



## POLICY FOR THE INSTALLATION OF STANDBY ELECTRIC GENERATOR

### **Purpose:**

Brackenridge Estate requires a policy document to ensure that the installation of Portable Electric Standby Generators is conducted in a safe and responsible manner which is safe to both the occupants of the affected property as well as occupants and property of the surrounding neighbourhood.

### **Introduction:**

Due to the ongoing load shedding by South Africa's electrical utility, Eskom, it has become necessary for the residents of private dwellings to embark on the implementation of providing an alternate source of electrical power for their homes during these power outage periods which have become more intense over the past two years.

### **Background:**

The use of petrol and diesel powered standby generators is now seen to be a necessity rather than a luxury and in order to accommodate this kind of equipment it will be in the interest of the Estate to establish a set of rules and prerequisites in order to ensure that this equipment is beneficial rather than a nuisance, especially to the neighbouring home owners. This policy has been compiled through a number of extracts from various sources and based on literature from experts in the safe use and operation of generation equipment. Standby generators are often seen by the general public as a simple "plug and play" device but if not installed by a qualified official it could be lethal to the home owner as well as the neighbouring properties. The areas of most notable concern are the following:

- 1.) Electrical Safety
  - 2.) Fuel Storage
  - 3.) Environmental Control
- \* Noise Pollution
  - \* Air Pollution

In order to ensure that the Brackenridge Estate is compliant with the current legislation, regulations and standards it is deemed necessary to include a guideline that has been compiled by a work group of electrical engineers and experts who are fully knowledgeable in the safe installation and operation of standby power plant. This guideline is for the benefit of all home owners residing on the Estate. The comments below are from the South African Bureau of Standards and refer to the attached Guideline.



## **Conclusion:**

Based on the information provided by one of South Africa's leading work groups on the use of power generators the following principles should be considered:

1. The placement and position of the equipment is critical and is probably the most important factor when considering the acquisition of a generator. Furthermore, one is to ensure that your neighbour's living spaces are also accommodated for.
2. The generator should be installed within the boundaries of a particular plot but it may not exceed the building lines. The generator should further not be visible from the road and adjoining properties but suitably roofed/screened.
3. The placement of the unit must also provide for the discharging of the gases into the atmosphere and not to be allowed to remain in an enclosed area such as a courtyard that will cause the build-up of the carbon monoxide and flow into the house through open doors and windows. The minimum safe distance from a living unit is considered to be 4,5 meters which is based on numerous tests and as recommended by manufacturers for domestic use. The generator exhaust may not discharge towards any adjoining property.
4. The unit must be rated as a ultra/super silent generator to ensure that the sound pollution is kept to a minimum.
5. Storage of fuel must be placed and locked in an area where the risk of potential fire is eliminated as well as safe from access by children.
6. The size and capacity of the generator should be based on the estimated load for the property.
7. The range of units for the freehold housing would be in the 16 to 25kW capacity.
8. The maximum noise level at a distance shall not be greater than 55dBA. This would mean that all installed units irrespective of load output may not be louder than 55 dBA from a distance of 7 meters. 8. The Home owner is required to submit an application for permission to install a standby generator together with the machine supplier specification and the owner is to provide proof that the installer is a fully competent and certified person who will provide a certificate of compliance on completion of the work. Should the standby plant fail to meet the requirement of 55dBA at 7 meters then the unit shall be removed from site.
9. In cases where a standby plant has already been installed the home owner is to have a sound insulation casing manufactured and fitted to the plant and ensure that the above-mentioned maximum noise rating is met.
10. Discuss your proposed acquisition of a standby generator together with all your immediate neighbours and ensure that they are willing to accommodate your intention of installing the



standby plant. Their approvals/acceptance should be included in your application to the Home Owners Association.

11. The generator should be connected directly to the main Electrical Distribution Board (DB) in the home through and Automatic Change-over switch (ATS), connected to a timer. The timer should be set that no generator is started outside the hours indicated in par.12, even if a power failure occurs.
12. All generators on the Estate should be switched off between 22:00 at night and 07:00 the next morning.
13. The generator should be seen as an emergency back-up and may only operate during power failures.
14. Homeowners are required to submit a formal written application to install a generator to the ARC Committee. The application will have to include at least the following:
  - \* The specifications of the generator to be installed.
  - \* The location plan of the generator.
  - \* An Electricity lay-out plan showing details of the connections to and from the generator.
  - \* Envisaged noise level output measured in decibel and a Fire Protection Plan.

#### **SABS - Guidelines: "Using a portable power generator safely"**

It has become popular practice to use standby power generators in the case of power failures, even in household applications. Although such generators can be used safely to operate one or more pieces of electrical equipment on separate circuits, there are a number of important precautions necessary when such a generator is connected to a fixed electrical installation. Andre du Plessis, chairman of the working group for the wiring code (SANS 10142-1) at the SABS, comments as follows:

Portable generators can pose serious health hazards if used improperly as they produce carbon monoxide (CO) and cause other risks. Portable generators are useful tools during power interruptions but their CO risks are more potent than many people realize. A typical 5,5 kW home generator can produce the same amount of CO as six idling cars, according to a study by the US Centre for Disease Control and Prevention (CDC). Petrol-engine generators are not designed for indoor use.

Please note: Your home's wiring is likely not matched for standby generator use. Connecting your portable generator to your home's electrical power system or wiring can be lethal. It is recommended that a qualified electrical engineer or contractor install a manual transfer switch, which is used to connect and disconnect power and is also able to cut off the electrical power being produced by the generator, once the mains supply is restored. This changeover switch shall be of a three-position type, break before make, and have an appropriate rating for the size of the generating set. Such work may



only be done by a qualified electrician and the work must be certified safe by a person registered by the Department of Labour in terms of the Occupational Health and Safety Act as an accredited person. Important issues concerns earthing and switchover facilities between the electrical power supply from the supply authority and the standby power generator. The size and complexity of the installation will determine the cost of such an installation. Where a single generator is used to supply only one or two appliances during a power failure and it is plugged in directly at the generator via extension cords, the costs will be relatively low. In this case there is no installation costs involved and a basic generator can be purchased as a ready to use unit for between R2000 and R8000. A standby generator installation suitable to run a normal house will depend on the size of the house and the number of appliances that will be connected simultaneously. The installation costs will also vary depending on the complexity and will be more costly, at between R25 000 to well over R100 000. A reputable supplier of such equipment should be consulted in this regard. Where standby power generation is installed, precautions should be taken that the generator cannot operate in parallel with the main supply unless the installation is approved by the supply authority. It must not be possible for the generated power to be fed back into the public network, since it can have lethal consequences in other installations. Recently, when a power source fed back into the public network, technicians working on the power supply were electrocuted during the power failure. Never try to power the house wiring by plugging the generator into a wall outlet, a practice known as “back-feeding.” This is an extremely dangerous practice that presents an electrocution risk to utility workers and neighbours served by the same utility transformer.

#### **Other practical hints to note**

When buying a generator, the purchaser should ask for proof that it complies with the ISO SANS 8528 series of standards. This series is fully aligned with the international ISO 8528 series of standards. The last of this series has recently been published as the SANS 8528 series I.

Have the generator run at full speed before placing load on it; this prevents damage as the generator starts and reaches full speed

Ensure that all appliances/equipment connected to the generator have over-current protection or preferably the supply from the generator should be equipped with over-current protection.

Consider using surge protection - it is common for generators to damage more sensitive electronic equipment.

Where more than one generator is installed, the installation must be designed by a professional person to ensure proper synchronisation between the generators and isolation and protection of each



generator. A standby generator is normally installed to provide power only where there is a mains-power failure or when the supplier switches off the power to do maintenance work. If there is not a proper changeover switch installed to ensure that the main supply is completely disconnected before the generator is switched in, the generator will feed power back into the supply system causing a hazardous condition to anyone connected to the system. The generator will not be able to carry any such load and will fail.

More information on the installation of standby generators can be seen under the heading “Guidelines for the safe use of portable generators on public utilities’ networks” on the website of the Association of Municipal Electricity Undertakings (AMEU), [www.ameu.co.za](http://www.ameu.co.za) and published on page 62 of the October 2007 issue of Vector. Contact Andre du Plessis, SABS, Tel 012 346-2653, [duplesad@icon.co.za](mailto:duplesad@icon.co.za) .

NRS 098:2008 GUIDELINES FOR THE SAFE USE OF  
STANDBY/PORTABLE GENERATORS ON UTILITIES’ NETWORKS