

Getting Through a Power Outage

In an effort to prevent wildfires during exceptionally dry years and in advance of high winds, an electric utility might temporarily de-energize parts of a system until the winds pass and inspections can be conducted to assure safety. Pacific Gas and Electric Company (PG&E) conducted such a precautionary measure during the week of October 7, called a PSPS, or Public Safety Power Shutoff.

Last week, advance weather forecasts were calling for exceptionally high winds, so notices were sent to schools and municipalities well in advance of the planned outages which commenced in the north part of the state on Wednesday and then worked their way to other areas throughout the week. Customers who signed up for alerts by phone, text, or email would be notified that their address might lose power, and anyone could enter their address on a dedicated website to see if they needed to become prepared. California customers and, indeed, homeowners and renters anywhere in the country should be prepared for outages that might last a few hours, or in some cases several days. PG&E provides a useful guide to preparing for outages [here](#).

Our NEED California Director was among the residents who lost power last week and he shared how he got through a day without power. Familiarity with NEED curriculum and tools came in handy!

\$1,000 Generator or a \$45 Power Inverter?

While others scrambled to buy water, batteries, and expensive gas generators to get through the outage, our director mixed a solar energy concept with an energy conservation lesson and tool from NEED's Energy Management kits and went to work. Those familiar with photovoltaic systems know that an inverter is used to convert low DC voltage to useful 115-volt household current. Automobile parts providers sell 12V inverters that plug into the lighter socket or clamp to your car's battery to convert your 12-volt power supply to household current. These inverters are typically used to power tools or lights while off the grid.

Waking up on a Thursday morning to find that you have no power can feel stressful, especially if you like fresh coffee. Fortunately, ten miles away from the outage were some coffee places and a Harbor Freight Tools store. The store was fresh out of generators, no surprise, and out of C and D cell batteries, but they did have a great selection of inverters ranging in power supply from 80 watts, enough to run your laptop, to over 4,000 watts, more than enough to get through a power outage. A 1,500-watt inverter selling for \$44.95 seemed just right for minimum household needs, but to be sure and to be safe, you need to figure out how much power your devices use.

NEED energy management kits include a very useful Kill-a-Watt® meter that indicates the power demand, or plug load, of any device that plugs into a standard power outlet.

Before using the inverter, it is important to check the power demand for each device and to be sure not to run anything over the inverter's 1,500-watt range. The coffee maker came first, naturally.



The Kill-a-Watt® meter indicates the power needed for this coffee maker: 993 watts.

Another very important item to power is the refrigerator. The refrigerator's nameplate rating of 6.5 amps maximum indicated that this inverter would work.

Math Check: Volts x Amps = Watts, $120 \times 6.5 = 780$ watts. The Kill-a-Watt® meter confirmed demand about 750 watts on startup, well within the range of the 1,500-watt inverter.

Important Note: You would NOT be able to run both the coffee maker and the refrigerator at the same time as the sum of their power demand, 993 watts and 750 watts exceeds the 1,500-watt range of this device. You could, of course, take turns between your different appliances.

The value of keeping perishable and frozen items cold more than covered the \$45 cost of the inverter, and the ability to run the refrigerator and computer while charging phones and staying on top of the news made for a pretty bearable day off the grid, especially with that pot of fresh coffee!



Making coffee off the grid the day the power went out.



An automotive power inverter connects to the lighter socket in the car or to the car's battery or, for an electric hybrid like this Chevy Volt, to the positive and negative terminals used for jump starting. Refer to your vehicle owner manual for guidance.

With an automotive power inverter, your car's engine is your generator. But remember, you'll need to run your car's engine from time to time to make sure you don't drain your battery!

Steps to take BEFORE an Outage:

There are more things to do than have a back-up power supply during a power outage. Here are some tips from PG&E:

- Confirm or update your contact information with your electric utility provider.
- Create a safety plan for all members of your family, including pets.
- Prepare an emergency supply kit. Include enough water and nonperishable food to last your household one week. Be sure to refresh your kit once a year.
- Determine if your landline will work during an outage. Keep a mobile phone as backup.
- Keep mobile phones and other devices charged.
- If you have a generator, make sure it's ready to operate safely.
- Have flashlights available for your household. Avoid using candles.
- Have a battery-powered or crank radio.
- Stock up on the right batteries for items you rely on. Include two extra sets in various sizes.
- Keep cash on hand and a full tank of gas. ATMs and gas stations may not be available during an outage.
- Learn how to manually open your garage or any other door that operates with electricity.
- Talk with your building manager if you live or work in a building that has elevators or electronic key card access to understand how they will deal with a possible multi-day outage.

Special Solutions for Special Needs

We know that many customers have special medical needs. If you depend on a CPAP machine, an electric bed lift, or any number of other power-dependent devices, an automobile inverter may not provide adequate power.

If you, a neighbor or family member rely on power for special medical needs, please refer to this US Health and Human Services publication, provided by the ADA National Network (2017).

[Emergency Power Planning for People Who Use Electricity and Battery-Dependent Assistive Technology and Medical Devices.](#)