

Standby Power Generators

Storms, flooding or wildfires may interrupt electrical power for just a few minutes or for hours or even for days. A standby power generator can be important to keep critical equipment operating or to provide heat and light during power outages. But several key factors need to be considered when buying, connecting and using standby generators.

The generator must be capable of supplying adequate power at the correct voltage. Generators are rated in kilowatts or KW. One kilowatt equals 1,000 watts. If the nameplate lists two kilowatt ratings, the larger number is the “short-time overload capacity.” The smaller number is the “continuous-output rating.”

An adequately-sized generator is critical to avoid electric motor overheating or “burnout.” Electric motors require three to five times more power (starting amperage shown on the nameplate) to start compared to full load or continuous operation. Add all of the ampere ratings or amp loads of the electric circuits that you plan to operate with a standby generator. The ampere rating of equipment to be powered can be converted to watts by multiplying its voltage by its amperage.

Whether a generator is an automatic- or manual-start generator determines how you should select your kilowatt rating or generator size. To size automatic-start units, add the wattage of all motors connected to the generator and multiply this number by 3.5. Then add the wattage of all other connected electrical loads. To size manual-start units, you need to know the starting wattage of your largest motor, then add this to the other total full load electric motor wattage demands and add any wattage requirements for lighting on the connected circuits to get the required generator size.

For example, a 5-horsepower, 5,000-watt running-load motor has a starting wattage of 17,500 watts, so an 18 KW generator is needed to start the motor. If there are 2,000 watts of additional

continuously-connected load, select a generator rated for at least a “short-time overload capacity” of 19.5 KW. For PTO-driven units, the tractor should have a horsepower rating at least twice the kilowatt capacity of the generator. An 18 KW generator requires at least a 36-horsepower tractor to maintain power for the generator under continuous load.

Portable generators with 4- to 5-kilowatt ratings are the minimum size needed for a typical three-bedroom home, and prices can range from \$500 to several thousand dollars. More expensive units run quieter, are more durable and have larger fuel tanks.

An extension cord may connect light electrical loads directly to a small generator receptacle. Otherwise notify your local electric utility company if you plan to use a standby generator in case of power failure.

Don’t put yourself, your family or electric utility workers at risk. Have a double-pole, double-throw transfer switch properly installed by a licensed electrician. This switch disconnects the power utility lines from the standby generator and prevents the electricity you generate from energizing utility lines. The connection from your generator must be open to your transformer or otherwise “hot” utility lines can electrocute a utility repairman or a person who casually comes into contact with downed power lines. The switch must have the capacity to carry the total load of the house, farm or electrical distribution, even though the generator typically has less electrical capacity.

Follow instructions provided with your electric generator for proper grounding. Many electrocutions have been caused by failure to ground electrical circuits (properly) or working around “hot” circuits. Obtain a licensed electrician to assure that your electrical circuits are safe and that your standby generator is prepared to supply current when an emergency arises. Your electric power supplier may also be helpful if you have questions.

The engine exhaust should discharge away from confined areas; it shouldn't drift back into a window or garage. Keep children away from a portable generator to avoid an electrocution or a bad burn from the engine manifold.

Always store engine fuel in UL-approved containers; never inside your home or in your garage. Service the standby generator according to the guidelines given in your operator's manual in order to have it ready when electricity from your utility fails.