

If you have a standby power generator that you plan to use in case the power goes out, it's important to frequently check that your generator is running properly and ready for emergencies.

Your check of the equipment should include the actual connection and running of your generator to assure it is in proper working order. This test will also familiarize you with the proper operation under nonemergency conditions.

Standby generators must have a double-throw switch. The safe and proper connection of your generator requires a transfer switch to completely disconnect the generator from the cooperative's electric system. This switch prevents the flow of current into the utility's lines, which could electrocute line workers who are working to restore power or could present a hazard to people or livestock near downed power lines. The switch also protects the generator from potential damage when regular electric service is restored. The transfer switch is typically owned by the consumer and must be installed by a licensed electrician.

Before transferring the electric load, the generator must be brought up to speed. Once up to speed and generating the right voltage, the load can be switched to the generator. During this test, run your generator under load for an hour. This polishes any brush connections in the generator, plus it will dry out any moisture that has accumulated since you last used the unit.

Establish a periodic starting schedule to exercise the generator. Some manufacturers suggest operating a tractor-driven generator at least one hour every three months. Engine-driven units should be operated more frequently to check battery charge levels and other starting components.

Also, use the generator every so often with a typical electric load to ensure that it can carry the load. Over the years, you may have added electric loads that weren't taken into consideration when you bought the generator. Remember, your standby generator is like an insurance policy. It isn't much good if it's not kept up-to-date.

If you need assistance determining which generator will fit your home, farm or ranch needs, contact your local electric cooperative.

One final reminder: the quality of electricity generated by standby generators may damage sensitive electronic equipment such as home electronics and computers. Use a quality surge protector to protect your equipment or simply unplug the devices while operating the generator.

Before operating your generator, read and follow your generator's instruction manual.

Make sure the generator is brought up to speed and operating at the proper voltage before connecting any load to the generator. Failure to do this may damage your equipment.

Myth

My farm's welder outlet is the appropriate place to connect my generator to my electric system. All I have to do is flip the main switch.

FACT

Plugging a generator directly into a home or farm's electrical system is both unsafe and illegal. You run the risk of killing or maiming line workers working to restore your power because your generator may back feed into the cooperative's system. You will also likely destroy your generator.

Electric wiring code requires that a double-pole, double-throw switch be installed by a licensed electrician to prevent back feeding.

Sources for this brochure include:
National Electric Safety Foundation
National Electrical Code
National Food and Energy Council, Wilmington, Ohio

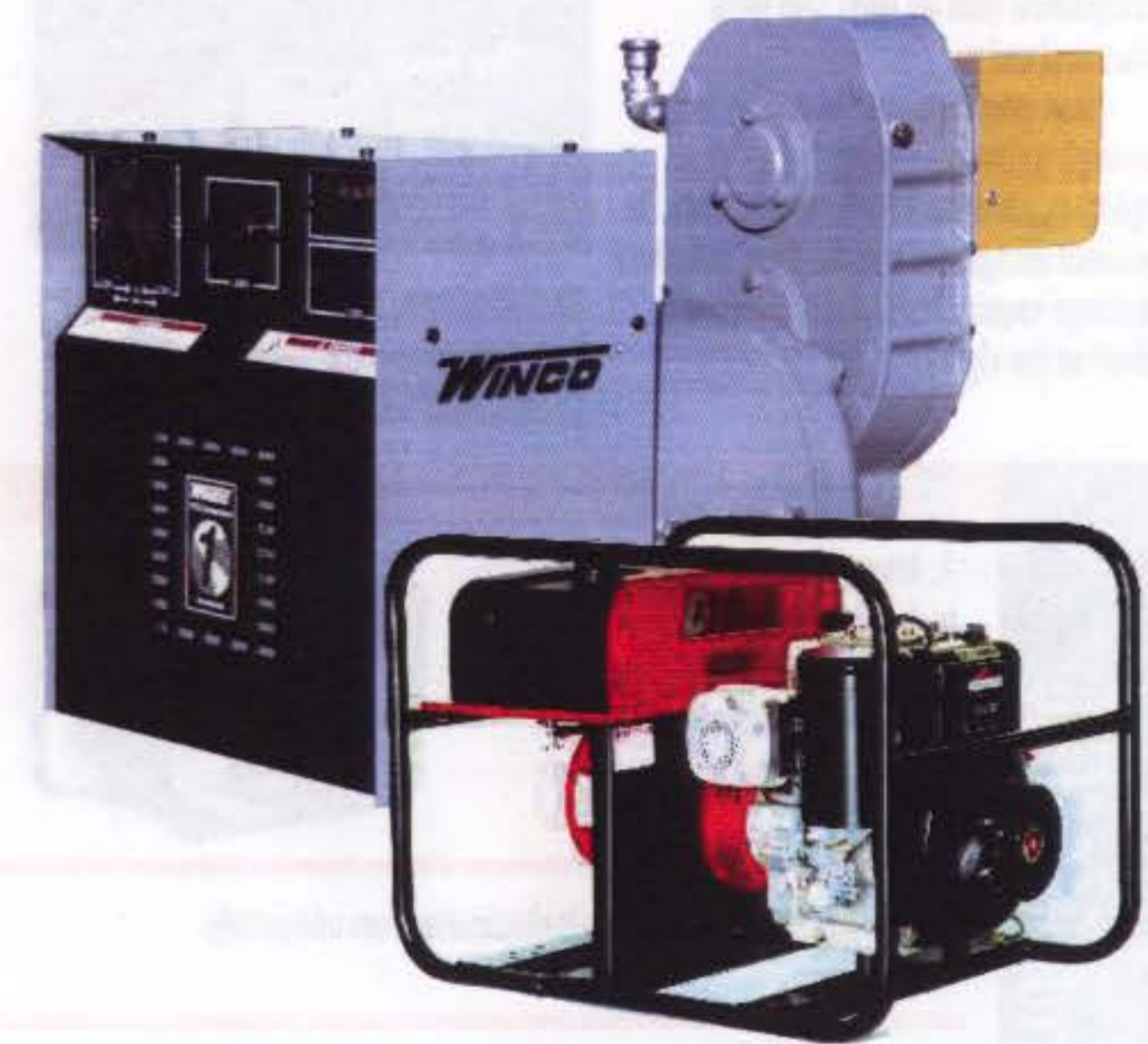
For more information, the following publications are available from the National Food and Energy Council (www.nfec.org):
Understanding National Electric Code Rules on Emergency and Standby Power Systems
Sizing and Selecting Your Standby Generator (A guide for homeowners, farmers and small businesses)

Always have a licensed electrician install your electric generator to ensure that it is installed properly.

For more information on standby generators, contact your local electric cooperative or a licensed electrician.

How to Operate A Portable Generator

Safely



You can use a portable generator to supply electricity to your appliances if an emergency exists during a power outage. But if used improperly, they can kill you and the people who are restoring power to your building. They also can damage the appliances you connect.

Generator sizes vary. Common units can be from 8 to 14 horsepower and capable of handling from 4,000 to 8,400 watts (including starting surge requirements). Prices may range from \$800 to \$3,000.

Connecting a generator to the main electrical supply for your house requires the services of a qualified, licensed electrician. Installing the connection and switch (as explained inside) can cost \$600 to \$1,000.

Before connecting the generator to your household circuit, notify your electric cooperative.

This message brought to you by:



**Touchstone Energy[®] Cooperatives
of South Dakota**

The power of human connections[®]

WARNING

If you connect a portable electric generator to the main electrical supply coming into the house, the electrical generator could feedback into your electric cooperative's system and electrocute workers who are repairing the electrical lines.

To avoid back-feeding of electricity into utility systems, you must have a qualified, licensed electrician install a double-pole, double-throw transfer switch (see illustration at right) between the generator and utility power in compliance with all state and local electrical codes.

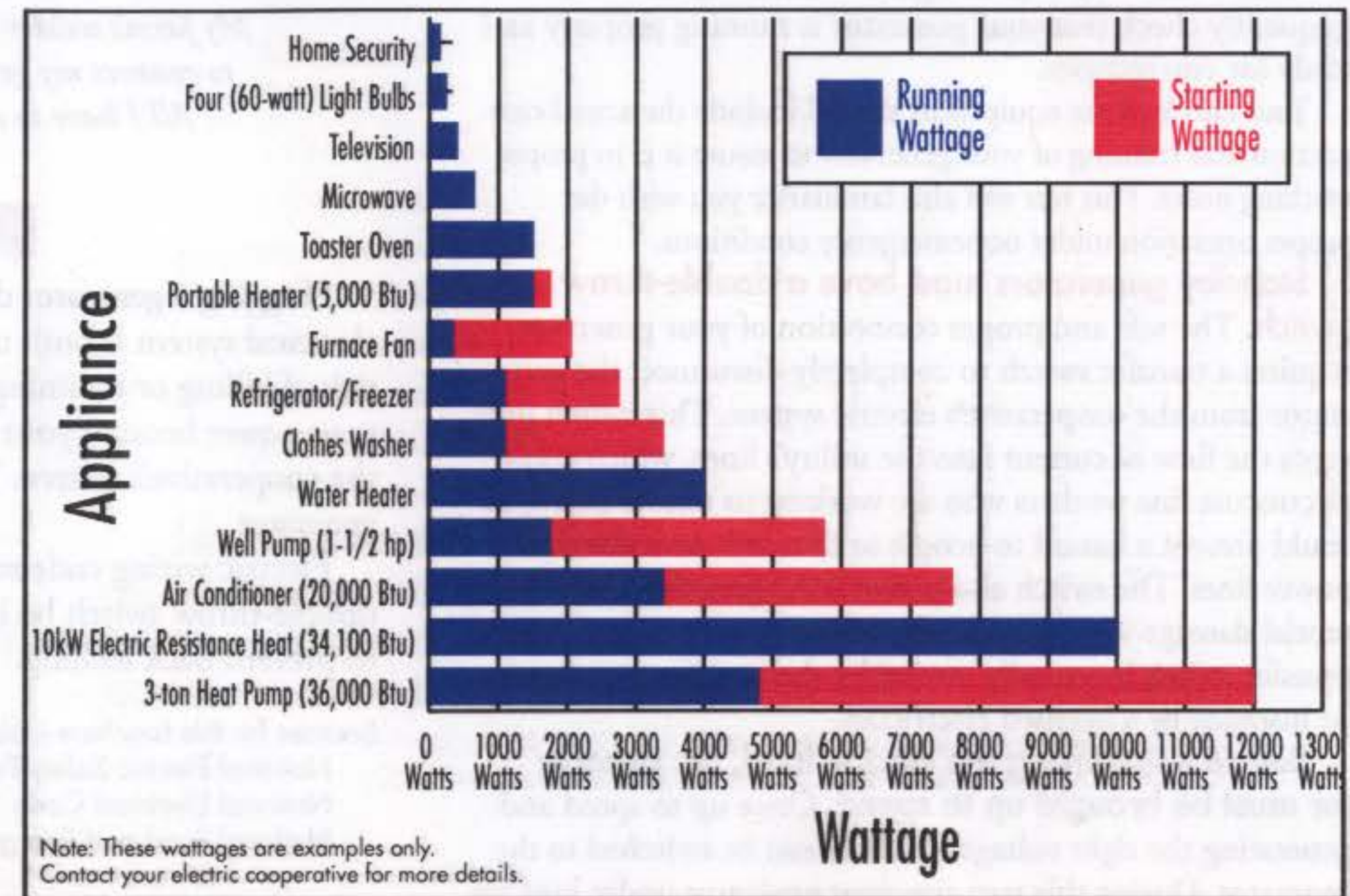
Your generator might not be large enough to handle the load of all the lights, appliances, TV, etc. at one time. To prevent dangerous overloading, calculate wattage requirements correctly (see chart at far right).



In this photo, the safety bar, which is locking out the generator switch, prevents backfeeding to the power lines.

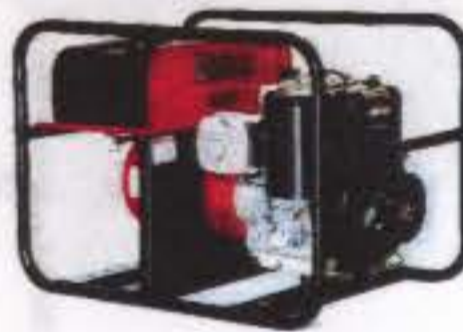
Determining Wattage Requirements

Never exceed the rated capacity of your generator. Overloading can cause serious damage to the generator or appliances. Before operating a generator, list all of the appliances that are going to operate at the same time. Then determine the starting wattage requirements and the running wattage requirements. The starting load lasts only for a few seconds, but is very important when figuring your total wattage to be used. Your generator must be rated to handle the total wattage. Ratings shown here are samples. Wattage requirements vary with different brands of appliances. Be sure to check the name plate on the appliances you plan to use. Always start your largest electric motor first, then plug in other items one at a time.



If you do this

1. Attempt to connect generator directly to the electrical system of any building.



2. Fail to ground the generator's electrical system adequately.

3. Operate generator in rain, wet, icy or flooded conditions.

4. Use worn, damaged, undersized or ungrounded extension cords.



5. Attempt to fill the fuel tank while the engine is running.



6. Fail to ventilate generator by operating in an enclosed area.

7. Tamper with factory set engine speed settings.

This could happen

1. You can kill or injure a person repairing service lines. The electricity you generate will back feed through the building's electrical system to the outside utility feed lines. Attempting to connect to the incoming utility service could result in electrocution.

If your electric cooperative's line crew is restoring electrical service while your generator is connected to the incoming utility service, you could start a fire or seriously damage your building.

2. Entire generator could become electrically charged and cause electrocution.

3. If water comes in contact with the electricity produced by the generator the generator frame may become energized.

4. Contact with worn or damaged extension cords could cause electrocution. Undersize extension cords could overheat wires or attached items, resulting in fire. Use of ungrounded cord sets could prevent operation of circuit breakers and result in electrical shock.

5. Gasoline and gasoline vapors can become ignited by coming in contact with hot components such as the muffler, engine exhaust gases or from an electrical spark.

6. Obstructing ventilation causes overheating and possible ignition of the materials. You will produce toxic carbon monoxide exhaust fumes from the engine. Breathing exhaust fumes will cause serious injury or death.

7. Tampering with the engine speed adjustment could result in overheating of attachments and could cause a fire.

Unless you prevent it

1. A qualified, licensed electrician must install a double-pole, double-throw transfer switch to connect the generator to a building's electrical system. This is required by the National Electrical Code. Connection must meet local ordinances.

2. Make sure that the unit is connected to an appropriate electrical ground, in accordance with the National Electrical Code. Follow instructions supplied with the generator.

3. Operate generator in a clean, dry, well-ventilated area. Make sure your hands are dry.

4. Inspect extension cords before use and replace with new if required. Use proper size (wire gauge) cord set for application. Follow instructions supplied with your unit. Always use electrically grounded cord sets.

5. Turn engine off and allow it to cool before adding fuel. Make sure there's a fire extinguisher in the immediate area certified to handle gasoline or fuel fires.

6. Operate generator in a clean, dry, well-ventilated area. Keep objects away from unit during operation. Do not operate unit in a confined area, such as garages, basements, storage sheds, etc., which lack a steady exchange of air. Never operate unit in a location occupied by humans or animals. Keep children, pets and others away from where it's operating.

7. Never attempt to "speed-up" the engine to obtain more performance. Both the output voltage and frequency will be thrown out of standard by this practice, endangering you and the attachments.