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

<u>Step 1:</u> Section 220.12 – Lighting load for listed occupancies.

_____ Sq. ft. x 3 VA = _____ VA

<u>Step 2 :</u> 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

<u>Step 3:</u> 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

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

_____A x _____V x _____(#) =_____VA

_____A x _____V x _____(#) =_____VA

_____A x _____V x _____(#) =_____VA

Largest load =_____VA

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

_____A x _____V x 25% =_____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.

<u>Step 9:</u> 220.14(A) Other Loads – EVSE

_____A x _____V x _____(#) =_____VA

Sum of Calculated Loads

Lighting, Sm. Appliance, Laundry (Step 3) =_____VA

Fastened in Place Appliances (Step 4) =_____VA

Clothes Dryer (Step 5) =_____VA

Cooking Equipment (Step 6) =_____VA

Noncoincedent Heat – A/C (Step 7) =_____VA

25% of Largest Motor (Step 8) =_____VA

Other Loads – (Step 9) =_____VA

Total Calculated Load =_____VA

Step 10: Table 310.15 (B)(6) – Size the service and conductors.

_____**VA / 240V** **=**_____**Amps**

Conductor Size _____ CU _____ AL

Step 11: Grounding Electrode Conductor – Table 250.66

GEC Size _____ CU _____ AL