

RESIDENTIAL ELECTRICAL SERVICE SIZING Based on the 2001 California Electrical Code

NEC Code Load/Circuit Reference

GENERAL LIGHTING AND SMALL APPLIANCE

220-3b Living area sqft. _____ x 3 volt-amperes (VA) per sqft. = _____ VA (1)

220-16a Small appliance circuits (2 min.) _____ X 1500 VA. = _____ VA (2)

220-16b Laundry circuit (s) _____ X 1500 VA = _____ VA (3)

Lighting Load Subtotal (Total Lines 1-3) = _____ VA (4)

Adjust Light Load as Follows:

220-11 The first 3000 VA of lighting load at 100% = _____ VA (5)

Volt-Amperes over 3001 to 12000 VA _____ at 35%. = _____ VA (6)

Total Volt-Amperes over 12000 VA _____ at 25%. = _____ VA (7)

ADJUSTED LIGHTING & SMALL APPLIANCE TOTAL (Total Lines 4 -7). = _____ VA (A)

220-19 COOKING APPLIANCES: electrical ranges, ovens, counter cooking units etc. . = _____ VA (B)

220-17 APPLIANCE LOADS (VA Value from Nameplate)

Microwave 1500 VA X _____ = _____ VA (8)

Compactor 1200 VA X _____ = _____ VA (9)

Dishwasher 1200 VA X _____ = _____ VA (10)

Disposal 800 VA X _____ = _____ VA (11)

_____ VA X _____ = _____ VA (12)

_____ VA X _____ = _____ VA (13)

Appliance subtotal (Total lines 8-13) = _____ VA (14)

ADJUSTED APPLIANCE TOTAL = Sub Total (Line 14) _____ X _____ % = _____ VA (C)
(Less than 4 units X 100%, 4 or more units X 75%)

220-18 ELECTRIC DRYER - 5000 VA or Nameplate (which ever is larger). = _____ VA (D)

220-3b ELECTRIC WATER HEATER(name plate value) = _____ VA (E)

220-10b LARGEST COOLER, A/C OR HEATING LOAD

220-15 _____ VA (from name plate or use 9600 VA). = _____ VA (F)

OTHER LOADS _____ VA (or _____ AMPS X 240 = VA) = _____ VA (G)

OTHER LOADS _____ VA (or _____ AMPS X 240 = VA) = _____ VA (H)

OTHER LOADS _____ VA (or _____ AMPS X 240 = VA) = _____ VA (I)

TOTAL VA {Total (A)+(B)+(C)+(D)+(E)+(F)+(G)+(H)+(I)}. = _____ TOTAL VA

220-2 MINIMUM SERVICE SIZE = $\frac{\text{TOTAL VA}}{240 \text{ VOLTS}} = \frac{\quad}{240} = \quad$ AMPS

Note: Error in these calculations as well as improper electrical installations can be hazardous. If in doubt, hire a licensed Electrical Contractor to do the work.



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HELP FOR THE HOMEOWNER

CITY OF SANTA PAULA, BUILDING AND SAFETY

Approved By:

Date: 4/9/03

8/1/03
Date

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RESIDENTIAL ELECTRICAL NOTES Based on the 2001 California Electrical Code

REQUIRED BRANCH CIRCUITS

1. Small-Appliance Branch Circuits. Two or more 20-ampere small-appliance branch circuits shall be provided for all receptacles or outlets specified by Section 210-52(b). Section 210-11(c)1
2. Laundry Branch Circuits. At least one 20-ampere branch circuit shall be provided to supply the laundry receptacle outlet(s) required by Section 210-52(f). This circuit shall have no other outlets. Section 210-11(c)2
3. Bathroom Branch Circuits. At least one 20-ampere branch circuit shall be provided to supply the bathroom receptacle outlet(s). Such circuits shall have no other outlets. Section 210-11(c)3

OTHER DEDICATED CIRCUITS TO CONSIDER

Type of Appliance	Typical Branch Circuit Rating	Volt Amperes For Calculations
1. Electrical range (240 V)	60 AMPS	13100 VA
2. Kitchen counter top small appliance branch circuit (120 V)	20 (15 Min) Amperes	1500 VA (2 Min.)
3. Counter-Mounted Electric Cooking Unit (240 V)	30 Amperes	14500 VA
4. Dishwasher (120 V)	15-20 Amperes	1200 VA
5. Garbage Disposal (120 V)	15 Amperes	800 VA
6. Wall-mounted electric oven (240 V)	30-40 Amperes	12000 VA
7. Electric clothes dryer (240 V)	30 Amperes	5000 VA
8. Washing machine or laundry area	20 Amperes	1500 VA
9. Microwave (120 V)	20 Amperes	1500 VA
10. Bathroom Electric Resistance Heaters (120 V)	20 Amperes	2400 VA
11. Electrical Wall Heaters	40 Amperes	9600 VA

Notes: Circuit rating shown here are typical and may vary. Always verify the nameplate rating of the actual unit and ensure the demand does not exceed the capacity of the circuit.

These loads may sometimes be combined with each other but total loads must be calculated and deratings must be applied. See NEC articles 220, 230, 424, 430, 440 and others for detailed requirements.

Loads From Motors

Largest or single motor at $1.25 \times \text{FLA} \times \text{Volts} = \text{VA}$

Total of Remaining Motors at $1.00 \times \text{FLA} \times \text{Volts} = \text{VA}$

Total of Remaining Motors at $1.00 \times \text{FLA} \times \text{Volts} = \text{VA}$

Total of Remaining Motors at $1.00 \times \text{FLA} \times \text{Volts} = \text{VA}$

Subtotal = _____ VA

(Can be entered in calculations in the "OTHER LOADS" section)

Table 430-148 Full-Load Currents in Amperes
Single-Phase Alternating-Current Motors

HP	115V	230V
1/6	4.4	2.2
1/4	5.8	2.9
1/3	7.2	3.6
1/2	9.8	4.9
3/4	13.8	6.9
1	16.0	8.0
1-1/2	20.0	10.0
2	24.0	12.0

Single-Phase Alternating-Current Motors

Useful Information

AMPS X VOLTS = VA (Volt-Amps or Watts)

FLA = Full Load Amps



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