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Don't be Powerless During a Blackout

My columns usually cover new and emerging technologies, so it seems strange for me to write this one without electric power flowing through the wiring of my home in

a front support column along with some roof tiles, have some broken windows, can't run our heating system, and of course lost electricity.

If technologists could harness and convert the energy of a transient storm like Sandy, they could generate a great deal of electricity very, very quickly. In seconds, Sandy pushed over a giant tree and smashed it into my neighbor's home. (See Photo 1.) Sandy's fury sent three trees into the roof of a different neighbor's home and into a neighbor's car. That said, the homes in my

neighborhood suffered little damage when compared with other areas of the New York metropolitan area that Sandy hit.

Some people in our area preplanned for this event by purchasing a gas-powered electric generator. With these units operating, they were able to run a series of extension cords to plug in a refrigerator, a freezer, lights, and other devices until electricity was restored. (See Photo 2.) When the weather started to get very cold in our area, though, what people really needed was heat.

If you are lucky enough to **not** have electric heat in your home, you can get

your heating system running during a power blackout. Your furnace or boiler needs electricity to run its systems based on information that comes from your electric-powered zone thermostats.

Michael Kirby, a licensed electrician and family friend, helped me set up a gas generator to run the items mentioned earlier and also to restore our daughter's home heating system. By switching the wiring at the heating system's master switch from the house wiring to one of the extension cords running off the generator, all the electric components of the heating system were re-energized, which allowed the system to run as if there was no blackout.

If your heating system runs on natural gas, propane, or oil; has a furnace or a boiler; and has a pilot light or gas valve igniter, an electrician can probably help you design an emergency system that lets you switch from your electric company to a home generator by just flicking some switches in a manual transfer switch box. **Michael emphasized that the initial installation of a transfer system should only be done by a licensed electrician.** Once the system is installed, it is very safe for you to plug your generator into the transfer switch and quickly go from utility power to your own generator. (See Fig. 1.)

With most gas stations lacking



Photo 1—The high winds of a storm like Sandy can push over trees into homes, cars, and utility poles. Even in areas with underground utilities, above ground power lines can still be broken, causing local electrical blackouts.

New York's Rockland County. As I write, we have been without electricity for six days. Hurricane Sandy knocked out our electricity on Monday October 29, at 5:28 P.M. Rockland County and many other parts of New York are now labeled a disaster area and we are being told that our electricity might not be back until almost the middle of November. (Update: Our electricity was restored on November 5.)

Everywhere you look in our neighborhood, you see partially crushed homes, severely damaged cars, and downed electrical wires. My home had relatively little damage. We lost

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Photo 2—A portable generator can restore some electricity to your home. Generators should always be operated outside and away from windows to keep fumes from entering the home.

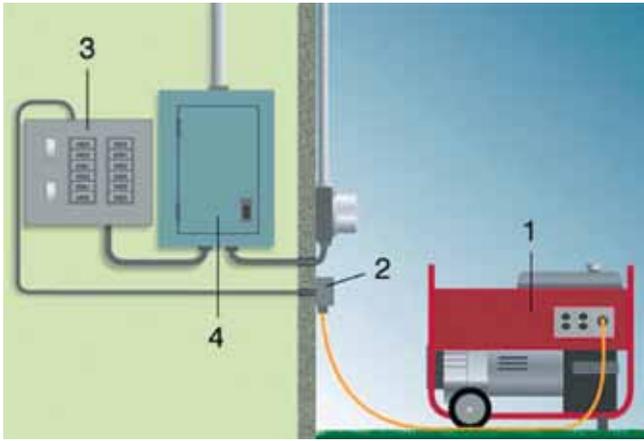


Fig. 1—The manual transfer switch (3) is installed inside next to the circuit breaker box (4). Outside, a weather-protected electrical box (2) is installed so you can plug an extension cord from the generator (1) straight into the manual transfer switch.

utility company corrects the outage, the generator controller tells the automatic transfer switch to switch back to your power company's circuit breakers.

The contractor who installs this type of system will use the services of a licensed plumber to install the fuel line to the generator and an electrician to wire the panels. Often, video is worth a thousand words. You can view the Generac video

“How a Generac GenReady Panel Works in a Home Standby Application” online at www.youtube.com/watch?v=dOfNbq7yowA.

Recalling the Facts

1. Why should you use the services of an electrician if you want to wire a portable gasoline or propane electric generator into the electrical circuits of your home?

2. Sandy was a powerful storm and it caused many people to lose their electricity. Why? ©

the electricity needed to run their pumps, people in our area found it hard to find gas for their cars and for their generators. Storm damage closed most gas stations, and the ones with working pumps had extremely long lines. The storm made gasoline a scarce commodity—and it is a substance that is not easily stored in a home in large quantities. A generator that runs on propane would probably work better in this situation since propane is very safe and easy to store. A generator must be located out of doors away from windows so the fumes that it produces don't enter the home.

Anyone who loses utility power often might want to look at a standby generator that is permanently mounted outside of the home. (See Photo 3.) These types of systems are usually installed with an automatic transfer switch. (See Fig. 2.) The auto transfer switch panel is installed next to the circuit breaker panel in your home and monitors the electricity

flowing from your utility company into your home.

When the utility company's electricity stops flowing, the generator controller tells the automatic transfer switch to safely switch your home's circuit breakers to its own set of breakers and then the generator controller starts your emergency generator. When your



Photo 3—Standby generator

MIDDLE SCHOOL STEM PROGRAM

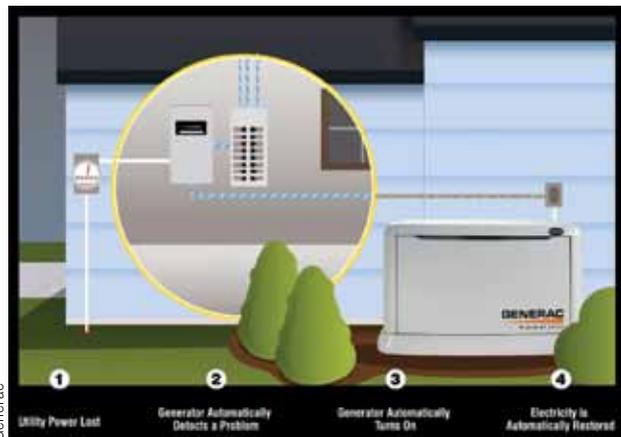
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Fig. 2—Operation of a generator with an automatic transfer switch



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