



CITY OF EL CAJON

COMMUNITY DEVELOPMENT

Electric Vehicle Charging System Guidelines for Residential Buildings

Checklist Review for Residential Electric Vehicle Charging Station Permits

| Check One | Type of Charging Station(s) Proposed | Power Levels (proposed circuit rating) |
|-------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------|
| <input type="checkbox"/> | Level 1 | 110/120 volt alternating current (VAC) at 15 or 20 Amps |
| <input type="checkbox"/> | Level 2 - 3.3 kilowatt (kW) (low) | 208/240 VAC at 20 or 30 Amps |
| <input type="checkbox"/> | Level 2 - 6.6kW (medium) | 208/240 VAC at 40 Amps |
| <input type="checkbox"/> | Level 2 - 9.6kW (high) | 208/240 VAC at 50 Amps |
| <input type="checkbox"/> | Level 2 - 19.2kW (highest) | 208/240 VAC at 100 Amps |
| Standard permit fee \$276.44, this does not include any electrical panel upgrades. | | |

PERMIT APPLICATION REQUIREMENTS

- 1) Complete with the following information: Project address, parcel #, builder/owner name, contractor name, valid contractor license #, phone numbers and any other requirement.
- 2) Include electric vehicle charging station model number, manufacturer's specs and installation guidelines.

ELECTRICAL LOAD CALCULATION WORKSHEET

- 1) Provide an electrical load calculation worksheet, see last sheet.
- 2) Based on the load calculation worksheet, is a new electrical service panel upgrade required¹?
- 3) If charging equipment proposed is a Level 2 - 9.6kW station with a circuit rating of 50 amps or higher, include a single-line diagram.

SITE PLAN & SINGLE LINE DRAWING

- 1) Provide a site plan and electrical plan with a single-line diagram included with the permit application.
 - a. If mechanical ventilation requirements are triggered for indoor venting requirements (CEC 625.29 (D)), a mechanical plan must be included with the permit application.

¹ Load Calculation Worksheet: EV is calculated at 100%. The size of the existing service MUST be equal to or larger than the minimum required size of main service breaker. If the existing service panel is smaller than the minimum required size of existing electrical services, then a new upgraded electrical service panel must be installed in order to handle the added electrical load from the proposed EVCS.



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- 2) The site plan shall be fully dimensioned and drawn to scale.
 - a. Showing location, size, and use of all structures.
 - b. Showing location of electrical panel to charging system.
 - c. Showing type of charging system and mounting.

COMPLIANCE WITH 2019 CALIFORNIA ELECTRICAL CODE

- 1) Include EVCS manufacturer's specs and installation guidelines.
- 2) Show on the electrical plan and identify the amperage and location of existing electrical service panel.
 - a. Include sizes for the conduit and conductor.
- 3) If the charging unit rated more than 60 amps or more than 150V to ground, a disconnecting means must be provided in a readily accessible location in line of site and within 50' of EVCS. (CEC 625.23).
- 4) The charging equipment must have a Nationally Recognized Testing Laboratory (NRTL) approved listing mark. (UL 2202/UL 2200)
- 5) If trenching is required, detail the trenching.
 - a. Trenching shall comply with electrical feeder requirements from structure to structure. (CEC 225)
 - b. Show the trenching in compliance with minimum cover requirements for wiring methods or circuits. (18" for direct burial per CEC 300)

NOTES:



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Plug-In Electric Vehicle Load Calculator for Level 2 Charging

INSTRUCTIONS: Review the list of electrical loads in the table below and check all that exist in your home (don't forget to include the proposed Level 2 charger). For each item checked, fill in the corresponding "Watts Used" (refer to the "Typical Usage" column for wattage information). Add up all of the numbers that are written in the "Watts Used" column and write that number in the "TOTAL WATTS USED" box at the bottom of the table, then go to the next page to determine if your existing electric service will accommodate the new loads.

(Loads shown are rough estimates; actual loads may vary. For a more precise analysis, use the nameplate ratings for appliances and other loads and consult with a trained electrical professional.)

| Check all Applicable Loads ✓) | Description of Load | Typical Usage | Watts Used |
|--------------------------------------------------------|-------------------------------------------------|-------------------------|------------|
| GENERAL LIGHTING AND RECEPTABLE OUTLET CIRCUITS | | | |
| <input type="checkbox"/> | Multiply the square footage of house x 3 | 3 watts/sq. ft. | |
| KITCHEN CIRCUITS | | | |
| <input type="checkbox"/> | Kitchen circuits | 3,000 watts | |
| <input type="checkbox"/> | Electric oven | 2,000 watts | |
| <input type="checkbox"/> | Electric stove top | 5,000 watts | |
| <input type="checkbox"/> | Microwave | 1,500 watts | |
| <input type="checkbox"/> | Garbage disposal under kitchen sink | 1,000 watts | |
| <input type="checkbox"/> | Automatic dish washer | 3,500 watts | |
| <input type="checkbox"/> | Garbage compactor | 1,000 watts | |
| <input type="checkbox"/> | Instantaneous hot water at sink | 1,500 watts | |
| LAUNDRY CIRCUIT | | | |
| <input type="checkbox"/> | Laundry circuit | 1,500 watts | |
| <input type="checkbox"/> | Electric clothes dryer | 4,500 watts | |
| HEATING AND AIR CONDITIONING CIRCUITS | | | |
| <input type="checkbox"/> | Central heating and air conditioning | 6,000 watts | |
| <input type="checkbox"/> | Window mounted air conditioning | 1,000 watts | |
| <input type="checkbox"/> | Whole-house or attic fan | 500 watts | |
| <input type="checkbox"/> | Central electric furnace | 8,000 watts | |
| <input type="checkbox"/> | Evaporative cooler | 500 watts | |
| OTHER ELECTRICAL LOADS | | | |
| <input type="checkbox"/> | Electric water heater (storage type) | 4,000 watts | |
| <input type="checkbox"/> | Electric tankless water heater | 15,000 watts | |
| <input type="checkbox"/> | Swimming pool or spa | 3,500 watts | |
| <input type="checkbox"/> | | | |
| <input type="checkbox"/> | | | |
| ELECTRIC VEHICLE CHARGER CIRCUIT | | | |
| <input type="checkbox"/> | Level 2 electric vehicle charger wattage rating | | |
| | | TOTAL WATTS USED | |