 Number of bicycle, vanpool and carpool parking spaces required.⁸

New buildings or structures over fifteen thousand square feet shall provide bicycle parking at a rate of five percent of the automobile parking required pursuant to Section 9.04.10.08.040⁹ (Number of parking spaces required) and shall provide a minimum of one electrical outlet which shall be accessible to the parking area for the purpose of recharging electric vehicles.

City of Vancouver: Infrastructure Installation for Plug-in Electric Vehicles

⁴ http://ladbs.org/LADBSWeb/LADBS_Forms/Publications/LAGreenBuildingCodeOrdinance.pdf

⁵ http://www.documents.dgs.ca.gov/bsc/CALGreen/2010_CA_Green_Bldg.pdf

⁶ <http://vancouver.ca/files/cov/green-homes-council-report.pdf>

⁷ <http://vancouver.ca/home-property-development/green-home-building-policies.aspx>

⁸ http://www.qcode.us/codes/santamonica/view.php?topic=9-9_04-9_04_10-9_04_10_08-9_04_10_08_050&frames=on

⁹ http://www.qcode.us/codes/santamonica/view.php?cite=section_9.04.10.08.040&confidence=6

Policy Report from the Office of Sustainability, Planning, Development Services and Engineering Services to the City of Vancouver Standing Committee on Planning and Environment advocating the Green Homes Program. A subsection of this program includes a recommendation in the building by-law for EVSE “pre-wiring” requirements for all new single family homes.

Over the past 5 years there has been a growing market for electric bicycles and scooters. It is also expected that plug-in electric hybrid vehicles will be available to the public in the near future, followed soon after by the widespread availability of fully electric vehicles. The adoption of this technology represents a significant opportunity to further reduce GHG’s in the Vancouver community. However, a primary challenge to their adoption is the fact that they require a charging station in the user’s home. To that end, staff is recommending requiring the installation of a cable raceway from the building’s electricity circuit panel to an enclosed outlet box in the home’s garage or carport. In doing so, staff is ensuring that the home can be easily retrofitted at a later date to allow for the installation of electric vehicle charging facilities. This recommendation recognizes that infrastructure must be put in place at the time of construction in order to ease the adoption of emerging technologies by the homeowner at a later date.

L.A. Green Building Code Standards for Non-Residential and Residential EVSE Building Code Requirements

Mandatory measure for newly constructed low-rise residential building: *Electric Vehicle Supply Wiring 99.04.106.6.*

- 1) For one- or two- family dwellings and townhouses, provide a minimum of:
 - a. One 208/240 V 40 amp, grounded AC outlet, for each dwelling unit; or
 - b. Panel capacity and conduit for future installation of a 208/240 V 40 amp, grounded AC outlet, for each dwelling unit
- 2) Residential occupancies where there is a common parking area, provide:
 - a. Provide a minimum number of 208/240 V 40 amp, grounded AC outlet(s), that is equal to 5% of the total number of parking spaces. The outlet(s) shall be located in the parking area; or
 - b. Panel capacity and conduit for future installation of electrical outlets. The panel capacity and conduit size shall be designed to accommodate the future installation, and allow the simultaneous charging, or a minimum number of 208/240 V 40 amp, grounded AC outlets, that is equal to 5% of the total number of parking spaces. The conduit shall terminate within the parking area; or
 - c. Additional service capacity, space for future meters, and conduit for future installation of electrical outlets. The service capacity and conduit size shall be designed to accommodate the future installation, and allow the simultaneous charging, or a minimum number of 208/240 V 40 amp, grounded AC outlets, that is equal to 5% of the total number of parking spaces. The conduit shall terminate within the parking area

Mandatory measure for newly constructed non-residential and high-rise residential building: *Electric Vehicle Supply Wiring 99.05.106.5.2*

- 1) Provide a minimum number of 208/240 V 40 amp, grounded AC outlet(s), that is equal to 5% of the total number of parking spaces. The outlet(s) shall be located in the parking area

Training and Education Programs

The jurisdictions that participated in the training and education section of the PEV readiness survey indicated a demand for greater training and education programs in the region. Furthermore, none of the agencies stated that they have developed policy tools to become more PEV ready; however, all agencies were interested in receiving education materials if they are available. This is a compiled list of best practices, including a brief description of EVSE training sessions, EVSE installation guidelines and contact information.

Best Practices

Electric Vehicle Infrastructure Training Program (EVITP)

The EVITP provides training and certification for people installing EVSE. As a voluntary collaboration of electrical industry organizations, EVITP supports developing PEV charging infrastructure for residential and commercial markets. EVITP offers a one-day training seminar for regional municipal staff and PEV stakeholders. There is no cost for participants and the seminar is free to attend.

Additionally, the DOE Clean Cities works with EVITP to address technical requirements, safety imperatives, and training needs for electric vehicle industry partners and stakeholders.

- **Website:** <http://www1.eere.energy.gov/cleancities/evitp.html>
- **Email:** info@EVITP.com
- For more information, contact Bernie Kotlier at (408) 242-4000 or Jennifer Mefford at (248) 318-7885.

Regional JATC Offices

EVITP training for electrical contractors will likely be held in regional JATC offices. This version of the EVITP is different than the training session municipal staff, previously described. The session for electrical contractors is a multi-day course, and participants will receive a certificate at the end of the session. There is also a cost to participate. For further information in your area on future training sessions and class content, please contact the following JATC offices and Training Directors:

Kern County Electrical JATC

- Address: 3805 N. Sillect Ave., Bakersfield, Calif. 93308
- Phone: 661-324-0105
- Fax: 661-324-4121
- Training Director: Jerry Melson
 - Email: kcett@sbcglobal.net

Fresno Madera Kings and Tulare Counties JATC

- Address: 5420 E. Hedges Ave., Fresno, Calif. 93727
- Phone: 559-251-5174
- Fax: 559-251-8402
- Website: www.fresnojatc.org
- Training Director: Edward (Chuck) Stanton
 - Email: cstanton@fresnojatc.org

San Joaquin and Calaveras Counties Electrical JATC **(Applicants are usually referred to Alameda County JATC, listed below)**

- Address: 1531 El Pinal Drive, Stockton, Calif. 95205
- Phone: 209-467-1012
- Fax: 209-462-1451
- Training Director: David J. Brooks
 - Email: stknjatc@inreach.com

Alameda County JATC

- Address: 3033 Alavarado St., San Leandro, Calif. 94577
- Phone: 510-351-5282 Ext-0
- Website: <http://www.595jatc.org/default.htm>

- Training Director: Byron Benton
 - Phone: 510-351-5282 Ext-15
 - Email: bbenton@595jadc.org

Sacramento JATC

- Address: 2836 El Centro Road, Sacramento, Calif. 95833
- Phone: 916-646-6688
- Fax: 916-646-0170
- Website: <http://www.340jadc.org/first.asp>
- Training Director: Dennis Morin
 - Email: dmorin@340jadc.org

Central Valley JATC

- Address: 1925 Yosemite Blvd., Modesto, Calif. 95354
- Phone: 209-579-5417
- Fax: 209-521-0908
- Website: <http://www.cvjadc684.org/index.cfm>
- Training Director: Mark Bowden

Southern California Edison (SCE)

Installers Guide

For safety guidelines and proper installation techniques, SCE's online tool for EVSE installers and contractors provides a guideline for installing EVSE at a single-family house¹⁰ that include panel and meter options for safe installation procedures.

- Website: <http://www.sce.com/info/electric-car/installers/installers.htm>
- EVSE installation guide: <http://asset.sce.com/microsite/Documents/PEV/EVElectricianGuide.pdf>

UL Standards

Free Online PEV Training Course for Electricians

The consists of 9 training modules covering various processes, procedures and related information to help you understand how to prepare residential homes and complexes for safe and reliable electric vehicle charging.

- To register online: <http://lms.ulknowledgeservices.com/catalog/display.resource.aspx?resourceid=358250>
- To register by phone: 1-888-503-5536

Outreach to Local Businesses and Residents

In an effort to increase the PEV and EVSE education in the San Joaquin Valley, a number of resources are currently available to area residents and businesses. The majority of these resources are online and local municipalities should leverage these resources to make further available for their citizens and businesses. This section includes outreach materials and programs for both San Joaquin Valley residents and local businesses. In addition, short descriptions of other PEV outreach programs in California are included.

¹⁰ <http://asset.sce.com/microsite/Documents/PEV/EVElectricianGuide.pdf>

Best Practices

PEV Outreach Materials

Taking Charge I: First Step to PEV Readiness in the San Joaquin Valley¹¹ This resource will help area residents walk through the steps to help them decide the appropriate level of charging for their PEV. This resource should be distributed to homeowners in your area. A full copy of this document is located towards the end of the report.

PEV Outreach Programs

Pacific Gas & Electric (PG&E)

www.pge.com/pev

High PEV adoption cities in PG&E's service territory: **Stockton** and **Fresno**

PG&E's dedicated website for PEVs offers an array of tools and PEV resources to help customers become "PEV ready." The website has a simple three-step "Get Plug-in Ready" resource and includes a step-by-step guide for PEV owners to choose their appropriate charging level, select PEV-specific rates and learn what to do in the case of upgrading their home electric service for PEV charging. The website also contains a PEV rate calculator that allows customers to estimate their PG&E electricity costs for various PEV models. In addition, the website houses a section for nonresidential customers interested in fleet charging and providing public charging or workplace charging for their employees.

- Key Industry Contact: Bob Riding, Community Energy Manager
- Address: 705 P Street, 3rd Floor, Fresno, Calif. 93760
- Phone: (559) 977-5006
- Email: rlr3@pge.com

Southern California Edison (SCE) PEV Readiness Website

www.sce.com/ev

High PEV adoption cities in SCE service territory: **Bakersfield**, **Visalia** and **Tulare**

SCE has developed an extensive website for consumers, businesses and local jurisdictions interested in PEVs. This resource provides information for SCE's residential customers to help them find rates for PEVs and tips for installation residential EVSE. In addition, a "tools and resources" page has information on PEV/EVSE rebates, incentives and charging station equipment. Businesses within SCE's service territory also can find information on the benefits of installing PEV charging stations at businesses and multifamily housing units. EVSE installers also have access to information on safety guidelines and proper EVSE installation techniques. Lastly, SCE allows jurisdictions to link their city's website to SCE's "tools and resources" page to ensure city residents and businesses have the right information about PEV fueling and EVSE literature.

Los Angeles Department of Water and Power (LADWP): CHARGE UP L.A.¹²

LADWP is currently promoting a consumer incentive and PEV education and outreach project through the LADWP Electric Vehicle Home Charger Rebate Program, "[CHARGE UP L.A.!](#)" This program provides rebates to LADWP customers who purchase or lease a PEV, install a rapid, Level 2 charging station and a separate time-of-use meter at their home.

¹¹ Adapted from Take Charge I: A First Step to PEV Readiness in the Sacramento Region, a report from SACOG and the Capital Area PEV Coordinating Council.

¹² https://www.ladwp.com/ladwp/faces/wcnav_externalId/r-gg-driv-elec?_adf.ctrl-state=i715yivrq_76&_afLoop=507557021860684

Customers can receive a rebate of up to \$2,000 toward their out-of-pocket expenses for charging equipment and installation after other incentives or rebates are deducted. Out-of-pocket expenses include the customer's final cost for the charger and related equipment, including installation performed by a contractor.

The program's overall electric vehicle strategy focuses on:

- Customer Support: 7-Day Permit-to-Plug Policy
- Customer Education and Promotion (Free Level 2 EV Home Charger)
- Data Sharing and Public Information
- Improve EV Infrastructure (Public Chargers)
- LADWP Distribution System Planning Analysis
- EV Rate Discount and Rate Options

SoCal EV

The City of Los Angeles and the Southern California Regional Plug-In Electric Vehicle Plan has teamed up with the Los Angeles Department of Water and Power to create SoCal EV (www.socalev.org), an interactive website dedicated to PEV outreach and education.

Bay Area PEV Ready

The Bay Area Air Quality Management District's PEV Ready program (<http://www.bayareapevready.org/>) offers grants to support early PEV use, and provides an information clearinghouse to assist drivers, local governments and infrastructure providers seeking information about plug-in electric vehicles.