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| Logo, company name  Description automatically generated | **CITY OF EASTVALE**  **COMMUNITY ENHANCEMENT AND SAFETY DEPARTMENT, BUILDING AND SAFETY DIVISION**  12363 Limonite Avenue, Suite 910  Eastvale, CA 91752  951.703.4450  (Eastvaleca.gov/building-safety-division) | **EV CHARGER GUIDELINES** | | | |
| EPR  SECTION | 0002  FORM NUMBER | |  |
| 7/1/2022  EFFECTIVE DATE | | 1/9/2023  REVISION DATE | |
| **RESIDENTIAL ELECTRIC VEHICLE (EV) CHARGER GUIDELINES** | | | | | |

# The purpose of this guideline is to assist permit applicants in streamlining the permitting, installation, and inspection process for Residential Ev Chargers.

**Be aware that there are different types of Electric Vehicle (EV) Chargers.** There are 2 basic types of EV chargers for home use (Level 1 and Level 2). Level 1 Chargers are smaller units that plug directly into a standard 120-volt receptacle outlet. These types of chargers typically require a longer period to recharge the vehicle. If the receptacle outlet being used to plug in the Level 1 charger exists, there is no requirement to secure a permit from the building and safety division. On the other hand, if you will be installing a new 120-volt receptacle outlet for the charger, you will need to obtain a permit.

A level 2 EV charging system requires a 240-volt electrical circuit and charges the vehicle battery much faster than a level 1. Level 2 charger installations typically require an electrical permit and inspections of the installation. In order to obtain the permit, you will need to provide some basic information to show that your existing electrical service can handle the added load.

**What information do I need to provide to obtain the permit?** This Residential EV Charger Permit Guideline has been developed to streamline the permit, installation, and inspection process. In most cases, you or your contractor merely need 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 department for an over the counter or within a day or two depending upon workloads and staffing levels at the time of submittal. Once the permit is issued, the installation may begin. When the installation is complete, an inspection of the work must be scheduled with the building inspector. Keep in mind that someone will need to be present during the inspection so that the building inspector can access the location of the electrical meter and EV charger (typically in the garage).

**Installing a level 2 EV charging system** often requires changes to the building’s electrical wiring. Before installing the EV charging equipment and the associated wiring, talk to your EV manufacturer about the electrical requirements for the charger unit to be installed at your home.

**When installing your EV charger,** be sure to use a licensed electrical contractor whose state contractor’s license and insurance are current. The contractor should follow the installation instructions of the EV charger manufacturer and the requirements of the California Electrical Code.

**Why is the electric utility concerned about your EV charger installation?** An individual level 2 EV charger may have a negligible impact on the utility electric system, the combined effect of several chargers in the same neighborhood could result in overloads on utility secondary wires and transformers**.** It is important that the electrical utility provider be notified of any level 2 charger installations to ensure that utility electrical system components are adequately sized to maintain high levels of service reliability.

**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 your 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 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 appliance and other loads consult with a trained electrical professional.)

|  |  |  |  |
| --- | --- | --- | --- |
| **CHECK ALL APPLICABLE LOADS** | **DESCRIPTION OF LOAD** | **TYPICAL USAGE** | **WATTS USED** |
| **GENERAL LIGHTING AND RECEPTACLE OUTLET CIRCUITS** | | | |
|  | MULTIPLY THE SQUARE FOOTAGE OF HOUSE X3 | 3  WATTS/SQ.FT. |  |
|  | | | |
|  | KITCHEN CIRCUIT | 3,000 WATTS |  |
|  | ELECTRIC OVEN | 2,000 WATTS |  |
|  | ELECTRIC STOVE TOP | 5,000 WATTS |  |
|  | MICROWAVE | 1,500 WATTS |  |
|  | GARBAGE DISPOSAL | 1,000 WATTS |  |
|  | AUTOMATIC DISH WASHER | 3,500 WATTS |  |
|  | GARBAGE COMPACTOR | 1,000 WATTS |  |
|  | INSTANEOUS HOT WATER AT SINK | 1,500 WATTS |  |
| **LAUNDRY CIRCUIT** | | | |
|  | LAUNDRY CIRCUIT | 1,500 WATTS |  |
|  | ELECTRIC CLOTHES DRYER | 4,500 WATTS |  |
| **HEATING AND AIR CONDITIONING CIRCUITS** | | | |
|  | CENTRAL HEATING GAS & AIR CONDITIONIGN | 6,000 WATTS |  |
|  | WINDOW MOUNTED AC | 1,000 WATTS |  |
|  | WHOLE-HOUSE ATTIC FAN | 500 WATTS |  |
|  | CENTRAL ELECTRIC FURNANCE | 8,000 WATTS |  |
|  | EVAPORATIVE COOLER | 500 WATTS |  |
| OTHER ELECTRICAL LOADS | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | ELECTRIC WATER HEATER (STORAGE) | 4,000 WATTS |  | |
|  | | ELECTRIC TANKLESS WATER  HEATER | 15,000 WATTS |  | |
|  | | POOL OR SPA | 3,500 WATTS |  | |
|  | | OTHER: | WATTS |  | |
|  | | OTHER: | WATTS |  | |
|  | | OTHER: | WATTS |  | |
|  | **LEVEL 2 ELECTRIC VEHICLE CHARGER WATTAGE RATING** | | | |  |
| (ADD-UP ALL OF THE WATTS FOR LOADS YOU HAVE CHECKED) TOTAL WATTS USED | | |  | | |

**\*Use name plate ra�ng in wats or calculate as:(Ampere ra�ng of circuit x 240 volts = Wats)**

**INSTRUCTIONS:** Using the “**TOTAL WATTS USED”** number from the previous page, check the appropriate line in column 1 and follow that line across to determine the minimum required size of the electrical service panel shown in column 3. In column 4, write in the size of your exis�ng service panel (main breaker size). If your exis�ng service panel (column 4) is smaller than the minimum required size of the exis�ng service (column 3), then you will need to install a new upgraded electrical service panel to handle the added electrical load from the proposed level 2 EV charger.

**TABLE BASED ON CEC 220.83(A), 230.42, AND ANNEX D.**

|  |  |  |  |
| --- | --- | --- | --- |
| **1** | **2** | **3** | **4** |
| **CHECK THE APPROPIATE LINE** | **TOTAL WATTS USED**  **(FROM PREVIOUS PAGE)** | **MINUMUN REQUIRED SIZE OF EXISTING 240 VOLT ELECTRICAL SERVICE PANEL (MAIN**  **BREAKERSIZE)** | **IDENTIFY THE SIZE OF YOUR EXISTING MAIN SERVICE BREAKER (AMPS)\*\*** |
|  | **UP 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 your exis�ng service (column 4) **MUST** be equal to or larger than the minimum required size of (column 3) or a new larger electrical service panel will need to be installed in order to sa�sfy the electrical load demand of the EV charger.

**STATEMENT OF COMPLIANCE**

# By my signature, I atest that the informa�on provided is true and accurate.

**Job Address:**

(Print job address)

**Signature:**

(Signature of applicant) (Date)

# In addi�on to this document, you will also need to provide a copy of the manufacturer’s installa�on literature and speciﬁca�ons for the level 2 charger you are installing.

**Note:** This is a voluntary compliance alterna�ve, and you wish to hire a qualiﬁed individual or company to perform a thorough evalua�on of your electrical service capacity in lieu of this alterna�ve methodology. Use of this electrical load calcula�on es�mate methodology 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.