

# Emergency Generator Safety Guidelines



Generators are useful when temporary or remote power is needed, especially during or after a storm. But these machines can be very dangerous when not installed or operated properly.

Before choosing a generator solution, determine your electrical needs by developing a prioritized list of the most critical equipment at your home or business – such as lights, refrigeration, and heat. Hire a qualified electrician to help you determine the size and type of generator required to meet your needs. The electrician can safely install your generator solution, including ensuring required permitting and inspections are completed. All installations must comply with the National Electrical Code.

## I. Portable Generator

A portable generator is one that operates as an independent, stand-alone unit NOT connected to any existing wiring system. Cords are plugged into the generator delivering power to selected electrical equipment and appliances. Portable generators are used when temporary or remote power is needed.

Portable electric generators offer backup power when outages affect your home or business, but using them can be hazardous. Here are some important tips for connecting and using a portable generator safely.

### A. Don't Overload the Generator

Do not operate more appliances and equipment than the output rating of the generator. Overloading your generator can seriously damage your valuable appliances and electronics. Prioritize your needs. Use a portable electric generator only when necessary and only to power essential equipment.

### B. Never Use a Generator Indoors or in an Attached Garage

Just like an automobile, a portable generator uses an internal combustion engine that emits deadly carbon monoxide. Be sure to place the generator where exhaust fumes will not enter the house or building. Operate it only outdoors in a well-ventilated, dry area, away from air intakes to the home or building, and protected from direct exposure to rain and snow, preferably under a canopy, open shed, or carport.

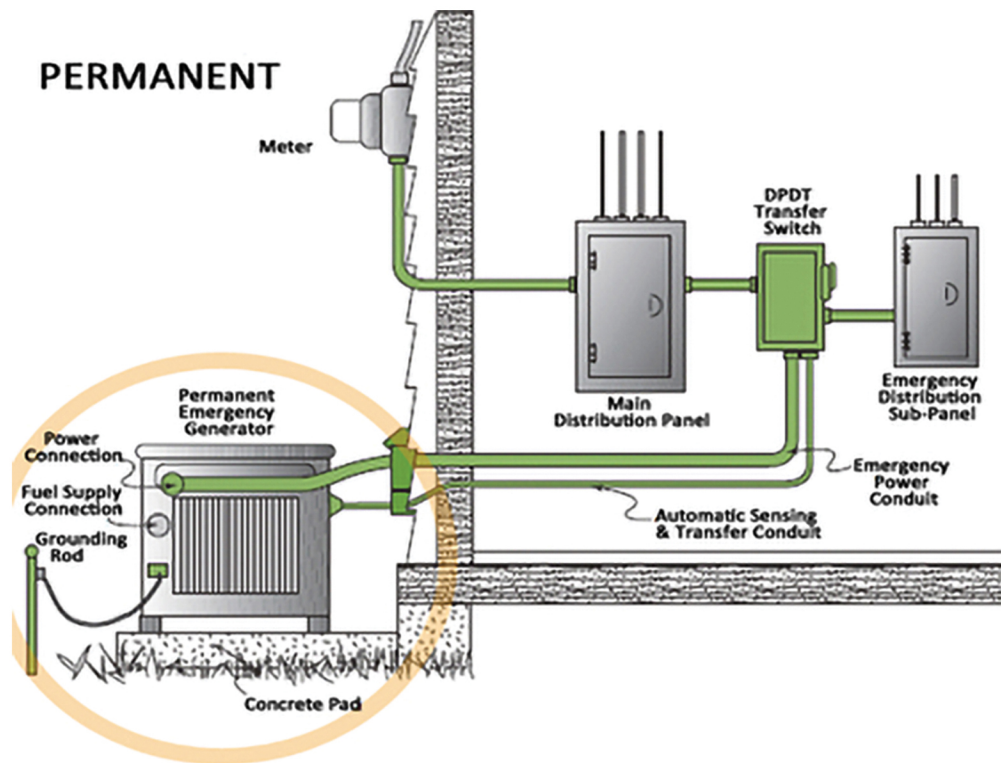
### C. Never Plug Your Generator into a Regular Household-Type Outlet

Plugging a portable generator into a regular household-type outlet can energize "dead" power lines and injure family, neighbors or utility workers. Connect individual appliances that have their outdoor-rated power cords directly to the receptacle outlet of the generator. Alternatively, connect these appliances to the generator with the appropriate outdoor-rated power cord having a wire gauge sufficient to handle the electrical load. Consider employing a qualified electrician to assist in the proper sizing outdoor-rated power cords.

## II. Permanent Standby Generator

A permanent standby generator is permanently connected to the existing wiring system of a home or business. This system uses a double-pole, double-throw (DPDT) transfer switch to safely isolate the generator from the utility power lines.

Permanent electric generators can be hazardous if not connected and used properly. Here are some important tips for connecting and using permanent standby generator safely.

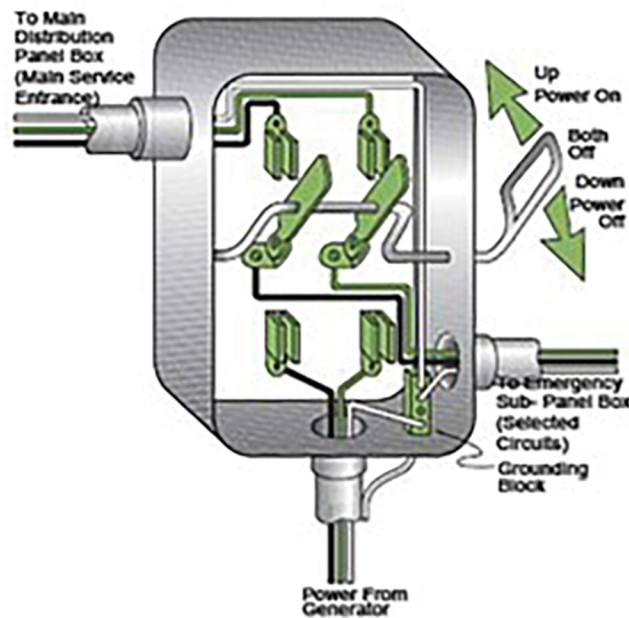


### A. Don't Connect Your Generator Directly to Existing Wiring

Connecting a standby electric generator directly to existing wiring in your home or business can be deadly to you and others. A generator that is directly connected to existing wiring can "backfeed" onto the power lines coming from the electrical grid. This "backfeed" condition may electrocute or kill line-workers that come into contact with the utility lines. Instead, hire a qualified electrician to install a DPDT transfer switch as part of the overall backup generator system.

### B. What is a DPDT transfer switch?

The only safe way to connect an electric generator to existing wiring is to have a qualified electrician install a double-pole, double-throw (DPDT) transfer switch or "transfer switch". The transfer switch safely transfers the power source serving your home or business from the utility power lines to the power coming from your generator. Installed correctly, the DPDT transfer switch should eliminate the hazardous "backfeed" condition described above.



The DPDT transfer switch has three positions:

- i. Utility power on, Generator power off;
- ii. Both off; and
- iii. Generator power on, Utility power off.

Most permanent electric generator systems come with an automatic transfer switch. This style of switch typically operate as follows:

1. The transfer switch continuously monitors incoming voltage from BTU.
2. When a loss of power is detected, the automatic transfer switch immediately senses the problem and signals the generator to start.
3. Once the generator is up and running, the automatic transfer switch safely disconnects your home or business from the BTU electric grid and simultaneously connects it to the generator, which begins supplying electricity to your home or business.
4. The transfer switch continues to monitor the utility line conditions.
5. When the automatic transfer switch senses the utility line voltage has returned, it automatically transfers the electrical load back to the BTU electric grid by disconnecting the electric feed from the generator prior to reconnecting to the BTU electric grid.
6. The transfer switch sends a signal to the generator to stop operating and it then resumes monitoring for subsequent power interruptions.



## General Generator Safety Tips:

- DO use a qualified electrician to help properly size and install a generator.
- DO follow the manufacturer's instructions.
- DO use carbon monoxide detectors in areas near the generator to monitor levels.
- DO make sure your generator is properly grounded.
- DO make sure extension cords used with generators are rated for the load and are in good condition.
- DO purchase a portable electric generator only from a reputable dealer who can service and maintain the unit.
- DO use a generator outdoors, away from open windows, vents or doors.
- DO allow the generator to cool completely before refueling.
- DO turn a portable generator off while you sleep or are away from the home or tailgate site to avoid a possible fire hazard.
- DO NOT operate a generator near combustible material.
- DO NOT connect generators directly to household wiring without an appropriate transfer switch installed.
- DO NOT operate a generator in an enclosed or partially enclosed space.
- DO NOT overload the generator.
- TURN OFF all appliances powered by the generator before shutting down the generator itself.

## Hazards Associated with Generators:

- Shocks and electrocution from improper use of power or accidentally energizing other electrical systems.
- Carbon monoxide from a generator's exhaust.
- Fires from improperly refueling, installing, or operating a generator or inappropriately storing the fuel for a generator.
- Noise and vibration hazards.