SINGLE FAMILY DWELLING ELECTRICAL LOAD CALCULATION: (OPTIONAL METHOD)

Purpose:

To illustrate the method for sizing an electrical service.

Contractor________________________________Address___________________________________________

CEC Section: 220:82

General light, power SF x 3 volt-amperes = volt-amperes
Two kitchen appliance circuits @ 1,500 volt-amperes = 3,000 volt-amperes
Laundry circuits = 1,500 volt-amperes
Electric range (NP rating) = volt-amperes
Wall mounted oven (NP rating) = volt-amperes
Water heater (NP rating) = volt-amperes
Dishwasher (NP rating) = volt-amperes
Disposal (NP rating) = volt-amperes
Dryer (NP rating) = volt-amperes
Other ____________________________ = volt-amperes

Subtotal ______volt-amperes

Subtotal ______volt-amperes (First 10 kilo volt-amperes @ 100%) = 10,000 volt-amperes

Difference ______volt-amperes (Remaining volt-amperes x 40%) = ______volt-amperes

Heating and Air-Conditioning (The Largest of the following shall be included):

1. Air conditioning and cooling (100% NP rating) = ______volt-amperes
2. Heat pump without supplemental heating (100% NP rating) = ______volt-amperes
3. Heat pump with supplemental electric heating (100% NP rating plus 65%) = ______volt-amperes
4. Electrical space heating < 4 separate units (65% NP rating) = ______volt-amperes
5. Electrical space heating ≥ 4 separate units (40% NP rating) = ______volt-amperes
6. Electrical thermal storage and other (100% NP rating) = ______volt-amperes

Total ______ volt-amperes

Total volt-amperes ______ ÷ 240 volts = ______
(amps size for service entrance conductors and panel)
Single Family Dwelling Load Calculation – Step by Step Example (Optional Method) CEC 220.82

2800 sq. ft.
14 kW range
3 kW water heater
5 kW clothes dryer
1.5 kW dishwasher
15 kW central heat
29 amp, 240 volt air conditioning

**Step 1:**
Multiply the sq. ft. area by 3 VA per Sq. ft.
2800 sq. ft. X 3 VA = **8,400 VA** (VA = volt amperes)

**Step 2:**
Add in 1500 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 appliances loads at nameplate value.
Range **14,000 VA**
Water heater **3,000 VA**
Clothes dryer **5,000 VA**
Dishwasher **1,500 VA**

**Step 4:**
Add all appliance loads together.
Total = **36,400 VA**

**Step 5:**
Take the first 10 kW at 100%. 10,000 VA
Take the remainder (26,400 VA) at 40%. 26,400 VA X .40 = **10,560 VA**

**Step 6:**
Add the two values from step 5 together to find the general load.
10,000 VA + 10,560 VA = **20,560 VA**

**Step 7:**
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 8:**
Add the general load to the largest of the AC or heating load.
General load = 20,560 VA
Heating load = 9,750 VA
Total = **30,310 VA**

**Step 9:**
Divide the load in VA by the voltage. 30,310 VA ÷ 240 = **126 amps.**