**City of San Juan Capistrano**
Development Services Department
32400 Paseo Adelanto
San Juan Capistrano, CA 92675
Phone: (949) 443-6347
Email: building@sanjuancapistrano.org
www.sanjuancapistrano.org/building

# RESIDENTIAL ELECTRICAL LOAD CALCULATION

**(Only for Service Ratings of 120/240V, 225 Amps Max)**

**INSTRUCTIONS:** Review the electrical loads in the table below and check all that exist in the home (be sure to include the proposed Level 2 EVCE and/or Photovoltaic System). Fill in the corresponding wattage for each item checked, and then add up all the checked items to determine total wattage used. Wattages shown are rough estimates: for a more precise analysis use actual values based on nameplate ratings or consult with an electrical professional.

**PROJECT ADDRESS:**

_____

STATEMENT OF COMPLIANCE:

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

**Name of Applicant:** _____
(Print Name)

**Signature:** _____ _____
(Signature of Applicant) (Date)

Note: This form 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 methodology. Use of this electrical load calculation worksheet is at the user's risk and carries no implied guarantee of accuracy. Users of this form are advised to seek professional assistance in determining the electrical capacity of a service panel.

| Check All Applicable | Description of Load | Volt-Amps on Nameplate Rating | (Watts) Volt-Amps Used |
|---|---|---|---|
| General Lighting/Power Load | | | |
| Required | Total Square footage of building times 3 | 3 volt-amps/sf | |
| Required | Kitchen Small Appliance Branch Circuits (min. 2) | 1,500 volt-amps/circuit | |
| Required | Laundry Circuit (min. 1) | 1,500 Volt-Amps | |
| Appliances and Equipment Except Air Conditioner(s) | | | |
| | Microwave | 1,400 watts | |
| | Trash Compactor | 1,000 watts | |
| | Dishwasher | 1,500 watts | |
| | Disposal | 1,000 watts | |
| | Electric Oven | 2,000 watts | |
| | Electric Range | 5,000 watts | |
| | Induction Range | 10,000 watts | |
| | Electric Clothes Dryer | 4,000 watts | |
| | Electric Clothes Washer | 500 watts | |
| | Electric Tankless Water Heater | 15,000 watts | |
| | Electric Water Heater | 4,000 watts | |
| | Electric Heat Pump Water Heater | 550 watts | |
| Required on new homes | Electric Vehicle Supply Equipment (EVSE) | 7,000 watts | |
| | Evaporative Cooler | 500 watts | |
| | Pool or Spa | 2,000 watts | |
| | Other: | | |
| | Other: | | |
| | Other: | | |
| Sub-Total Volt-Amps Used (add up V-A used for everything checked) | | | |
| | | | -10,000 V-A |
| | | Subtotal (A) | |
| | | | x .40 |
| | | Subtotal (B) | |
| | | | +10,000 V-A |
| | | Subtotal (C) | |
| Heating and Air-Conditioning (Include the largest of the following): | | | + |
| 1. Air conditioning and cooling (100% of nameplate (NP) rating) = | | | |
| 2. Heat pump without supplemental heating (100% NP Rating) = | | | |
| 3. Heat pump with supplemental electric heat (100% NP plus 65%) = | | | |
| 4. Electrical space heating , 4 separate units (65% NP rating) = | | | |
| 5. Electrical space heating > 4 separate units (40% NP rating) = | | | |
| 6. Electrical thermal storage and other 100% NP rating = | | | |
| | | | |
| | Total Current Demand (Volt-Amps) = | | |
| | Divided by 240 Volts = | | Amps |
| 40 Amp back-feed protection for future Photovoltaic System (Solar Panels) | | | + 40 Amps |
| Total Amps Required for Service Conductors and Panel = | | | |
| Rating of Existing/Proposed Electrical Service or Subpanel (Amps)= | | | |
| Panel Upgrade Required? (circle one) | | | Yes / No |

Single Family Dwelling Load Calculation – Step-by-Step Example (Optional Method)

CEC 220.82

Given:

Square foot area of home – 1700 square feet (sf)
1.5 kW (1,500 watts) dishwasher
10 kW range
15 kW central heat
4 kW water heater
29 amp, 240 volt air conditioning
4 kW clothes dryer

Instructions:

Step 1: Multiply the sf area by 3 volt-amperes (VA) per sf 1700 sf X 3 VA = 5,100 VA

Step 2: Add 1,500 VA for each 2-wire, 20-amp small appliance branch circuit and the laundry circuit 1,500 VA X 3 = 4,500 VA

Step 3: Add in the appliance loads at nameplate value or given on table (whichever is greater). Range 10,000 VA, Water heater 4,000 VA, Clothes dryer 4,000 VA, Dishwasher 1,500 VA

Step 4: Add all appliance loads together: 5,100+ 4,500 + 10,000 + 4,000 + 4,000 + 1,500 = 29,100 VA

Step 5: Subtract 10,000 VA from the total VA (this will be added back in later) 29,100 – 10,000 = 19,100 VA

Step 6: Multiply the remainder (19,100 VA) times 40%. 19,100 X .40 = 7,640 VA

Step 7: Add the 10,000 VA value from step 5 and the 7,640 VA from step 6 together to find the general load. 10,000 + 7,640 = 17,640 VA

Step 8: Compare the heating load to the AC load and take the larger of the two loads AC load at 100% = 29 amps X 240 volts = 6,960 VA, Heat load at 65% = 15,000 VA X .65 = 9,750 VA (largest load)

Step 9: Add the general load to the largest of the AC or heating load. General load (17,640 VA) + Heating load (9,750 VA) = Total load (27,390 VA)

Step 10: Divide the total load in VA by the voltage 27,390 / 240 = 114 amps

Step 11: Add 40 amps for future Photovoltaic System (Roof Solar Panels).

114 amps + 40 amps = 154 amps. (min. panel capacity)