



City of Huntington Beach
Department of Community Development
EV CHARGER CHECKLIST
2000 Main Street, Huntington Beach, CA 92648
Office: (714) 536 - 5241 Fax: (714) 374 - 1647

Purpose

The purpose of this guideline is to assist permit applicants in streamlining the permitting and inspection process for Residential Single Family EV Chargers.

☐ **Site Plan**

Provide two copies of the job-specific site plan showing:

- ☐ The location of the building and street name
- ☐ All EV receptacle location(s), conduit type / size, wire type / size, conductors, equipment ground size, and existing or proposed electric meter location
- ☐ Zoning Code Compliance

☐ **Manufacturer's Specifications**

Provide two copies of the manufacturer's charger specifications. These specifications will show requirements and data for the EV charger being installed as well as a listing agency approval.

☐ **Electrical Service Load Calculation Form**

Provide two copies of our Electrical Service Calculation Form. Follow steps one thru nine to figure out the minimum amperage needed for your main electric meter.

Sample Site Plan

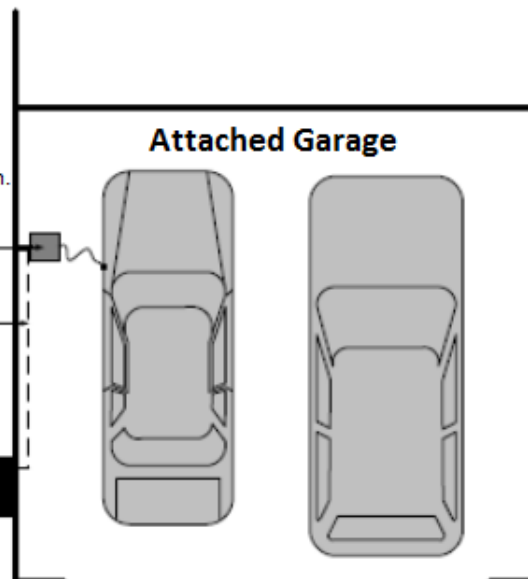
Sample Electrical Requirements

Vehicle batteries listed as suitable for charging indoors without ventilation.

New 40 amp rated level 2 EV Charger

New 3/4" EMT conduit with #8 THHN c.u. and #10 THHN c.u. ground

New 40 amp circuit breaker installed in the existing 200 amp electric meter panel



Sample Project Description

Installation of a new 40 amp circuit for a level 2 EV charger per manufacturer's installation instructions and 2016 CEC Article 625.

Minimum service panel size to be in accordance with the residential load calculation form.

House



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Optional Method Service Load Calculation for a Single Dwelling Unit (CEC 220.82)

1. General Lighting and Receptacle Loads 220.82(B)(1) Do not include open porches, garages, or unused or unfinished spaces not adaptable for future use.	$3 \times \underline{\hspace{2cm}} =$ (sq ft using outside dimensions)	1	
2. Small-Appliance Branch Circuits 20.82(b)(2) At least two small-appliance branch circuits must be included. 210.11(C)(2)	$1500 \times \underline{\hspace{2cm}} =$ (minimum of two)	2	
3. Laundry Branch Circuit(s) 220.82(B)(2) At least one laundry branch circuit must be included. 210.11(C)(2).	$1500 \times \underline{\hspace{2cm}} =$ (minimum of one) NOTE: 1500 VA shall be included for each laundry branch circuit.	3	
4. Appliances 220.82(B)(3) and (4) Use nameplate rating of all appliances (fastened in place, permanently connected, or connected to a specific circuit), ranges, ovens, cooktops, motors, and clothes dryers. Convert any nameplate rating given in amperes to volt-amperes by multiplying the amperes by the rated voltage.	Do not include any heating or air-conditioning equipment in this section. <u>water heater</u> / <u> </u> <u>dishwasher</u> / <u> </u> <u>clothes dryer</u> / <u> </u> <u>disposal</u> / <u> </u> <u>range</u> / <u> </u> <u>EV</u> / <u> </u> <u> </u> / <u> </u> <u> </u> / <u> </u> <u> </u> / <u> </u> <u> </u> / <u> </u> <u> </u> / <u> </u>	4	Total volt-amperes of all appliances. LISTED BELOW
5. Apply 220.82(B) demand factor to the total of lines 1 through 4. $\underline{\hspace{2cm}} - 10,000 = \underline{\hspace{2cm}} \times 40\% = \underline{\hspace{2cm}} + 10,000 =$ (total of line 1 through 4)		5	
6. Heating or Air-Condition System 220.82(C) Use the nameplate ratings in volt-amperes for all applicable systems in lines 'a' through 'c'.	A) Air-Conditioning and cooling systems, including heat pumps without any supplemental electric heating: $\underline{\hspace{2cm}} \times 100\% =$		
B) Electric thermal storage and other heating systems where the usual load is expected to be continuous at full nameplate value. Systems qualifying under this section shall not be figured under any other selection in 220.82(C). $\underline{\hspace{2cm}} \times 100\% =$	B	C) Supplemental electric heating equipment for heat-pump systems. Include the heat-pump compressor(s) at 100%. If the heat-pump compressor is prevented from operating with the supplement heat, omit the compressor. $\underline{\hspace{2cm}} \times 65\% =$	
7. Total Volt-Ampere Demand Load: $\underline{\hspace{2cm}} + \underline{\hspace{2cm}} =$ (largest VA rating from line 6a through 6c) (line 5)		7	
8. Minimum Amperes Divide the total Volt-amperes by the voltage. $\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} =$ (line 7) (voltage)	8	9. Minimum Size Service or Feeder 240.6(A) <u> </u> (minimum amperes)	9
10. Size the Service or Feeder Conductors. Use 310.15(B)(6) to find the service conductors up to 400 amperes. Ratings in excess of 400 amperes shall comply with Table 310.16. 310.15(B)(6) also applies to feeder conductors serving as the main power feeder.		Minimum Size Conductors	10
11. Size the Grounding Electrode Conductors. Use line 10 to find the grounding electrode conductor in Table 250.66. Size the Equipment Grounding Conductor (for Feeder). 250.122. Use line 9 to find the equipment grounding conductor in Table 250.122. Equipment grounding conductor types are listed in 250.118.		Minimum Size Conductors	12

(minimum is 100 amperes)