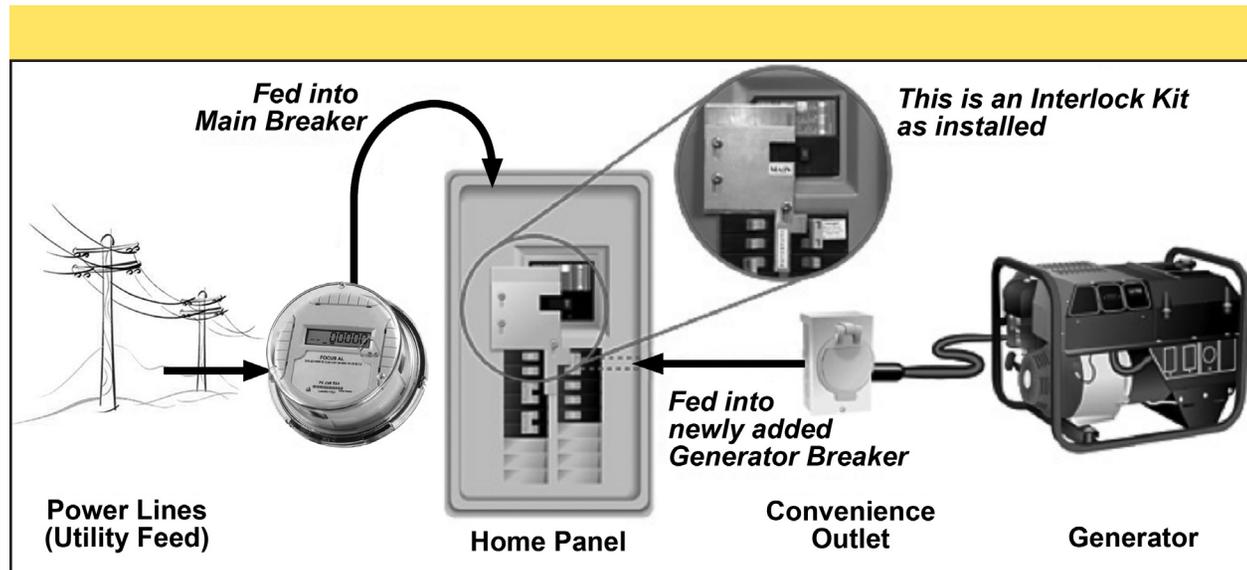


# Portable Electric Generators

## Safety and proper installation are GELD's main concerns when customers are considering the purchase of a portable electric generator

*GELD has noticed more and more interest in portable generators over the last several years. For the safety of our linemen and our distribution system, it is extremely important that the connection for your portable generator be properly installed by a licensed electrician.*



*A diagram of a mechanical interlock switch that was recently installed at GELD*

In the past, enduring a power outage was as simple as starting the fireplace. Not anymore. Without electricity, basements can flood. Well water is not available. Most heating systems can't operate properly. You don't realize how much you rely on electricity until you don't have it.

After safety, affordability tops the list of things to consider when purchasing a portable generator. That is why GELD's office facility was recently updated with a safe and affordable device called a "mechanical interlock switch" which allows the isolation of generator power from GELD's distribution system (see diagram left). The switch design is simple to install and simple to use. For more information regarding this technology, visit [www.interlockkit.com](http://www.interlockkit.com) or contact your local electrician.

There are other important elements to consider as well as affordability. Here are some common questions and answers to help guide you in the right direction when considering a portable generator.

### How do I select the size of the portable generator I need?

The first step is to identify the things you need to have operational during a prolonged power outage. Heating tops the list, followed by well pumps, sump pumps and refrigeration. You should consider your list of "needs" carefully because the generator's size also determines its price and fuel needs. The bigger the generator, the more expensive it will be and the more fuel will be needed to operate it.

Once you have determined the items needed to be operational, you must calculate how much electricity (in watts) each item requires to run. Check the wattage of each item

on its nameplate or in the owner's manual and add up the total wattage. This will determine the size of the generator you will need to consider.

*Keep in mind that generators should not be run continuously at more than 80 percent of their rated capacity and appliances which operate with a motor (like refrigerators and pumps) can require 3 to 7 times their listed wattage in order to start.*

When calculating the total wattage, consider the estimated **start-up wattages** of these important common appliances:

- Furnace Blower—875 to 1,475 watts
- Furnace Circulating Pumps (1/8 hp per heating zone)—220 to 370 watts each zone
- Refrigerator or Freezer—600 to 2,800 watts
- Well or Sump Pump (1/2 hp)—2,100 to 4,100 watts
- Electric Water Heater—4,500 to 5,500 watts

As you can see, wattages can add up very quickly and affect the size of the generator needed.

### **What are the dangers if I don't connect the generator properly?**

Electrocution of utility personnel or anyone coming in contact with a line that has been "back fed" is of the utmost concern.

The problem occurs when a homeowner plugs a generator into an electrical outlet to energize their furnace, for

instance, but has not installed a transfer or interlock switch. The electricity will flow from the generator through the home's wiring, out through the electric meter. Then its voltage will be increased to 7,970 volts as the current passes through the transformer (yes, it works in reverse) and then onto our distribution system, posing a potentially fatal shock hazard to anyone coming in contact with a sagging or downed line.

### **Can this also damage my generator?**

Yes, it can. When our linemen work on a power line, they routinely use a grounding system to protect themselves. If the generator is back feeding to that ground, the generator could be severely damaged. Also, when power is restored to a home that has a generator connected to the wiring, the sudden flow of utility power into the generator could burn out the machine.

### **How can I prevent back feed?**

We cannot over stress that the safest solution is to have a transfer or interlock switch installed by a licensed electrician to disconnect the home's wiring system from the utility power when the generator is turned on. This also allows the flow of electricity to be directed from the generator to any circuit in the house.

### **Can't I accomplish the same thing by shutting the main breaker?**

Not with any assurance. Simple circuit breakers do not always work for this purpose. And, the consequences are pretty high if it does fail.

## **REMEMBER these important safety tips:**

**NEVER** connect a generator directly to your home's main electrical panel. You could be putting your life and that of your family, neighbors, and our linemen in jeopardy.

**NEVER** plug a portable electric generator into a regular household outlet—this can energize "dead" power lines and injure neighbors and utility workers.

**NEVER** overload the generator. Overloading your generator can seriously damage valuable appliances and electronics, so you must prioritize your needs.

**ALWAYS** have the installation work for your portable generator done by a licensed electrician, and inspected by the Town Electrical Inspector.

**ALWAYS** install a manual or automatic transfer or interlock switch as required by the National Electrical Code. The switch prevents the generator from back-feeding electricity into our power lines.

**ALWAYS** operate your generator outdoors in a well-ventilated, dry area where exhaust fumes cannot enter your home. Do NOT operate a generator indoors, in your basement, or in a connected garage to avoid the buildup of deadly carbon monoxide fumes.

**ALWAYS** shut off or unplug appliances being used before shutting down your generator.