SACRAMENTO COUNTY

Building Permits & Inspection Division

General Information: (916) 875-5296

www.building.saccounty.net

Full Service Center 827 7th Street, Room 102 Sacramento, CA 95814 *M-F 8:30am - 4:30pm*	**East Area Service Center** 5229 Hazel Avenue, Suite B Fair Oaks, CA 95628 *M-Tu. 9:00am - 4:00pm*
Bradshaw Center 9700 Goethe Road, Suite A Sacramento, CA 95827 *M-F 8:30am - 4:30pm*	**North Area Service Center** 3331 Peacekeeper Wy, Suite 100 McClellan, CA 95652 *W-Th. 9:00am - 4:00pm*

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			
	10,000 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.**