

San Joaquin Valley Plug-in Electric Vehicle Coordinating Council

*Meeting #5
June 10, 2013*



San Joaquin Valley Plug-in Electric Vehicle Coordinating Council

Meeting #5 June 10, 2013 | 1:30 p.m. – 3:30 p.m.

Announcements and Public Comments

All

Summary of May 2, 2013 Meeting

Tyler Petersen, CCSE

- ✓ Workplace Charging
- ✓ Updating Building Codes for EVSE

EVSE 101

Tyler Petersen, CCSE

EVSE at Multi Unit Dwellings (MUDs)

SJV PEVCC Members

- ✓ MUD definition
- ✓ Regional barriers to the deployment of EVSE at MUDs

EVSE Installation & Inspection Guidelines

SJV PEVCC Members

- ✓ EVSE Installations: Residential and Non-Residential
- ✓ EVSE Inspection Checklists

Announcements & Public Comments

SJV PEVCC Meeting Summaries

✓ Download PDF at www.energycenter.org/pluginready

Includes:

- ✓ Detailed meeting notes
- ✓ Attendee list
- ✓ Links to resources

PEVCC Recommendations for Workplace Charging

- ✓ Local governments should provide an easy-to-fill out application for workplace permitting
- ✓ Waive the permit fees to spur EVSE adoption

PEVCC Recommendations for Updating Building Codes for EVSE

- ✓ To require one EVSE unit in new residential projects would likely be too aggressive in the region
- ✓ May be appropriate to have the EVSE units in a common-use space instead of dedicated parking space
- ✓ 5% PEV parking capacity for MUD sites is not practical. This is due to the issues of EVSE ownership and shared electricity costs

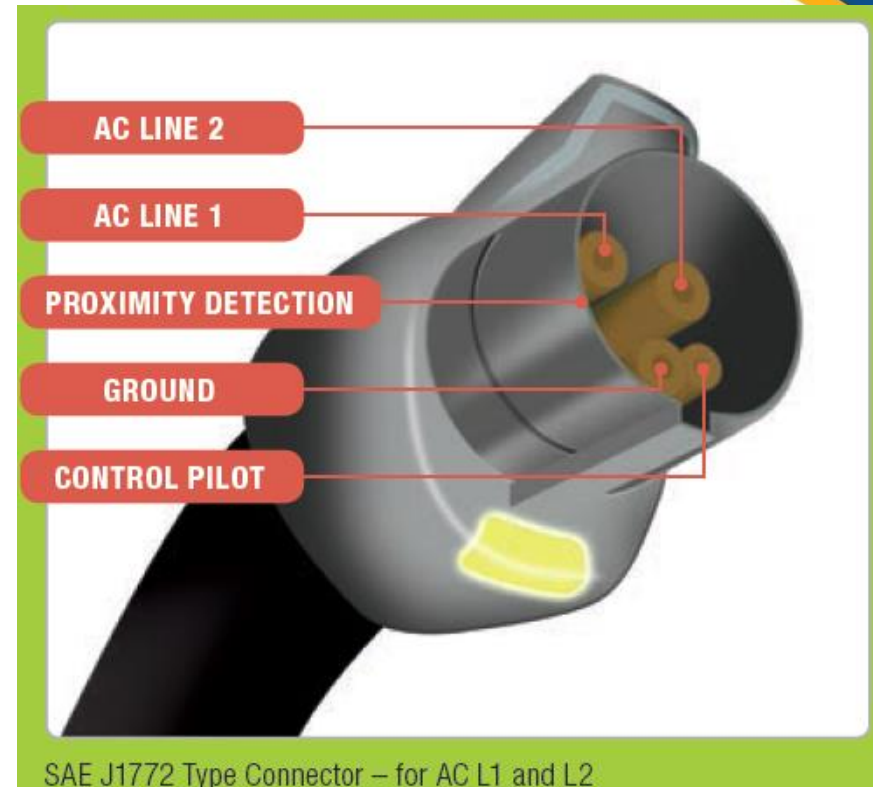
PEVCC Recommendations for Permitting Commercial EVSE Sites

- ✓ Permitting agencies should create similar or duplicate permitting applications for commercial sites (e.g. retail and workplace)
- ✓ Information on payments or financing options for retail charging should *not* be provided by local governments

EVSE 101

The Basics

- ✓ Two-way communication between the charger and car
- ✓ Correct charging current is based on the maximum current the charger can provide as well as the maximum current the car can receive
- ✓ **SAE J1772** standard develop by Society of Automotive Engineers (SAE)
 - ✓ Underwriters Laboratories (UL) and National Electrical Code (NEC) standards certified



Source: Advanced Energy

Typical Charging Rates

The rate at which charging adds range to a PEV depends on the vehicle, the battery type, and the type of EVSE. The following are typical rates for light-duty vehicles:

Level 1 (120V): 2 to 5 miles of range per hour/charging

Level 2 (208/240V): 10 to 20 miles of range per hour/charging

DC fast charging: 60 to 80 miles of range with 20 minutes of charging



AC Level 2 Equipment Styles

Site-specific Requirements

Differences between models are primarily related to durability, weatherization, data logging functionality, remote communications capability and payment systems

Mounting styles for EVSE:

- ✓ Floor-mount (Bollard-Style)
- ✓ Wall/Pole-mount
- ✓ Ceiling-mount

Mounting styles for EVSE

Floor-mount (Bollard-Style)

- ✓ Unit is mounted to the ground and wired through the base
- ✓ Typically requires concrete work
- ✓ Typically have largest footprint



Picture courtesy of Plug-in America

Mounting styles for EVSE

Wall/Pole-mount

- ✓ Unit is mounted to a wall or pole, as applicable
- ✓ Able to be mounted to and wired through garage wall
- ✓ Flexible placement options
- ✓ Takes up less space than floor-mount

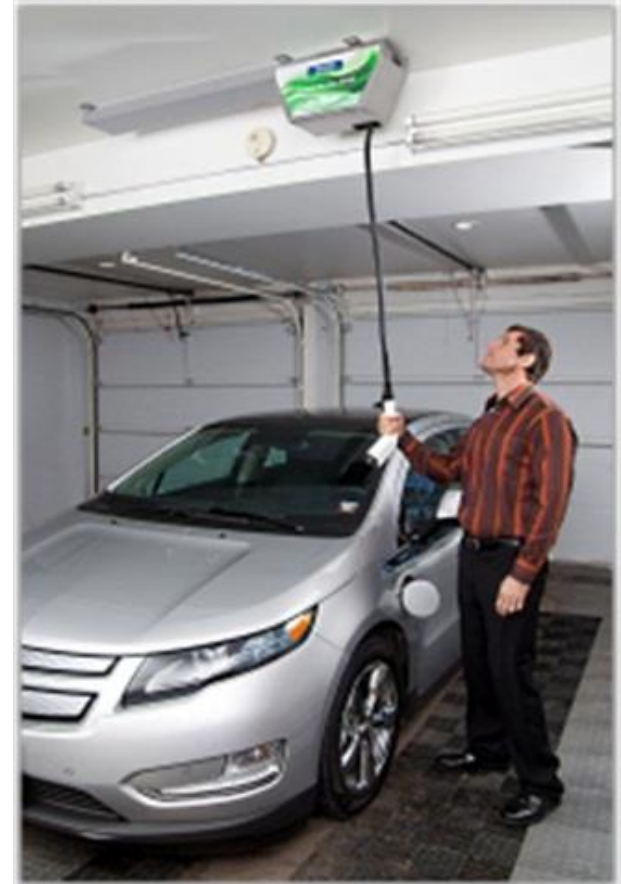


Picture courtesy of Plug-in America

Mounting styles for EVSE

Ceiling-mount

- ✓ Mounted to and wired through ceiling
- ✓ Minimizes trip hazard and vehicle impact risk
- ✓ Physical space must exist and not be obstructed by overhead garage door
- ✓ May require space on wall to store the J1772 plug



Picture courtesy of Green Fleet magazine

DC Fast Charging

Charging protocols

CHAdeMO - Japanese manufacturers Nissan and Mitsubishi support this standard

SAE International's J1772 “combo connector” – Allows for slower AC charging and faster DC charging using a single vehicle electrical inlet

- ✓ Chrysler, Ford, GM, Audi, BMW, Daimler, Porsche and Volkswagen will use the new connector
- ✓ Rollout of vehicles with the new connector begins in 2013 (Chevy Spark EV, should be first vehicle on market to use connector)
- ✓ The current-generation Volt is designed for the first-generation J1772 connector, which does not allow for DC fast charging

Charging Network Membership

Many public stations require a membership card to activate the station

- ✓ Examples of current networks:

- ✓ ChargePoint, Blink and AeroVironment

- ✓ Interoperability issues

- ✓ Collaboratev - joint venture by ECOtality and ChargePoint that allows payment at either type of station



EVSE Resources

EVSE Vendors/Manufacturers

Goelectricdrive.com - Extensive list of UL certified EVSE Vendors/Manufacturers

- ✓ <http://goelectricdrive.com/index.php/find-an-ev-charger>

Helpful Resources

- ✓ <http://www.afdc.energy.gov/pdfs/51228.pdf>
- ✓ <http://www.advancedenergy.org/transportation/resources/MUD%20Handbook%20FINAL%20Web.pdf>

Regional PEV Readiness Plan Development



EVSE at Multi Unit Dwellings (MUDs)

No Formal Definition

- ✓ Within PEV planning world, there does not exist a formal definition. Generally referred to anything from condominiums to mobile homes

PEV Collaborative MUD Working Group proposed definition:

Multi-unit dwellings (also known as multi-family residences) are a classification of residential housing where multiple housing units are contained within one building or several buildings within a complex. Some multi-unit residences are owned as condominiums, where one or more units are owned individually rather than leased from a single building owner. Some common types of multi-unit dwellings are duplexes, townhomes and apartments, mobile homes and manufactured-home parks. All are similar to single-family housing in terms of time-of-day charging and general power requirements, but installation requirements may be more similar to commercial parking lots and decks.

EVSE at Multi Unit Dwellings (MUDs)

The Challenges

- ✓ Cost - \$2,000 to \$10,000
- ✓ Power supply, proximity to metering equipment
- ✓ Parking - shared/designated
- ✓ Electricity rates and meters for common areas
- ✓ Homeowner associations lack of knowledge

EVSE at Multi Unit Dwellings (MUDs)

What are the regional barriers to the deployment of EVSE in MUDs?

EVSE Installation Locations

Single-Family Housing

- ✓ Residential garage
- ✓ Carport/driveway
- ✓ On-street parking

Multi-Family Housing

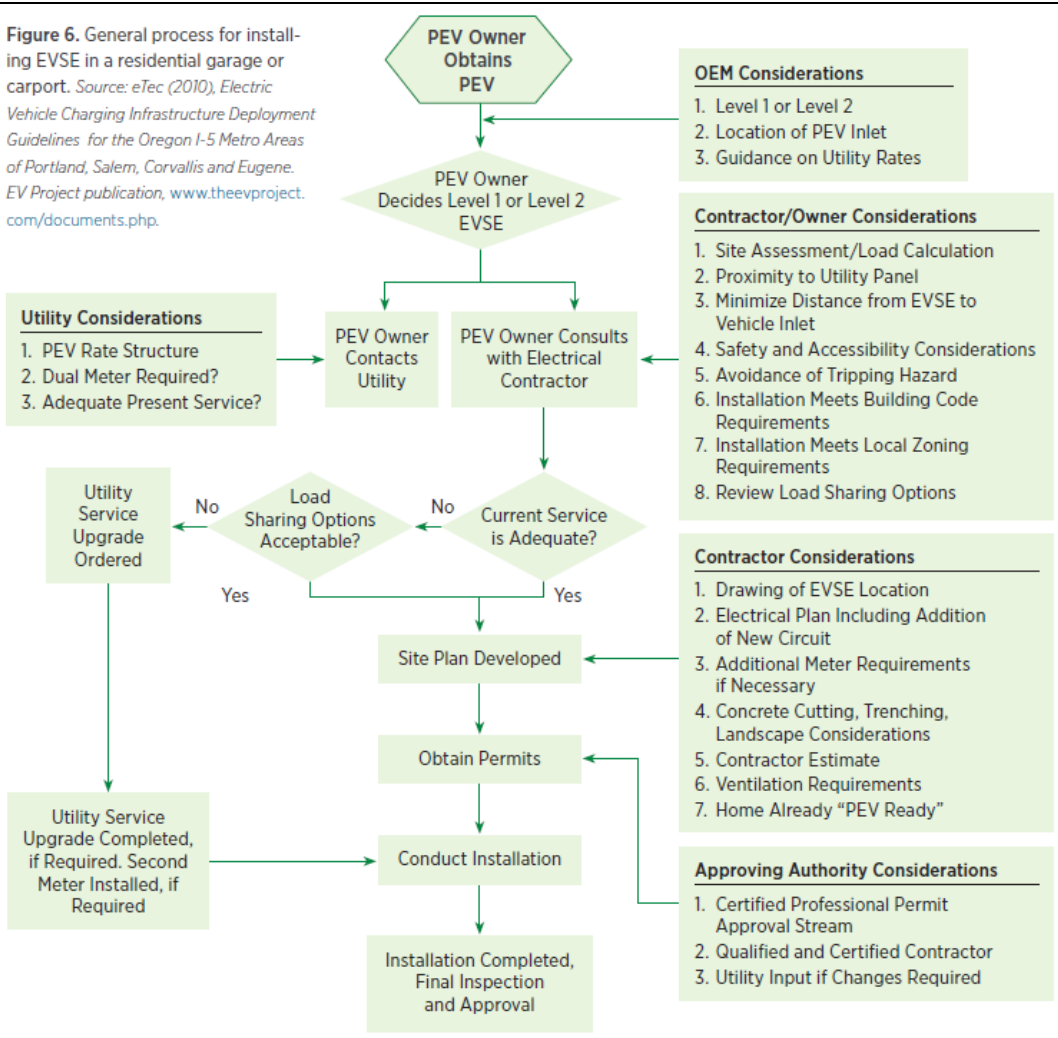
- ✓ Apartment buildings
- ✓ Condos and townhomes

Non-Residential

- ✓ Mixed-use
- ✓ Workplace
- ✓ Long-term
- ✓ Retail
- ✓ Public

Residential EVSE Installation

Figure 6. General process for installing EVSE in a residential garage or carport. Source: eTec (2010), *Electric Vehicle Charging Infrastructure Deployment Guidelines for the Oregon I-5 Metro Areas of Portland, Salem, Corvallis and Eugene*. EV Project publication, www.theevproject.com/documents.php.

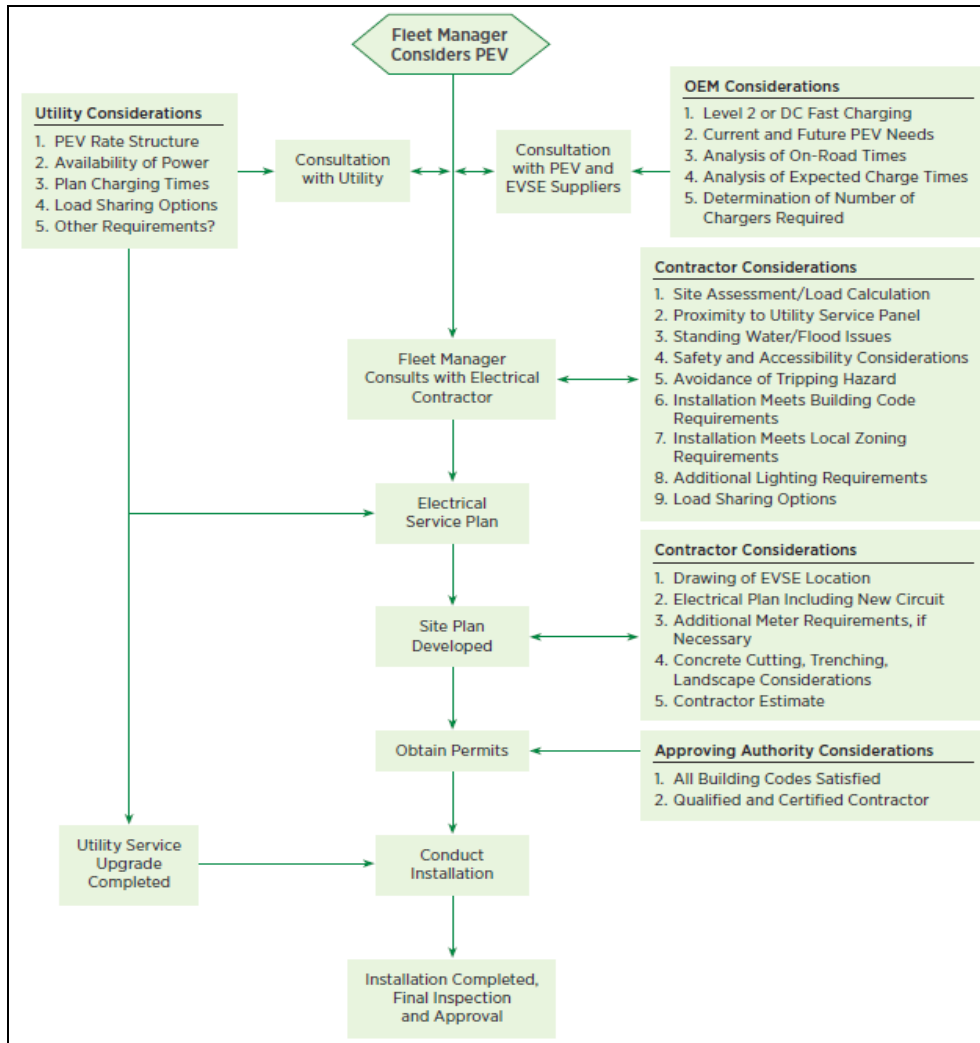


General process for installing EVSE in a residential garage or carport

[PDF link](#)

Source: U.S. DOE Clean Cities PEV Handbook for Electrical Contractors

Non-Residential EVSE Installation

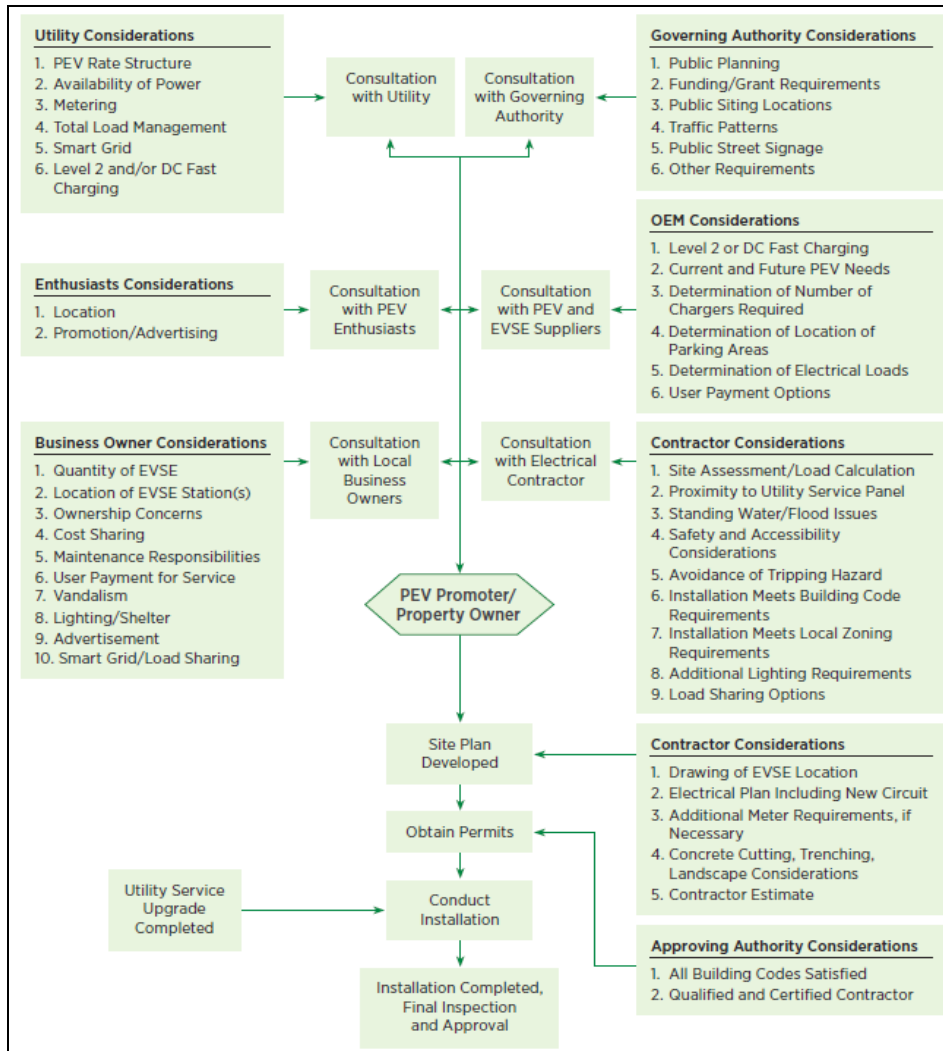


General process for installing EVSE at a fleet facility

[PDF link](#)

Source: U.S. DOE Clean Cities PEV Handbook for Electrical Contractors

Non-Residential EVSE Installation



General process for installing EVSE at a public facility

[PDF link](#)

Source: U.S. DOE Clean Cities PEV Handbook for Electrical Contractors

EVSE Installation Checklist

- 1) Is the appropriate permit secured and is there a plan and calculation as required by the AHJ?
- 2) What type of EVSE is being installed (i.e. Level 1, Level 2, other)?
- 3) Where is the EVSE located in relation to the charging station and the service or supply source?
- 4) Is the EVSE listed by an NRTL and are the installation instructions available for reference?
- 5) Is the EVSE going to be cord-and-plug connected (and so listed) or direct wired to an individual branch circuit?
- 6) What amount of voltage and current is required for the type of EVSE (nameplate information)?
- 7) Is the EVSE securely mounted to the structure and individual branch circuit wiring installed per NEC?
- 8) Is the properly sized equipment grounding conductor connected and proper overcurrent protection provided?
- 9) Does the service or source have adequate capacity for the load served?
- 10) Are separate utility meter(s) and/or service disconnecting means installed for special utility rates?

PEVCC July Meeting

- ✓ Scheduling July meeting date
- ✓ Barriers topics
 - ✓ Public agency EVSE installations
 - ✓ Regional planning for public EVSE siting
 - ✓ Plans to attract PEV manufacturing, production, infrastructure and services of PEV development in region

SJV PEV Readiness Plan Key Deliverables

Task Name & Product	Due Date
Draft PEV Readiness Plan	11/8/2013
Draft Public Workshop Materials	12/13/2013
Final PEV Readiness Plan	2/3/2014
Final Public Workshop	3/3/2014

Thank You!

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www.energycenter.org/pluginready