

Standard Method for Dwelling Service Calculations

Worksheet for the EVITP

Using the Standard Method complete this worksheet to perform a service load calculation. An example of standard loads is shown below.

- | | |
|--|-----------------------------------|
| 3000 Sq. Ft. of Living Space | 1-15 kW Electric Range |
| 3- Small Appliance Branch Circuits | 1- 5 kW Wall Mounted Oven |
| 1- Laundry Branch Circuit | 1- 3 kW Cooktop Unit |
| 1 – 4.2 kW Electric Dryer | 1.6 kW 120 V Dishwasher |
| 1 – 28A - 240V Central A/C Unit | 1/3 HP Disposal – 120V |
| 1-12A - 120V Under-Cabinet Microwave Oven | 1/2 HP Compactor – 120V |
| 1- 4kW Electric In-Floor Heat | 2-1/4 HP Attic Fans – 120V |
| 2 – 6kW Electric Baseboard Heat | 1/3 HP Sump Pump – 120V |
| Level 2 EVSE – 24A – 240 V | |

Step 1: Section 220.12 – Lighting load for listed occupancies.

_____ Sq. ft. x 3 VA = _____ VA

Step 2 : Section 220.52 – Small Appliance and Laundry load.

_____ Sq. ft. x 3 VA = _____ VA

_____ Appliances Circuits x 1500VA = _____ VA

_____ Laundry Circuit x 1500 VA = _____ VA

General Lighting Load = _____ VA

Step 3: Table 220.42 Apply demand factors to the general lighting load.

First 3000 VA at 100% = _____ VA

Remainder at 35% (_____ x 0.35) = _____ VA

Net Load = _____ VA

Step 4: 220.53 – Demand Factor – Appliance Loads – Dwelling Units.

_____	= _____ VA
_____	= _____ VA
_____	= _____ VA
_____	= _____ VA
_____	= _____ VA
_____	= _____ VA
_____	= _____ VA
_____	= _____ VA
_____	= _____ VA
_____	= _____ VA
_____	= _____ VA
Total	= _____ VA
75% of total; four or more appliances	= _____ VA

Step 5: 220.54 – Clothes Dryer – The greater of 5 kW or nameplate value.

_____ kW Electric Dryer = _____ VA

Step 6: Table 220.55 Household cooking Equipment

_____	= _____ VA
_____	= _____ VA
_____	= _____ VA
Total	= _____ VA

Step 7: Article 220.60 – Noncoincident Loads

Air conditioning

_____ A x _____ V x _____ (#)	= _____ VA
_____ A x _____ V x _____ (#)	= _____ VA

Electric Heat

$$\underline{\hspace{2cm}} \text{ A} \times \underline{\hspace{2cm}} \text{ V} \times \underline{\hspace{2cm}} (\#) = \underline{\hspace{2cm}} \text{ VA}$$

$$\underline{\hspace{2cm}} \text{ A} \times \underline{\hspace{2cm}} \text{ V} \times \underline{\hspace{2cm}} (\#) = \underline{\hspace{2cm}} \text{ VA}$$

$$\underline{\hspace{2cm}} \text{ A} \times \underline{\hspace{2cm}} \text{ V} \times \underline{\hspace{2cm}} (\#) = \underline{\hspace{2cm}} \text{ VA}$$

$$\text{Largest load} = \underline{\hspace{2cm}} \text{ VA}$$

Step 8: 220.50 – 25% of largest motor FLA.

$$\underline{\hspace{2cm}} \text{ A} \times \underline{\hspace{2cm}} \text{ V} \times 25\% = \underline{\hspace{2cm}} \text{ VA}$$

Remember that although the voltages shown in the tables in Article 430 indicate that motors are rated for 115, 230 and 460 Volts, Section 220.5(A) requires nominal voltages of 120, 240 and 480 Volts to be used for load calculations.

Step 9: 220.14(A) Other Loads – EVSE

$$\underline{\hspace{2cm}} \text{ A} \times \underline{\hspace{2cm}} \text{ V} \times \underline{\hspace{2cm}} (\#) = \underline{\hspace{2cm}} \text{ VA}$$

Sum of Calculated Loads

$$\text{Lighting, Sm. Appliance, Laundry (Step 3)} = \underline{\hspace{2cm}} \text{ VA}$$

$$\text{Fastened in Place Appliances (Step 4)} = \underline{\hspace{2cm}} \text{ VA}$$

$$\text{Clothes Dryer (Step 5)} = \underline{\hspace{2cm}} \text{ VA}$$

$$\text{Cooking Equipment (Step 6)} = \underline{\hspace{2cm}} \text{ VA}$$

$$\text{Noncoincident Heat – A/C (Step 7)} = \underline{\hspace{2cm}} \text{ VA}$$

$$25\% \text{ of Largest Motor (Step 8)} = \underline{\hspace{2cm}} \text{ VA}$$

$$\text{Other Loads – (Step 9)} = \underline{\hspace{2cm}} \text{ VA}$$

$$\text{Total Calculated Load} = \underline{\hspace{2cm}} \text{ VA}$$

Step 10: Table 310.15 (B)(7) – Size the service and conductors.

_____ VA / 240V = _____ Amps

Conductor Size _____ CU _____ AL

Step 11: Grounding Electrode Conductor – Table 250.66

GEC Size _____ CU _____ AL