Choose a Backup Generator Based on Essential Needs

BY JIM DULLEY

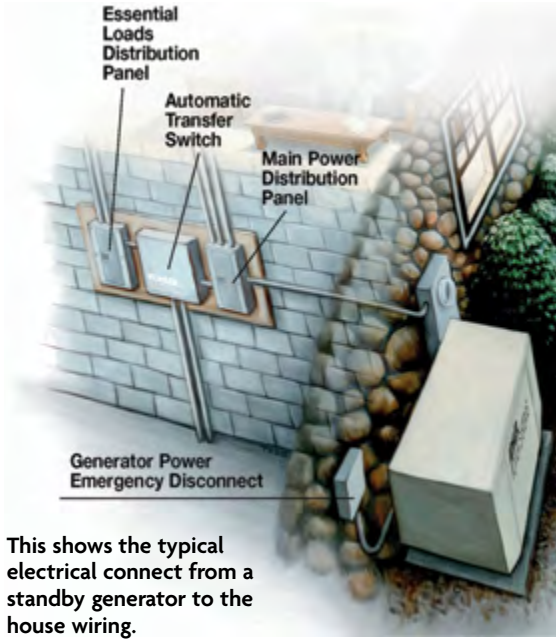
Dear Jim: I want to get a backup generator but I don't know what size I need. Is it very expensive to operate a generator during outages? If not, why not always use one? - Randy V.

Dear Randy: Many homeowners install portable or large whole-house emergency backup generators because most home activities require electricity today. Power outages are not from just storms or accidents. During the summertime with high air-conditioning loads, sometimes there are brownouts.

Even running on inexpensive natural gas, the cost to operate a generator is more than your current electric rate. Since it typically runs for a relatively short time, the operating cost is not significant. Running one continuously would also wear it out because it is not designed for that and there are maintenance costs.

When selecting a backup generator, determine what you want to keep running during an outage. This impacts how large (output capacity) a unit you need. Having enough power for cooking, refrigeration, lighting, television, and operating a furnace blower are typical essential needs.

Electricity output from a generator is rated in kW (kilowatts). For a typical family of four, a 12-kW backup generator is adequate to power almost everything. By doing without some appliances and not trying to use many simultaneously, a smaller, less expensive 5- to 7- kW generation should keep essential appliances running.



This shows the typical electrical connect from a standby generator to the house wiring.

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To properly size a generator for your needs, make a list of the electric items you want to keep running. Check the wattage on the nameplate of each one. This is called the total "running wattage." Appliances with electric motors are inductive devices so they require additional surge "startup wattage" briefly at startup. This can be as much as three times the running wattage.

A sizing rule of thumb is to total the running wattages for the appliances you need to keep running. Add the additional startup wattage for the largest appliance to get the rated power for a generator. The theory is all appliances will likely not start at the same time.

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This is a whole-house sized standby generator being installed at a home. Notice the small gas engine inside the housing.

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For example, the running/startup wattages respectively for several essential items are: refrigerator – 200/1200; several lights – 200/0; furnace blower – 800/2300; sump pump – 800/1300; and television – 100/0. The required generator size would be 200+200+800+800+100+2300=4700 watts.

The "rated power" output of any generator, from small portable to fixed whole-house, is the amount of wattage that is produce continually. The "maximum rated power" is the amount it can produce for a maximum of 30 minutes or so. Running at maximum output longer can damage the generator.

If you select a whole-house generator that is attached to the breaker panel, hire a qualified licensed electrician to install it. An automatic transfer switch (ATS) must be installed with it to ensure the safety of utility company repair workers. When the ATS senses a power outage or brownout (low voltage), it disconnects your house from the electric grid and starts the generator.

Another advantage of an ATS is it starts and runs the generator periodically to make sure it's functioning properly for when it is actually needed. This is called exercising the system.

Natural gas is the least expensive and cleanest fuel to power a backup generator. The small engine requires very little maintenance. Propane burns clean, but it is considerably more expensive than natural gas and requires a storage tank.

A diesel-powered generator requires more maintenance and a storage tank. A big advantage is if the electricity outage is very long, you can easily dump more diesel fuel into the tank to keep it running. A drawback is diesel fuel has a limited useful life.

If you want to just keep a light and TV running and food from spoiling in the refrigerator, get an uninterruptible power supply (UPS). Select one with a maximum wattage greater than your refrigerator (200 watts for a new Energy-Star model; up to 400 watts for an old one). It will power the refrigerator for a while before its battery runs down. Get one for your computer too. Also get an emergency car battery power pack. Most have a 115-volt inverter and outlet, but may not be powerful enough for the refrigerator. Plug the UPS into the car battery pack to recharge it. The car battery pack can be recharged from your car battery system. **KCL**

Send inquiries to James Dulley, *Kansas Country Living*, 6906 Royalgreen Dr., Cincinnati, OH 45244 or visit www.dulley.com.

THE FOLLOWING COMPANIES OFFER LARGE BACKUP STANDBY GENERATORS:

- **BALDOR**, 479-646-4711 www.baldor.com
- **COLEMAN POWERMATE**, 888-977-2622, www.powermate.com
- **CUMMINS ONAN**, 800-888-6626, www.cumminsonan.com
- **GENERAC POWER SYSTEMS**, 888-436-3722, www.generac.com
- **KOHLER POWER SYSTEMS**, 800-544-2444, www.kohlergenerators.com

DEAR JIM: *I have a crawl space underneath my house. The floor above is insulated and there are outdoor vents but there is still mold on the underside of the floor lumber. Why? - Diego N.*

DEAR DIEGO: Venting your crawl space was a good idea, but only a partial solution. You should also lay 6-mil thick plastic vapor barrier over the ground and up the crawl space walls to the top. This blocks moisture. To kill the mold on the joists, mix 1/2 to 3/4 cup of bleach to a gallon of water. Spray it on the joists. Wear safety goggles and protective clothing. **KCL**