

Off-grid appliance wattage cheat sheet

* Watt My Roof

Typical values for sizing solar, batteries and inverters

Appliance	Running W	Startup W	Hours/day	Wh/day	Voltage
Refrigerator (full-size, efficient)	150	600	8	1,200	120V
Chest freezer	100	500	8	800	120V
12V compressor fridge (RV/van)	45	90	8	360	12V DC
Microwave (1,000 W cooking power)	1,500	1,500	0.25	375	120V
Electric kettle	1,500	1,500	0.2	300	120V
Drip coffee maker	900	900	0.25	225	120V
Induction cooktop (single burner)	1,800	1,800	0.5	900	120V
Slow cooker	200	200	6	1,200	120V
Clothes washer (top or front load)	500	1,200	1	500	120V
Gas clothes dryer (electric parts)	300	600	1	300	120V
12V RV water pump	60	120	0.5	30	12V DC
Shallow-well jet pump (1/2 hp)	1,000	3,000	1	1,000	120V
Submersible well pump (1 hp)	1,500	4,500	1	1,500	240V
Window air conditioner (8,000 BTU)	700	2,100	6	4,200	120V
Ductless mini-split (12,000 BTU, inverter)	900	1,000	6	5,400	240V
Space heater	1,500	1,500	4	6,000	120V
Gas furnace blower	500	1,000	4	2,000	120V
Ceiling fan	60	60	8	480	120V
12V roof vent fan (RV/van)	30	30	8	240	12V DC
Dehumidifier (50 pint)	500	1,000	8	4,000	120V
LED lights (6 bulbs)	60	60	5	300	120V
Internet modem and Wi-Fi router	25	25	24	600	120V
Satellite internet dish (standard)	60	60	24	1,440	120V
Laptop charging	65	65	5	325	120V
Phone charging	10	10	3	30	12V DC
LED TV (50 inch)	100	100	4	400	120V
CPAP machine with humidifier	60	60	8	480	120V
Circular saw	1,400	2,400	0.25	350	120V
Table saw (15 A)	1,800	4,500	0.25	450	120V
Air compressor (portable)	1,200	3,600	0.5	600	120V
Cordless tool battery charger	100	100	2	200	120V
EV charging, Level 1	1,400	1,400	4	5,600	120V

Size it in four steps

- Daily energy:** watts × hours per day for each load, then add them up.
Fridge: 150 W × 8 h = 1,200 Wh.
- Battery (kWh):** daily kWh × days of storage × 1.2 ÷ 0.8 for lithium.
- Panels:** daily kWh × 1.2 ÷ (panel kW × peak sun hours × 0.8). Use your darkest month's sun hours.
- Inverter:** 120V/240V watts that run together × 1.25. Surge = those watts + the biggest startup jump (add the jumps of motors that can start at once).

Stay safe

- Never run a generator indoors or in a garage. Carbon monoxide kills.
- Startup watts vary by model. Check the nameplate before you buy an inverter.
- Don't charge lithium batteries below about 32°F (0°C).
- Wiring into a building's panel, 240V work, and solar strings above 50V DC need a licensed electrician.