

Calculator/ form to be loaded on Power+ Energy Solutions website, the website is in Wordpress format.

Energy sizing calculator is to compile a list of loads in a home or building to determine what size battery storage or generator will be needed to back up a residence or business.

**\*\*Many examples use the unit of measurement VA (volt-amps) please use the unit of measurement of WATTS or wattage in place of volt-amps\*\***

Examples

[http://gensizer.assurancepower.com/index.php?option=com\\_aps&view=calculator&layout=wholehouse&Itemid=55](http://gensizer.assurancepower.com/index.php?option=com_aps&view=calculator&layout=wholehouse&Itemid=55)

<https://www.electricgeneratorsdirect.com/stories/1469-Easily-Size-Your-Home-Standby-Generator.html>

<https://www.ecmag.com/section/codes-standards/residential-calculations-estimating-elements-electrical-system>

1. The calculator is a dynamic form which should be able to be printed as a PDF,
2. The form should have 2 versions.
  - a. A **PRO** version that another contractor can use that allows them to add their logo at the top of the page (our logo is placed at bottom for both versions) and contact info.
  - b. There is a dropdown button to choose Home or Building
  - c. There is a drop down button to choose single phase 120/240 volts or 3 Phase 120/208v or 120/240v. Or 277/480v
  - d. A **HOMEOWNER** version that has our logo at top and contact info on the PDF, and only single phase 120/240v is selectable.
3. Each form/ project to be named (required) and a location field supplied but not required
4. Each section to have icon of respective loads/ items

5. Each section going forward has a box next to loads to indicate if loads will be managed, if they are managed (yes) then are they managed based on priority 1-8, or “off” on battery/ generator”. A “yes” they are managed adds that load in watts to the total size of the battery/ generator required.
6. Each project to take 2 paths of flow
  - a. Whole home
  - b. Partial home
7. Appliance Section includes drop down menu listing each appliance load circuit with corresponding watts per load. Each appliance selection (see list) corresponds to set wattage, multiple unlimited appliances can be chosen.
8. Load 1: General lighting and receptacle loads & Small appliance loads
  - a. Choosing the whole home/ building goes to “enter size of home/ building” in sq. ft. (computed by multiplying 3 watts per square foot) to equal total general lighting and plug load. Zip code required to be added to this section on the homeowner version.
  - b. At least two small appliance circuits per 210.52(A) must be installed to supply receptacle outlets in the kitchen, breakfast room, pantry and dining room. One is needed for the laundry room per 210.52(B). Small appliance circuits are calculated at 1,500 VA each. Therefore, 4,500 VA is added to the general lighting load. These outlets are not to be connected to the circuits supplied by the general-purpose or special appliance circuits.
  - c. A demand factor, as permitted in Table 220.42, can be applied to these loads. Depending on the VA, the first 3,000 VA can be calculated at 100 percent and the remaining VA at 35 percent.
9. Load 2: Appliance loads
  - a. Fixed appliance loads, such as dishwashers, disposals, water heaters, compactors, etc., are permitted to have a 75 percent demand factor applied to their total VA. (not included are electric ranges, cloth dryers, space-heating equipment, or air-conditioning equipment)

10. Load 3: Electric Cooking Appliance loads, *Table 220.55, Col. B (3.5kw - 8.75kw)*

- a. # of appliances 1=80%, 2=65%, 3=55%, 4=50%, 5=45%, 6=43%, 7=40%, 8=36%

11. Load 4: Dryer load

- a. 100%

12. Load 5: HVAC (220.6 no noncoincident loads) the larger of the two loads such as heating and AC need only be used.

- a. Fixed electric space heating loads shall be calculated at 100%
- b. AC compressors shall be calculated at 100%, heat pump supplemental heat strips to be sized at 65%. If heat pump compressor is prevented from operating at the same time as the heat pump, it does not need to be added to supplementary heat for the total central heating load.

	Appliances and Load Sheet					
Appliance	Load Wattage					
2 Small Appliances a 1 Laundry Receptacle	4500					
Sauna	7500					
Steam Unit	7500					
Electric CookTop						
4 burners	6000					
5 burners	8000					
Cooktop Gas	240					
Diswasher/Disposal	1680					
Single oven						
Double Oven	8500					
Exhaust Hood	1000					

Freezer	1200					
Garbage Disposal	540					
ICE Maker	1200					
InstaHot	1500					
MicroWave	1500					
Oven	7000					
Oven Gas	300					
Range	7680					
Refrigerator	1200					
Trash Compactor	600					
UC Refrigerator	300					
Wine Cooler	1200					
Dryer Gas	700					
Dryer	5000					
Washer	1200					
Dock Power - 50 AMPS	10000					
Garage Door Opener	540					
Pump 1HP	1800					
Pump 1/2 HP	575					
Pump 2HP	2000					
Warming Drawer	1200					
Pool Heater	7500					
Pool Heater Gas	200					
Recirc Pump	375					
Central Vac	1000					
Jaccuzi Tub	1000					
Elevator	7500					
Electric Car Charger 30 A	7200					
Electric Car Charger 60 A	14400					
Golf Cart Charger	1200					
Sump Pump	750					
Tankless Water Heater	24000					
Tankless Water Heater GAS	200					
Water Heater	4500					

Water Heater Gas	300					
1.5 TON AC	1757					
2 TON AC	2342					
3 TON AC	3513					
4 TON	4684					
5 TON	5855					
AIR Handler Blower Fan	300					
Geothermal Heat Pump	2400					
Mini Split AC 12,000 BTU/HR	1300					
Mini Split AC 14,000 BTU/HR	2000					
Mini Split AC 17,200 BTU/HR	2070					
Mini Split AC 22,000 BTU/HR	2500					
Mini Split AC 30,700 BTU/HR	3380					
Mini Split AC 34,000 BTU/HR	4240					
Mini Split AC 9,000 BTU/HR	1200					
Window AC 10,000 BTU/HR	1080					
Window AC 12,000 BTU/HR	1500					
Window AC 18,000 BTU/HR	2000					
Window AC 24,000 BTU/HR	3050					
Window AC 5,000 BTU/HR	540					
Window AC 8,000 BTU/HR	890					
10 KW Heat Strip	10000					
15 KW Heat Strip	15000					
5 KW Heat Strip	5000					
7.5 KW Heat Strip	7500					
AIR Handler Blower Fan	500					
AIR Handler Blower Fan	300					
Boiler	600					
Furance Ignitor	300					
Geothermal Heat Pump	2400					

Heat Pump 15 AMP	3600					
Heat Pump 20 AMP	4800					
Heat Pump 30 AMP	7200					
Radiant Heat Biler	300					
Radiant Heat Pump	575					
SteamRadiant Heater	600					