



Every day, more and more homeowners are installing standby generators particularly where utility electrical power outages are frequent due to hurricanes, ice storms, high winds, tornadoes and other natural climatic causes. These units will avoid the losses of security systems, heat and/or cooling, refrigerated foodstuffs, sump pumps, personal computers, etc. There are many factors to be considered when specifying a permanently installed standby generator set for residential use during utility outages. Often the final decision is unfortunately made purely on the cost factor, but other issues are important and should be weighed into the decision. This Information Sheet discusses the selection of a residential standby generator, its characteristics and factors, and how they influence the specification of a generator set being used in a private home for a standby power application.

1.0 STABLE ELECTRICAL FEED AND SIZING:

Close voltage and frequency tolerances will benefit the trouble-free operation of household electronics during utility outages. Careful attention should be paid to calculations for the electrical loads of equipment required to run during outages. This can range from bare essentials to a complete functioning home, with all installed electrical equipment operational. The larger the electrical load, the larger and more expensive the standby generator.

2.0 LOCATION:

The standby generator should be as close as possible to the main building taking advantage of any prevailing wind direction for improved cooling efficiency, as well as exhaust and noise dispersion.



The installation information provided in this information sheet is informational in nature only, and should not be considered the advice of a properly licensed and qualified electrician or used in place of a detailed review of the applicable National Electric Codes and local codes. Specific questions about how this information may affect any particular situation should be addressed to a licensed and qualified electrician.

3.0 STANDBY POWER:

A regular residential standby system assumes the normal power source is the utility supply. The standby generator will start automatically when the utility power fails, transferring power from the load to the generator through an ATS (Automatic Transfer Switch).

4.0 KW LOAD:

A typical residential generator is normally about 12kW but this will vary in accordance with customer's wishes and budget.

5.0 FUEL CHOICE OF STANDBY SET:

The prime mover selected can be influenced by any of the following factors:

Site location - The ability to get fuel to the site. Natural gas is available in many urban areas which can have the supply piped directly to the set, while propane and diesel fuel will have to be stored separately under or close to the set in the case of off-grid areas.

Fuel Storage - Natural gas can be delivered from the utility supply line and avoids the necessity to allocate an area to store fuel on the property. LPG and diesel sets will require outside storage tanks.

6.0 GENERATOR ARRANGEMENT:

Residential sets typically are supplied to the following arrangement:

The generator is fitted with an enclosed sound attenuated canopy as a low noise level is highly desirable

A four-pole (1,800rpm) direct coupled engine and alternator arrangement will provide the best case for a long trouble-free operational life, with low noise level and overall reliability when compared to a two-pole (3,600rpm) model.

Automatic controls allow for the protection of home contents (food refrigeration, freezers, sump pumps, etc.) should the home owners not be present.

We recommend buying from a manufacturer's local distributor or one of their authorized dealers who will assist you in calculating your specific kW needs and options. You will also avoid possible problems caused by faulty installation, risk of poor performance, and/or warranty issues by using a single well-trained organization with total overall responsibility.

7.0 ELECTRICAL LOADS TO BE CONSIDERED:

The generator end in a residential generator will need to be capable of starting any electrical motors (refrigerator, air conditioning, sump pump, etc.), which can be up to six times the kVA compared to the running load.

A smaller (and less expensive) generator can be purchased providing the owner accepts the reduction of certain electrical appliances during the outage. Perhaps switching appliance duty intermittently will be a solution.

8.0 CONTROLS:

Include a suitable amp sized automatic transfer switch (ATS) either mounted inside the home or in a NEMA 3R outdoor enclosure. Normally an adjustable timer is included in the supply for exercising the unit on a weekly or similar basis.

9.0 FUEL SUPPLY:

LPG and diesel fuel tanks will need to be of sufficient size to allow the generator to run as long as an outage is in effect. A natural gas connection permits permanent fuel supply no matter how long the utility is out of service.

10.0 OPTIONS:

In colder climates, a battery heater is a desirable accessory for ambient temperatures below 32°F (0°C).

A carburetor heater for dry fueled engines should be supplied for ambient temperatures below 32°F (0°C).

An engine block heater should be included to automatically maintain engine coolant temperature between 80°F and 120°F when ambient temperatures of 0°F to minus 20°F (minus 18 to minus 20°C).

A load control monitoring module to prevent generator overload and determine when to shed loads should frequency drop is a useful addition.

To fulfill our commitment to be the leading supplier in the power generation industry, the Buckeye Power Sales team ensures they are always up-to-date with the current power industry standards as well as industry trends. As a service, our Information Sheets are circulated on a regular basis to existing and potential power customers to maintain their awareness of changes and developments in standards, codes and technology within the power industry.



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