

Select the Right Portable Generator after a Disaster



General

Power outages can leave a home without power for lighting, cooking, refrigeration and pumping water.

Portable generators can be bought to provide substitute power. However, the generator must be properly sized to start the appliances and equipment you want to run.

What To Do

(For 120-volt, plug-in appliances)

First, find the wattage of the appliance(s) you want to run by checking the nameplate. Motor-driven appliances may be listed in horsepower which must be converted to watts. Motors require four times as much power to start as they do to run. If the running wattage of a motor is 400, then the starting wattage will be 1,600. The following table gives some starting and running wattage for electrical motors:

Table 1

Watts Required

<i>Motor, hp</i>	<i>To start</i>	<i>To run</i>
1/6	1,000	215
1/4	1,500	300
1/3	2,000	400
1/2	2,300	575
1	4,000	1,000
5	18,000	4,500
7.5	28,000	7,000
10	36,000	9,000

Now determine how many appliances you want to run at the same time and add or total the wattage. The size of the generator you use must be such that it will start and run the necessary appliances. If you get a generator that is too small to run refrigerators and freezers, they will try to start, but the voltage will drop and their motors will overheat and burn out. If you cannot find the wattage, an estimate can be made from the following table:

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For more information, contact your local office of Virginia Cooperative Extension.

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Table 2**Typical Equipment Wattages**

<i>Essential home equipment</i>	<i>Typical wattage</i>
Refrigerator	400-800
Freezer	600-1,000
Furnace blower	400-600
Optional home equipment	Typical wattage
Electric skillet	1,150-1,500
Electric stove	3,000-4,000
Washing machine	400 800-2,500
Water pump	1,000-5,000
Water heater	75-300
Electric fan	2,000-5,000
Central air conditioner	
Farm equipment	Typical wattage
Ventilator fans	300-800
Silo unloader	2,000-7,500
Feed mixing	800-1,500
Feed conveyor	800-5,000
Bulk milk cooler	1,500-12,000
Electric fence	7-10

For example, if you want a generator to run a refrigerator and a freezer, the wattage (table 2) of the refrigerator would be 800 and the freezer would be 1,000. To select the correct size generator, you decide if both refrigerator and freezer are to start at the same time. If so, you would need (1,800 X 4) 7,200 watts. You would select the nearest larger wattage generator. If you can be certain both appliances will not start at the same time, you would only need 4,800 watts (to run the refrigerator while starting the freezer).

Installation

Install wiring and equipment to meet National Electrical Code requirements, local regulations and the requirements of the power supplier. Single phase standby generators are connected to the electrical line by a double-pole, double throw transfer switch. This prevents accidentally feeding power back into the utility lines where it can injure neighbors or utility workers servicing the lines. This type switch also protects the generator from damage when power is restored.

Put the switch in a water-tight box and properly ground it, the central meter pole is a common location. Install the switch between the watt-hour meter and the service disconnect (main fuse box). Note that the white (neutral) conductor is usually not switched, but some power suppliers require it be switched also. When the handle is up, the utility black and red conductors are connected to the load black and red conductors, respectively. In the down position, the load conductors are disconnected from the utility conductors and connected to the black and red conductors from the generators.