

Residential Generators

Residential generators can be lifesaving during power outages caused by severe weather or other significant events. When sized correctly, they can keep household appliances, such as refrigerators, heating and cooling systems, as well as medical devices, working. They can also maintain lighting, communication devices and security systems for safety during prolonged outages.

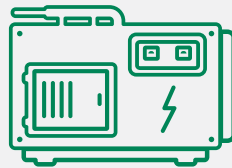


1 Understanding Costs

The price of a generator can vary significantly depending on its type, capacity and brand, though your electric cooperative may offer programs that provide credits or rebates for Members who own one.



Portable generators can range from a few hundred dollars to a couple thousand for high-end models.



Stationary, standby (backup) generators, which are permanently installed and automatically kick in during a power outage, can cost on average between \$5,000 and \$30,000, including installation. If you add on a smart electrical panel to control the generator, the total cost could be \$40,000 or more.

In addition to the initial purchase price, you'll also want to consider maintenance, regular servicing, fuel consumption and potential repairs, as these contribute to the long-term expense of owning a generator. Fuel type, as well, heavily influences operating costs; natural gas, propane, gasoline and diesel have different pricing structures and availability depending on location. Permits and inspections add to your overall costs, too.

2 Properly Sizing a Generator

Estimating the load capability of your generator – the amount of electricity it can provide to support your home's electrical needs – is crucial. First, you'll need to determine whether you would like to be able to power your whole home or only a few critical appliances. Whole-home standby generators are best for keeping everything powered but come with a high price tag. Portable generators may be a better and more affordable option for those who only need a few important appliances running, such as lights and refrigerators.

Once you've identified which system you'd like to install, you'll need to calculate the total wattage, or energy consumption, of the appliances and equipment you intend to operate. Most equipment will need more power to start up than to run.

You can use the U.S. Department of Energy's "Appliance Energy Calculator" to estimate your home's energy consumption: www.energy.gov/energysaver/estimating-appliance-and-home-electronic-energy-use

The key is to size a generator approximately 20–30% larger than the total load you want to have supported in the event of an outage. Total load is the amount of electricity required to operate your desired appliances. This buffer is necessary so that the generator isn't overloaded by being strained too severely, which can diminish power output and possibly damage the generator itself. Your co-op can also provide meter data to assist with generator sizing.

3 Electrical Safety with the Grid

(if your generator will not be wired to your home, see next section)

When connecting a generator to your home's wiring system, it's important to let your co-op know for the safety of utility workers and others. The co-op needs this information for awareness of potential backfeeding to the grid. This can pose serious risks to utility workers who might be repairing lines (that they believe are not energized) or other people who may be around downed lines. To keep this from happening, co-ops require that members have a transfer switch, either manual or automatic, or an interlock kit when installing a generator. These technologies ensure the power from the generator is isolated from the grid.

There are many ways to safely wire in a generator depending on the goals of the homeowner, either feeding to the main panel or a subpanel – which could be installed to serve critical devices that you want kept on with your generator. It is essential to contact your co-op to discuss local regulations and options for interconnection. Some may require that you pull a permit to install your generator.

4 Health & Safety Considerations

Generators should always be operated in well-ventilated areas to prevent people and animals from breathing harmful carbon monoxide. They should never be used indoors or in enclosed spaces, including basements, garages or sheds. Here are other health and safety recommendations.

- Keep the generator dry and clean of dust and debris. Grime or debris can restrict output capacity and may shorten equipment life.
- Always operate it on a level surface to prevent fuel spills or engine damage.
- Use extension cords that are rated for outdoor use and sized for the generator's electrical output. This will prevent overloads and electrical fires.
- Connecting the generator directly to your household wiring should only be performed by a qualified electrician to avoid backfeeding (see Part 3).
- Store fuel in a safe area, in approved containers and away from living areas and ignition sources.

Generator Selection Process



Consider Cost

In addition to the initial purchase price, consider maintenance, regular servicing, fuel consumption and potential repairs.



Calculate Consumption

A generator should be sized approximately 20–30% larger than the total load you want to have supported.



Contact Co-op

It is critical to discuss local regulations and options for interconnection.



Connect with Care

Keep health and safety recommendations in mind.



Check & Change

Whether the oil or filters, maintenance is key to ensure generator reliability and longevity.



Choose Carefully

Consider the different brands and the benefits of each.

5 Maintenance Considerations

Maintenance is essential to ensure generator reliability and longevity. Here are some best practices.

- Regularly check the oil level and change it according to manufacturer guidelines.
- Inspect the air filter and replace it as needed to maintain efficient airflow, preventing the generator from overheating.
- Keep an eye on the fuel system for any leaks, and make sure the fuel remains fresh. Stale fuel can clog the system and lead to poor performance or engine damage.
- Regularly inspect power cords for damage.
- Regularly check the battery's charge and clean any corrosion around the terminals to guarantee that the generator starts without issue when needed. Running the generator periodically can help keep all components in working order. This full-system exercise not only keeps the parts lubricated but also identifies any potential problems before they become critical failures.
- Schedule professional inspections annually. Technicians can perform a thorough checkup, addressing issues that might not be immediately visible and ensuring your generator is always ready when you need it most.

6 Popular Brands

Several popular brands dominate the market:

- Generac is recognized for its large range of home generators and portable models, known for their durability and performance.
- Champion is appreciated for its affordability and user-friendly designs.
- Honda is known for the quiet operation and fuel efficiency of its generators, which are great for those who prioritize low noise levels and long-term use.
- Briggs & Stratton offers generators that combine reliability with ease of maintenance.
- Westinghouse provides traditional and inverter generators, catering to varying power needs with advanced technologies.
- Kohler is known for its high-performance standby generators that feature enhanced diagnostics durability.

Remember to contact your local co-op with questions or for more information on generators, generator safety and maintenance, as well as local regulations and interconnection options.

Sources

[American Red Cross: How to Choose a Generator](#)

[American Red Cross: How to Prevent CO Poisoning When Using a Generator](#)

[Electrical Safety Foundation: Generator Safety](#)

[FEMA: 5 Steps to Portable Generator Safety](#)

[FEMA: Use Generators Safely at Home](#)

[General Power: Automatic Transfer Switch vs. Interlock: Which is Best?](#)

[OSHA: Grounding Requirements for Portable Generators](#)

[OSHA: Preventing Carbon Monoxide Poisoning While Working with Portable Generators](#)

[OSHA: Using Portable Generators Safely](#)

[SafeElectricity.org: Use a Generator Safely](#)