



*City of Rancho Cucamonga*

**BUILDING AND SAFETY SERVICES DEPARTMENT**

10500 Civic Center Drive | Rancho Cucamonga, CA 91730

Tel: (909) 477-2710 | Fax: (909) 477-2711 | [www.CityofRC.us](http://www.CityofRC.us)

## **ELECTRICAL VEHICLE CHARGING SYSTEMS In Single Family Residence PLAN REVIEW AND PERMITTING REQUIREMENTS**

The City of Rancho Cucamonga has developed this EV Charger Installation Guideline in order to streamline the permit and installation process. In most cases, you or your contractor merely needs to fill-in the blanks on this document, attach the manufacturer's installation instructions and charger specifications and submit it to the Building and Safety Services Department for an over-the-counter review and permit issuance. 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). Permits may be obtained over-the-counter for EV charging system installations.

If all of the information is provided and the proposal complies with the applicable codes, the review and approval process will only take a few minutes. Once the permit is issued, the installation may begin. When the installation is complete an inspection of the work will be scheduled with the Building Inspector upon request. Inspections are typically performed on the work day following your request for inspection. Keep in mind that someone will need to be present during the inspection so that the Building Inspector can access the location of the EV Charger (typically in the garage).

### **Electrical Permit:**

Electrical plans **are not** required to be submitted to the Building Department; that is, an electrical permit will be issued without an electrical plan review.

Please note that an **electrical load calculation sheet and manufacturer's installation guidelines** (See attached hand-out on pages 3 & 4), will be reviewed by the City's Permit Counter staff prior to permit issuance. **Load calculations, per California Electrical Code, Article 220 shall be provided for review when the service panel rating is 125 amperes or less.** 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 to be shown on the plans and be submitted for review:

1. Specify the type of EV charging system: Level 1 or Level 2. Provide the UL listing number, or the listing number of another approved nationally recognized testing laboratory, in compliance with UL2202: "Standard for Electric Vehicle Charging System Equipment".
2. 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.
3. Indicate if a second electric meter installation is required due to special electric utility rates available for EV charging.
4. Specify the proposed location of the EV charging system. EV charging system equipment shall be installed in accordance with manufacturer's written guidelines and shall be suitable for its intended location (indoor/outdoor).



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**ELECTRICAL VEHICLE CHARGING SYSTEM INSTALLED IN SINGLE FAMILY RESIDENCE**

**PLAN REVIEW and PERMITTING REQUIREMENTS**

*(NO MINOR DEVELOPMENT REVIEW (MDR) REQUIRED BY PLANNING DEPARTMENT)*

**THIS SECTION TO BE COMPLETED AT THE PERMIT COUNTER BY THE INSTALLING CONTRACTOR**

**Equipment & Project information**

Site Address \_\_\_\_\_

Permit Number \_\_\_\_\_

Manufacturer's Name \_\_\_\_\_

Unit Serial Number \_\_\_\_\_

Unit Model Number \_\_\_\_\_

Installation Contractor \_\_\_\_\_

Contractor's Contact Information \_\_\_\_\_

Site plan with location of EV unit \_\_\_\_\_ yes \_\_\_\_\_ no

Manufacturer installation guide is attached to site/floor plan \_\_\_\_\_ yes \_\_\_\_\_ no

**Electrical Requirements:**

Size of Existing Service \_\_\_\_\_ Amps

New Service Req \_\_\_\_\_ yes \_\_\_\_\_ no

Dedicated Electrical Circuit? \_\_\_\_\_ yes \_\_\_\_\_ no

Minimum Circuit Ampacity Rating? \_\_\_\_\_ Amps

Outlet installed within 12" of the unit \_\_\_\_\_ yes \_\_\_\_\_ no

**Installation Requirements:**

Location of Unit \_\_\_\_\_ outdoors \_\_\_\_\_ indoors

Setback from Property Line \_\_\_\_\_ ft

Unit is protected from rain \_\_\_\_\_ yes \_\_\_\_\_ no

Vehicle Protection Req'd \_\_\_\_\_ yes \_\_\_\_\_ no

How is protection accomplished? \_\_\_\_\_

**THIS SECTION TO BE COMPLETED IN THE FIELD BY THE INSTALLING CONTRACTOR AND GIVEN TO THE BUILDING INSPECTOR FOR FINAL INSPECTION**

**NOTE:** Before leaving the site, installer must instruct the user in the proper operation of PEV unit.

Unit is installed per the manufacturer's installation guide \_\_\_\_\_ yes \_\_\_\_\_ no

If not, Explain \_\_\_\_\_

Signature of installer: \_\_\_\_\_ Print Name: \_\_\_\_\_

License No.: \_\_\_\_\_



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**LEVEL 2 ELECTRIC VEHICLE CHARGER – SERVICE LOAD CALCULATION**

**INSTRUCTIONS:** Review the list of electrical loads in the table below and check all that exist in the home (don't forget to include the proposed Level 2 EV 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. Write that number in the "Total Watts Used" box at the bottom of the table and proceed to the next page.

*(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
<b>GENERAL LIGHTING AND RECEPTACLE OUTLET CIRCUITS</b>			
✓	Multiply the Square Footage of the House X 3	3 watts/sq. ft.	
<b>KITCHEN CIRCUITS</b>			
✓	Kitchen circuits	3,000 watts	3,000
	Electric oven	2,000 watts	
	Electric stove top	5,000 watts	
	Microwave	1,500 watts	
	Garbage disposal under kitchen sink	1,000 watts	
	Automatic dishwasher	3,500 watts	
	Garbage compactor	1,000 watts	
	Instantaneous hot water at sink	1,500 watts	
<b>LAUNDRY CIRCUIT</b>			
✓	Laundry circuit	1,500 watts	1,500
	Electric clothes dryer	4,500 watts	
<b>HEATING AND AIR CONDITIONING CIRCUITS</b>			
	Central heating (gas) and air conditioning	6,000 watts	
	Window mounted A/C	1,000 watts	
	Whole-house or attic fan	500 watts	
	Evaporative cooler	500 watts	
<b>OTHER ELECTRICAL LOADS</b>			
	Electric water heater (storage type)	4,000 watts	
	Electric tankless water heater	15,000 watts	
	Swimming pool or spa	3,500 watts	
	Other (describe):		
	Other:		
	Other:		
<b>ELECTRIC VEHICLE CHARGER CIRCUIT</b>			
	Level 2 Electric Vehicle Charger rating**		

**(Add-up all of the watts for the loads you have checked✓) TOTAL WATTS USED →**

**\*\*Use name plate rating of all the watts or calculate as: (Ampere rating of circuit X 240 volts = Watts**



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**INSTRUCTIONS:** Apply the **Total Watts Used** number from the previous page to the Table below to identify if the Existing Electrical Service Panel is large enough to handle the added electrical load from the proposed Level 2 EV Charger. If your electrical service is NOT large enough, then you will need to install a new upgraded electrical service panel.

**Table based on NEC 220.83 (A)**

✓ Check the appropriate line	Watts Used	Minimum <u>Required</u> Size of Existing 240 Volt Electrical Service Panel (Main Service Breaker Size)	Identify the Size of Your <u>Existing</u> Main Service Breaker (Amps)**
	Up to 24,000	60 amps	
	24,001 to 48,000	100 amps	
	48,001 to 63,000	125 amps	
	63,001 to 78,000	150 amps	
	78,001 to 108,000	200 amps	
	108,001 to 123,000	225 amps	

\*\*Please note that the size of you existing service MUST be equal to or larger than the Minimum Required Size identified in the Table above or a New Upgraded electrical service panel will need to be installed (separate permit required for new service).

**CAUTION:** This table is **NOT** to be used to determine the size of a **NEW UPGRADED** electrical service panel if your existing panel is too small or overloaded according the table above. In order to determine the size of a NEW or UPGRADED service panel, there is a completely different load calculation methodology that applies. Sizing of a NEW or UPGRADED electrical service panel should only be done by a qualified electrical contractor or electrical engineer.

**STATEMENT OF COMPLIANCE**

By my signature, I attest that the information provided is true and accurate.

Job Address \_\_\_\_\_  
(Print job address)

Signature \_\_\_\_\_ (Date) \_\_\_\_\_  
(Signature of applicant)

In addition to this document, you will also need to provide a copy of the manufacturer's installation literature and specifications for the Level 2 charger you are installing.

*Please note that this is a voluntary compliance alternative and you may wish to hire a qualified individual or company to perform a thorough evaluation of your electrical service capacity in lieu of this alternative methodology. Use of this electrical load calculation estimate methodology and forms is at the user's risk and carries no implied guarantee of accuracy. Users of this methodology and these forms are advised to seek professional assistance in determining the electrical capacity of a service panel.*