

# Safe Connections of Electric Generators

By David Williams

Backfeeding is a very dangerous condition in which electricity from your generator flows back through your electrical panel and meter into the utility company's electrical system.

Backfeeding can occur when a generator is connected to your home wiring system without disconnecting from the utility power. The most common way this could occur is if you directly connect a generator to your electrical panel or to a circuit in your home.

If you feed power back into the utility system during an outage, you will energize the transformer serving your house. This poses an electrocution hazard for utility company line crews and for your neighbors who may not know the lines are energized. If the utility company's power is restored while your generator is backfeeding, your generator may be severely damaged, or there may be an electrical fire in your home.

## How Can Backfeeding Be Prevented?

The simple answer is to always keep generator power and utility power isolated from each other. Permanent generators are isolated from the utility's electrical system with a transfer switch installed between the generator and the electrical panel. The transfer switch allows power to be fed from only one source at a time.

Portable generators are usually connected directly to an appliance or piece of equipment through an extension cord. As long as the equipment is not hard-wired to the building's electrical panel, there is no path back to the panel. Transfer switches are available to safely connect portable generators to building electrical systems.

Can't I accomplish the same thing by throwing the main breaker?

Not safely. Simple circuit breakers do not make a positive disconnection between the home electric system and the generator system. What's more, they've been known to fail. And, the consequences are pretty high if it does fail. The only safe way to create a positive disconnection between the two electric systems is through the use of a transfer switch.

Generators can provide comfort, safety and security during power outages and emergencies, and can be installed temporarily during these situations. A generator must be installed properly to protect electrical utility workers, family members and property. Improper installation of your portable generator and transfer switch system could void your home owner's insurance in case of accident or injury.

A manual transfer switch is the key to safe and convenient operation of portable generators for standby power. By isolating those circuits using generator power, a transfer switch eliminates the risk of backfeeding the electrical utility which can cause injury to workers and property damage. By installing a transfer switch or transfer panel at your breaker box and connecting a generator to the transfer switch, you can run selected appliances such as a furnace, well pump (which cannot be run with standard extension cords), sump pump, refrigerator, television, computer, printer or lighting circuit during a power outage, depending on the capacity of your generator. Since many home standby generators cannot handle all of these loads at the same time, the transfer switch allows you to manually transfer each of these loads separately whenever you need them. Good planning requires that you determine the wattage output you need before buying a generator. The generator's wattage output should at least meet or exceed the total rated watts of the equipment you will operate in case of an outage.