CITY OF STOCKTON

ELECTRIC VEHICLE CHARGER Guide

GENERAL

The purpose of this guide is to clarify the minimum building code requirements when applying for a permit to install an electric vehicle charger.

The information provided in this document is general and intended as a guide only. Each project is unique and additional requirements may be enforced as deemed appropriate.

APPLICATION

An electrical permit is required for installation of electric vehicle chargers.

PLAN SUBMITTAL REQUIREMENTS

COMMERCIAL ELECTRIC VEHICLE CHARGER PROJECTS

1. For commercial and multi-family EVCS projects, plans and details showing the locations and number of charging stations, signage, accessibility compliance and electrical components and load calculations, shall be included in the submittal package.

SINGLE FAMILY RESIDENTIAL ELECTRIC VEHICLE CHARGER PROJECTS

2. For construction of new one- and two-family residential projects, include plans and details showing the location of the charger, along with electrical components and load calculations. It is recommended that a listed raceway to accommodate a dedicated branch circuit for the charger be included. The raceway shall not be less than trade size 1. The raceway shall be securely fastened at the main service or subpanel and shall terminate in close proximity to the proposed location of the charging system into a listed cabinet, box or enclosure. Raceways are required to be continuous at enclosed or concealed areas and spaces. A raceway may terminate in an attic or other approved location when it can be demonstrated that the area is accessible and no removal of materials is necessary to complete the final installation. A label stating "EV Capable" shall be posted in a conspicuous place at the service panel or subpanel and next to the raceway terminal point.

3. For existing residential projects provide the following:

   a. A completed Building Permit Application

   b. Indicate the type of electric vehicle charging system:

      I. Level I (120 v AC, 15-20 Amp)

      II. Level II (240 v AC, 40 Amp)

      III. Level III (208-240 v AC, 40 Amp)

   c. Indicate the location of the charger (inside garage or carport, or outdoors).

   d. Provide photographs of the existing electrical panel:

      I. With the panel cover on

      II. With the panel cover off

III. Close-up of panel rating label (or documentation showing the size rating of the existing panel)

IV. Close-up of breakers and labels showing the existing load on the panel

e. Include the load calculations. If the panel is to be upgraded to accommodate the new EV Charging System, an additional fee of $117.36 is to be added to the permit for panel upgrades.

f. If the main electrical panel is to be relocated, provide a letter of approval from PG&E for the new location.

g. If the charger is located outside the garage or carport, the Planning Division may require review and approval.

h. An approval letter from the Homeowner's Association, if applicable.

INSTALLATION REQUIREMENTS

ELECTRICAL CODE REQUIREMENTS

The following are the minimum requirements that must be met based on the 2013 California Electrical code:

1. The electric vehicle charging system shall be listed by a nationally recognized testing laboratory (UL) in compliance with UL 2202 "Standard for Electric Vehicle (EV) Charging System Equipment."
2. The electric vehicle charging system shall be installed in accordance with manufacturer's instructions, and shall be suitable for the environment (indoor or outdoor). It installed indoors, the charging station shall be labeled "Ventilation Not Required" in a location clearly visible after installation
3. Include documentation showing the proposed load/circuits for the electric vehicle charging system in order to determine if there is adequate capacity in the existing panel, and provide photographs of the existing electrical panel:
   a. With the panel cover on
   b. With the panel cover off
   c. Close-up of panel rating label (or documentation showing the size rating of the existing panel)
   d. Close-up of breakers and labels showing the existing load on the panel
4. Include the load calculations.
5. In installed indoors, the electric vehicle charging coupling (nozzle) shall be located between 18" and 48" above the finished floor. If installed outdoors, the electric vehicle charging coupling (nozzle) shall be located between 24" and 48" above the finished grade.
6. If the electric vehicle charging equipment is located in an area subject to vehicular damage, an adequate barrier shall be installed. The barrier may consist of a 4" diameter steel pipe filled with concrete, a minimum of 40" above the finished floor or grade, imbedded in a footing measuring 12" in diameter and 3' deep.
7. If the project site is in a FEMA designated Special Flood Hazard Area (zone A, AE, AO, or AH) the charging equipment shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding. Flood zone information is available at: http://www.sjmap.org/floodzoneviewer/Disclaimer.htm

COMMERCIAL AND MULTI-FAMILY REQUIREMENTS

1. The electric vehicle charging spaces may be counted towards the number of required low-emitting/fuel efficient parking spaces if using the Green Building Code Nonresidential Voluntary Measures.

2. A sign shall be posted at the electric vehicle charging spaces stating "Electric Vehicle Charging Only."

3. Charging spaces shall meet the requirements of the California Building Code for accessibility as follows:

   a. 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 striped). These spaces do not need to include signage dedicating them for disabled access use. These spaces shall not be counted as accessible parking spaces.

   b. Operational controls and receptacles for the charging station controls (on/off buttons, payment readers, etc) shall be located between 15" and 48" from the finished floor or grade.

RESIDENTIAL SINGLE FAMILY REQUIREMENTS

1. 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 electrical permit.

2. If a separate meter will be installed for the electric vehicle charger, it shall be 48" to 66" above the grade level. Additionally, if a single mast will continue to be used to serve the meters, ensure that the service entrance conductors shall be sized to the sum of the two meters, based on CEC Table 310.5(b)(6) and Chapter 9 Table 1.

3. Consult with PG&E regarding specific requirements for electric vehicle chargers and the location of new meters at: http://www.pge.com

INSPECTION REQUIREMENTS

One inspection is required after the new wiring and charger unit is installed. However, additional inspections may be required depending on the scope of work. The building inspector will let you know if there are additional inspections. The manufacturer's installation guidelines shall be available for the building inspector at the job site during the inspection.

A representative of the installing contractor must be onsite for all inspections. The representative must have an understanding of the project and be able to perform all requirements of the following checklist:

- ☐ Verify installation matches the approved set of plans. If not, a revision is required.
- ☐ Vehicle shall be present and connected if electric equipment/EVSE is subject to physical damage.
- ☐ A disconnect is required a minimum 10' away at each charging station location. A phenolic plaque with red background and white letter stating "EMERGENCY POWER OFF – ELECTRIC VEHICLE CHARGING STATION" must be installed on each disconnect. (Red background, white lettering, minimum 3/8" lettering, all capital letters)
- ☐ Provide working clearances at all electrical equipment. (36" deep x 30" wide x 6'6" high) *CEC 110.26*

☐ All new and existing circuit breakers shall be listed to be used with panel (usually the same manufacturer).

☐ All new and existing circuits must be labeled.

☐ Verify load calculations attached to the job copy.

☐ Gas meter clearances: There shall be no electrical equipment, conduit, conductors 10' above the gas meter or within 18" of the service riser.

☐ Verify grounding electrode system: For new buildings and remodels that have at least 20' of new foundation the Building Division requires the primary electrode be a 20' of # 4 rebar OR 20' of minimum 4 AWG bare copper wire placed 3" from the bottom of the footing (if no footing, use (2) 8' long by 5/8" ground rods spaced a minimum of 6' apart). In addition to the primary grounding electrode a metal water pipe supplemental electrode is required and must be connected with a minimum 4 AWG copper wire and connected at the exterior hose bib where the water service enters the building.

☐ Note: For sizing the GEC for services over 200 AMP's refer to NEC/CEC Table 250.66

☐ Supports: EMT, IMC, and RMC shall be securely fastened in place at least every 10' and within 3' of each outlet box, junction box, device box, cabinet, conduit body or other termination. *CEC 342.30 (A), 344.30 (A), 358.30 (A)*

☐ Where EVSE are not mounted on a wall, they must mount on metal post.

☐ Fire department inspection approval may be required prior to scheduling building department final. To request an inspection contact the San Mateo Fire Department at 650 522-7940.

TORQUE REQUIREMENTS

☐ All associated EVSE breakers must be verified for proper torque.

☐ Torque all connections per manufacturer's listing. (Electrical contractor to be onsite with torque wrench and torque screwdriver of the audible type. (Ratcheting). (CEC 110.3 (b))

☐ Secure lugs with channel locks to hold lug in place when applying the proper torque.

☐ Verify all torque connections. (For example: Polaris connectors in junction boxes)

☐ TOOLS REQUIRED FOR INSPECTION:

a. Torque screw driver

b. Torque wrench (and associated sockets)

c. Square tip and standard/slot tip (extra long/deep)

d. Channellocks

e. Phase tape

f. Ladder (as required)