GENERATOR GUIDE

SELECTING A GENERATOR

Generators come in permanent and portable units. They burn gasoline, natural gas, propane or diesel fuel.

WHAT TYPE TO CHOOSE?

Portable generators are not tied to the home's electrical system. Appliances are plugged directly into the generator.

Permanent generators are generally wired to the main breaker panel and operate automatically when there is a loss of power.

WHAT SIZE DO I NEED?

A generator's size is indicated in watts. To decide what size generator to purchase, determine what will be run off of the generator.

Most electrical products have a tag indicating the amps and volts required to run them, or their wattage.

When a motor is not required—such as for light bulbs, hot plates, toasters and space heaters—figure the wattage by multiplying amps times volts.

Do this for each item and add those figures together for the total wattage needed.

For example, the wattage of three light bulbs at 100 watts each totals 300 watts. Add a 1,000-watt coffee maker, and the total is 1,300 watts. Each additional item adds more wattage until you determine your total load in watts.

More wattage is needed when a motor is required to start the appliance. This is the case with refrigerators, freezers, water pumps, hair dryers, etc. They may need three times the rated power requirement to start up.

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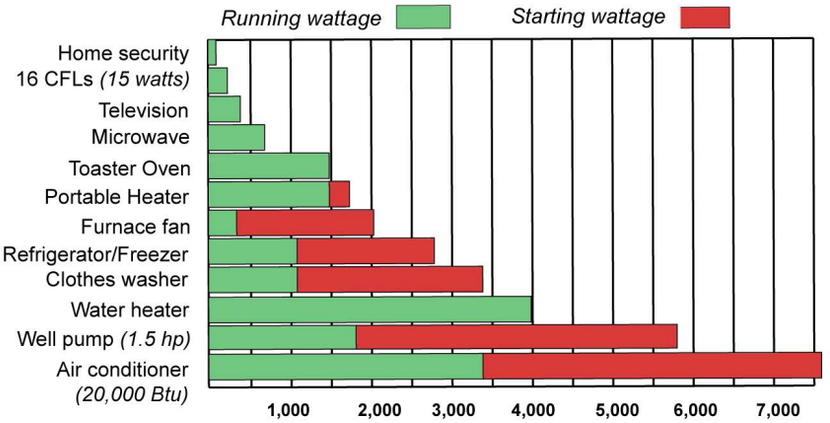
The Right **Portable Generator** for the Job

Before purchasing or operating a portable generator, make a list of the appliances you will need to run at the same time. Find both starting and running wattage requirements on appliance nameplates or in owner's manuals; add them up to determine the total wattage your generator should handle.

Sample running wattages, as compared to spiked starting wattages:



Sources:
North Carolina Association of Electric Cooperatives; National Rural Electric Cooperative Association

BE PREPARED

Despite our best efforts, severe and unusual weather can wreak havoc and cause a power outage that can last for hours or days. In advance of the winter storm season there are several things that you can do ahead of time to prepare and protect your family in the event of an outage. To help members get started, check out CPI's Winter Preparedness checklist

POWER OUTAGE TIPS

- Leave a porch light on so repair workers—and you—know if power is back on.
- Install surge protectors to protect equipment.
- Keep refrigerator and freezer doors closed. Food in a refrigerator will last 12 to 24 hours if kept cool. Food in a full freezer can last 24 to 48 hours.
- Prepare an emergency kit that includes a flashlight, radio, bottled drinking water and easy-to-prepare food items.

GENERATOR GUIDE

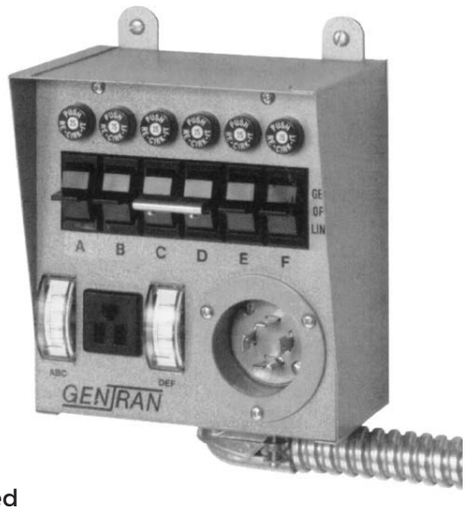
To get the wattage needed for one of these appliances, multiply amps x volts x 3. Total all the wattage to calculate the size of the generator needed.

The watts indicated on the side of generators (2,500W, 3,000W 5,500W) is the surge wattage. A generator's rated wattage is less then the surge wattage. For instance a 5,000W generator will deliver about 4,500 continuous watts.

Rated wattage is the amount of watts available for continuous running; surge wattage is the amount of watts available for a short time to start up an appliance with a motor.

GENERATOR SAFETY AND TIPS

- All generators must be isolated from the home's electric wiring so the electricity they generate does not feed onto power lines and endanger utility line workers and the public. Likewise, when power is restored, electricity can backfeed into the home, damaging equipment.
- Never plug a portable generator into a wall outlet. Run only those appliances that can be plugged into the generator.
- Permanent generators should be installed by a licensed electrician. A transfer switch is critical to the safe operation of a generator, because it disconnects the generator from the outside electric system.
- Generators are most efficient running near capacity, so know your loads and manage it accordingly. You do not want a large generator running to power a couple of lights.
- Be sure the generator will run critical equipment, such as well pumps. Calculate the watts needed to run your well pump by using the formula for starting motors.
- Electric starters, with or without remote operation, are a big plus. Physical condition and strength of the operator could be a factor in pulling a starter cord.



- It is possible to plug appliances, lights and heaters directly into the generator using extension cords. Use appropriate size cords and monitor them carefully to prevent overloading, overheating and becoming a fire hazard. Do not fashion a double-ended cord and plug the generator into a house circuit through an outlet. This not only energizes the house, it will also backfeed onto the utility grid, and could easily kill a utility worker attempting to repair a "dead" line.
- For safety, generators can be connected to the house wiring with a transfer switch or transfer panel. The designated circuits in the house then operate as normal, without using extension cords. An electrical contractor can handle any necessary permits when installing the transfer switch or panel. Never wire a generator directly to your electrical service panel. Without a transfer switch, your generator endangers utility crews working on power lines.
- Several laminated lists of what your appliances draw can be handy, especially when there is more than one person using electricity. ■

FOR MORE INFORMATION, VISIT CPI.COOP/ SAFETY

CHOOSE THE BEST WHOLE-HOUSE GENERATOR

Many families today are interested in installing backup—or standby—whole-house generators to provide electricity during power outages.

Weather events that cause outages are becoming more frequent and intense. Our modern lifestyles are heavily dependent on electronic appliances, so it is a major inconvenience when they are off.

A true whole-house generator produces enough electric output to operate every appliance in your home just as you would with power from your utility grid. Depending on the size of your house and family, a large standby generator and installation will cost thousands of dollars. It is a major expense for something you will not use often. Think of it like fire insurance. Hopefully you never have to use it.

Many families can get by with a smaller generator that provides enough power to run essential appliances, such as a refrigerator, some lighting, sump pump, etc.

If you use electricity for your primary source of heat and are concerned about freezing pipes during a winter outage, you need a whole-house generator.

If you heat with gas, oil or propane, a smaller generator provides plenty of power for the blower and controls.

Most whole-house generators start automatically when power from the grid drops or stops. It takes less than a minute for the generator to start and have full electric power again. To ensure the system is ready and functioning properly for a future outage, the generator periodically starts to test itself.

It is important to install a transfer switch with a wholehouse generator. This disconnects your house wiring from the utility grid before the generator starts. Most do this automatically. If it is not disconnected, your generator will feed 120-volt electricity back onto the grid, which can be dangerous for those repairing power lines.

The size of standby generator you select depends on how many items you want to operate during a power outage. A 15-kilowatt generator will handle a typical family's power needs. If you are disciplined and will not run too many appliances simultaneously, a 10-kw model may be adequate

When comparing generator sizes, the listed rated power output of any generator—from small portable to fixed wholehouse—is the amount of wattage it can produce continuously. The maximum rated power is the amount it can produce for a maximum of about 30 minutes. Running at maximum output longer can damage the generator.

Notice the small gas engine inside the housing of this whole-house standby generator. PHOTO BY KOHLER

The first step to determine proper generator size is to add the wattages of all the electric items you think you need. The wattages of various appliances are listed on each appliance nameplate. Heating appliances usually use the most electricity, but they often cycle on and off from a thermostat. A heat pump or central air conditioner usually uses the most.

Many appliances with motors require greater starting wattages for a short period than the continuous use listed on the nameplate. For example, a refrigerator using 700 watts may require up to 1,500 watts each time the compressor starts.

If you choose a smaller portable gasoline generator and plan to use extension cords, read the manufacturer's guideline for the proper gauge.

Natural gas, propane and diesel are the main fuels for standby generators. If available, most people select natural gas. Gas is relatively inexpensive, burns cleanly and does not require a storage tank. However, if there is a natural disaster, such as an earthquake, the gas supply may be interrupted. Propane is another common fuel. It burns cleanly. Since the storage tank is on your property, the supply cannot be interrupted.

Propane is more expensive than gas. It also requires an expensive storage tank, which may not look nice next to the generator.

Diesel-powered generators are less common. A major advantage is that diesel fuel is available at a gas station. It does not burn as cleanly as gas or propane, so it requires more maintenance. Diesel fuel has a shelf life of about two years, so you cannot just fill the tank and ignore it. ■

For more information or to ask a question about energy savings, go to www.dulley.com.