Portable power stations for power outages

How to stay safe and keep your devices running

If the power goes out due to an emergency, you don't want to be left in the dark. Portable power stations are compact, rechargeable battery systems that can keep essential devices, like phones, medical equipment, lights and even refrigerators, running during an outage.

They're easy to use, safe to operate indoors and many can be recharged through a wall outlet, your car or solar panels. Here's what you need to know to choose the right one.

Portable power station basics

Think of a portable power station as a high-capacity rechargeable battery designed for emergencies, travel or off-grid use. Unlike traditional generators, they produce zero emissions, operate silently, need very little maintenance and don't require gasoline.

Most models have three main components:

- Battery: Stores the energy
- Inverter: Converts stored energy to usable household power
- Ports and outlets: USB, AC, and DC connections for your devices

Features to look for:

- Pass-through charging: Allows you to power devices while the unit is charging.
- Battery management system: Provides built-in safety features to prevent overcharging, overheating and shorting out circuits.

To maintain your system, store it in a cool, dry place and keep it clean to ensure maximum lifespan and performance.

How to choose the right power station system

The system that's right for you depends on three things:

- What you want to power (lights, phone chargers, refrigerator, medical equipment, etc.).
- How long you need power (a few hours during an outage or days without electricity).
- Where you'll use it (at home, in an RV, camping, or during travel).

When comparing battery systems, you'll see two key ratings:

- Capacity: How long it can power your devices
  This indicates how much total energy is stored in the battery. The higher the watt-hour (Wh) rating, the longer it can run your devices.
- Output: Which devices it can power
  This is the maximum amount of power the system can deliver simultaneously. The output must meet or exceed the wattage (W) required by the device you want to run.

Example: A battery with 500 Wh capacity and 1000 W output could run a 1000-watt device (like a small space heater or microwave) for about 30 minutes.

If you need to power multiple devices at once — like your refrigerator and lights — make sure their combined wattage stays below the unit's output limit and that the total running time fits within the capacity.

Be mindful that some appliances, especially those with motors such as fridges or power tools, have a higher starting wattage than their running wattage. For safety, add a 20% buffer to your calculations and look for surge output capability.

Power station categories

Power stations range from lightweight units to hefty systems that may require wheels or two people to move. Here's a quick breakdown:

- Small capacity: 100-500 Wh
  - Powers phones, laptops, Wi-Fi routers, small lights.
  - Weighs less than 10 pounds.
- Medium capacity: 500-1500 Wh
  - Powers mini fridge, small appliances, fans.
  - Weighs 30-50 pounds.
- High capacity: 1500-3000+ Wh
  - Powers a full-size fridge, microwave, multiple devices.
  - Weighs up to 135 pounds.

Stay powered when it matters

Portable power stations are a safe and flexible way to keep essential devices running during an outage or emergency, and many are compact enough to take with you anywhere. When choosing a system, think about how much power you need, how long you need it to last and whether portability or extra features are important to you.

If you want to power your entire home, look into whole-home battery systems or gas generators. Your utility may offer incentives or rebates, so it's worth asking before you buy.

Source: SafeElectricity.org