



# ELECTRIC VEHICLE CHARGERS

THESE REQUIREMENTS APPLY TO BUILDING PERMITS SUBMITTED ON OR AFTER JULY 1, 2012

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## BUILDING DIVISION REQUIREMENTS

An electrical permit is required for installation of electric vehicle chargers. Following is a listing of the general requirements for electric vehicle charging equipment based on the 2010 California Electrical Code, California Building Code, and Sunnyvale Municipal Code. This brochure is intended to provide general information, contact the Building Safety Division for any questions or additional information.

### Pre-Wiring in New Construction

The Sunnyvale Municipal Code requires that new construction provide pre-wiring for electric vehicle chargers as described below. Pre-wiring shall include the installation of conduit, appropriately sized conductors, and adequate electrical capacity to serve the chargers. The pre-wired parking spaces must meet the accessibility requirements described in the next section below.

- Residential garages/carports attached to individual dwelling units (typically single-family detached and townhouses) shall be pre-wired for a Level 2 electric vehicle charger.
- Residential shared parking facilities (typically condominiums and apartments) shall have 12.5% of the required spaces pre-wired for Level 2 electric vehicle chargers.
- Industrial, research and development, and office buildings that have 100 parking spaces or more shall have 3% of the required spaces pre-wired for Level 2 electric vehicle chargers.

### General Installation Requirements

- The electric vehicle charging system shall be listed by a nationally recognized testing laboratory (i.e., UL) in compliance with UL 2202 "Standard for Electric Vehicle (EV) Charging System Equipment." (CEC 90.7)
- The electric vehicle charging system shall be installed in accordance with manufacturer's guideline and shall be suitable for the environment (indoor/outdoor). If installed indoors, the charging station shall be labeled "Ventilation Not Required" in a location clearly visible after installation. (CEC 625.15)
- Provide size of the existing electrical panel, existing load on the panel, and proposed load/circuits from the electric vehicle charging system in order to determine if there is adequate capacity in the existing panel. (CEC 220)
- If installed indoors, the electric vehicle charging coupling (the nozzle) shall be located between 18" and 48" above the finished floor. If installed outdoors, the electric vehicle charging coupling (the nozzle) shall be located between 24" and 48" above the finished grade. (CEC 625.29, 625.30)
- If the electric vehicle charging equipment is located in an area subject to vehicular damage, an adequate barrier must be installed (e.g. 4" diameter steel pipe filled with concrete, a minimum of 40" above the finished floor/grade, installed in a footing measuring 12" in diameter and 3' deep). (CEC 110.27)
- If the project site is in an AE or AO flood zone, the charging equipment shall be elevated or designed according to the flood requirement (Sunnyvale Municipal Code 16.62). Flood zone information is available on-line at [www.e-onestop.net](http://www.e-onestop.net).

### Non-Residential and Multi-Family Installation Requirements

- The electric vehicle charging spaces may be counted towards the number of required low-emitting/fuel efficient parking in the CALGreen or LEED, as applicable.
- A sign shall be posted at the electric vehicle charging spaces stating "Electric Vehicle Charging Only."

- Accessibility Requirements (CBC Chapter 11B):
  - In each group of charging stations, one space shall be provided with an accessible loading area (a minimum of 5' wide and 18' in length and stripped). These spaces do not need to include signage dedicating them for disabled access use. These spaces shall not be counted as accessible parking spaces, as required by California Building Code.
  - Operational controls and receptacles for the charging station controls (i.e. on/off buttons, payment readers, etc.) shall be located between 15" and 48" from the finished floor/grade.

### Single-Family Residential Installation Requirements

- If the electric vehicle charging system will be located outside of the garage or carport, review and approval by the Planning Division may be required prior to issuance of the building permit.
- If a separate meter will be installed for the electric vehicle charger, it shall be 48" and 66" above the ground. Additionally, if a single mast will continue to be used to serve the meters, ensure that the service entrance conductors shall be sized for the sum of the two meters, based on the table below (CEC Table 310.5(b)(6) and Chapter 9 Table 1):

SERVICE ENTRANCE CONDUCTORS SIZE AND RATING			
Service or Feeder Rating	Copper Conductors	Aluminum or Copper-Clad Aluminum	Minimum Conduit Size
100 Amps	#4 AWG	#2 AWG	1 ¼ inch
125 Amps	#2 AWG	#1/0 AWG	1 ¼ inch
150 Amps	#1 AWG	#2/0 AWG	1 ¼ inch
200 Amps	#2/0 AWG	#4/0 AWG	1 ½ inch

*Note: PG&E prohibits new meters to be installed on exterior walls adjacent to bedrooms or bedroom closets (due to noise concerns).*

## PERMIT PROCESS

1. Prior to submittal for a building permit, contact the Planning Division to determine if a separate permit is required.

### Building Permit Review

2. Building permits for chargers in single-family detached residential buildings are available on-line at [www.e-OneStop.net](http://www.e-OneStop.net) or at the One-Stop Permit Center. For all other locations, permits can be obtained at the One-Stop Permit Center, between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday.

### Inspections

3. A minimum of one final inspection is required after the electric vehicle charger is installed. However, additional inspections may be required depending on the scope of work (i.e. underground conduit installation, footing for pedestals, etc.).

The manufacturer's installation guidelines shall be available for the building inspector at the job site during the inspection.

### Building Permit Application Requirements

- A completed Building Permit Worksheet application.
- An approval letter from the Homeowner's Association (if applicable).
- Provide the type of electric vehicle charging system: Level 1 (120 VAC, 15/20 A), Level 2 (240 VAC, 40 A), or Level 3 (208-240 VAC, 40 A)
- For non-residential and multi-family locations, provide a site plan showing the following:
  - site plan showing the location of the electric vehicle chargers and accessibility requirements
  - electrical plan showing how the new charging units will be powered
- If the main electrical panel is to be relocated, provide a letter of approval from PG&E for the new location.