



STATE OF NEW HAMPSHIRE DEPARTMENT OF SAFETY

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INFORMATIONAL BULLETIN **ON** **RESIDENTIAL GENERATOR SAFETY** **(REVISED) MARCH 1, 2010**

The State Fire Marshal has developed this informational document to provide homeowners and other residents of New Hampshire with valuable information about generator safety during periods of power outages. Accidental fires from improper refueling methods, improper wiring methods, and carbon monoxide poisoning from exhaust can cause severe injuries or death to citizens. In addition, linemen attempting to restore power to the area can be injured or killed if the generator is not installed properly. For additional safety inspections and tips please contact your local Fire Department or this office at (603) 223-4289 or fmo@dos.nh.gov.

Portable Generators

Portable generators should be placed 10 feet from any structure, with the exhaust facing away from the building openings. Deadly exhaust fumes can enter the building through any opening resulting in severe injury or death to unsuspecting occupants.

Never place portable generators on or near combustible surfaces such as decks, porches, or tool sheds. Heat generated by the motor, or improper refueling methods can start a fire.

Never run portable generators inside any building, including basement areas and garages. Deadly levels of carbon monoxide can build up in minutes injuring occupants with little to no warning.

Allow plenty of time to cool the generator before refueling. Gasoline vapors can easily ignite from hot surfaces causing a flash fire and severe injuries.

Always store approved gasoline containers a safe distance from generators while in use. Always store gasoline in an approved container placed in a well ventilated storage area. Never store gasoline products in basements or enclosed areas of your dwelling.

Never modify or construct any power cord so a generator can be connected to a receptacle, dryer or range outlet.

Never connect a generator directly to panelboard without a means to prevent inadvertent connection to the normal supply system wiring. Connecting a generator directly to an electrical outlet or to a panelboard without a transfer switch or an interlocking device could result in a situation where power from the generator could energize the utility's wiring (back feeds into the utility system). Electrical power from a generator back fed through your meter into the utility system can cause fires, serious injury or death to utility workers trying to repair the lines in the street, or electricians working on nearby property's electrical systems.

Unless you are the owner of, and are occupying, a single family residence or meet one of the exceptions in RSA 319-C, a license is required to perform the electrical installation for connection of a generator to premises wiring. Therefore, a properly licensed master electrician must perform the electrical installation. In all cases the electrical installation must meet the minimum requirements of the National Electrical Code (NFPA 70-2008).

Although the generator is portable, an electrical permit and inspection may be required by the local jurisdiction for the installation of electrical wiring and equipment for connecting the generator to the premises wiring. Therefore it would be prudent to contact the local jurisdiction to ascertain whether an electrical permit is required.

Stationary Generator Installations

In many cases property owners have chosen to install a stationary generator. In addition to the above mentioned items, stationary generators used for an alternate source of power require additional considerations. Along with the National Electrical Code (NFPA 70-2008) the requirements of other documents, that are either adopted directly or by reference by the State of New Hampshire, must be adhered to. Examples of these documents and the types of requirements they contain are:

NFPA 37, Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines (2002 Edition)
NFPA 54, National Fuel Gas Code (2003 Edition)
The Manufacturers Instructions

NFPA 37 requires stationary generator engines and their weatherproof housings if provided, that are installed outdoors to be located at least 5' from openings in walls. This standard recognizes the potential danger of deadly carbon monoxide gas entering the structure and injuring the occupants. Building openings could be, but are not limited to, the following:

- Basement doors & bulkhead openings
- Basement windows
- Exit doors or sliding glass openings
- Windows
- Dryer vents
- Kitchen appliance vents
- Mechanical exhaust vents for heating or hot water appliances
- Air intake openings or screens

NFPA 37 also requires stationary generator engines and their weatherproof housings, if provided, that are installed outdoors to be placed a minimum of five feet (5') from structures having combustible walls. The minimum separation is not required where:

- (1) The adjacent wall of the structure has a fire resistance rating of at least 1 hour or
- (2) The weatherproof enclosure is constructed of noncombustible materials, which has been listed and approved in accordance with nationally recognized standards, verifying that a fire within the enclosure will not ignite combustible materials outside the enclosure.

To date this office has not recognized any generator manufacturing firm's weatherproof enclosure as meeting the requirements of the code compliance exception for NFPA 37: 4.1.4 (2). Therefore; all stationary generators must meet the five foot separation requirement as specified in the code, regardless of installation instructions stating any clearance reduction to the contrary.

These allowances apply directly to the separation from the combustible wall surface and in no case shall reduce the minimum distance to a building opening.

At not time should a stationary generator be installed under porches, decks, or balconies which could allow deadly carbon monoxide fumes to pool in such areas.

The fuel gas piping must be installed in accordance with both NFPA 37 and NFPA 54 (National Fuel Gas Code). These documents require that the second stage system regulator be placed a minimum of five feet (5') from any building opening and ignition source. Care must be given in placement of both the generator engine and delivery system piping to address the minimum separation distances.

Unless you are the owner of, and are occupying, a single family residence or meet one of the exceptions in RSA 319-C, a license is required to perform the electrical installation for connection of a stationary generator to premises wiring. Therefore, a properly licensed master electrician must perform the electrical installation. In all cases the electrical installation must meet the minimum requirements of the National Electrical Code (NFPA 70-2008).

Unless you are the owner of an existing single family stand-alone structure that is used as your primary residence, Saf-C 8003.01 requires a license to perform the installation of the fuel gas supply system. In all cases the installation of the fuel gas supply system must meet all the applicable standards and codes.

Installation permits and inspection may be required by the local jurisdiction for the installation of electrical wiring and equipment for connecting the generator to the premises wiring and for the fuel gas fitting portion of the installation. Therefore it would be prudent to contact the local jurisdiction to ascertain whether a permit(s) is required.

Formal Interpretation

NFPA 37

Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines

2006 Edition

Reference: 4.1.4
FI 06-1 (NFPA 37)

Background: Subsection 4.1.4 of NFPA 37 reads as follows: "4.1.4 Engines Located Outdoors. Engines, and their weatherproof housings if provided, that are installed outdoors shall be located at least 1.5 m (5 ft) from openings in walls and at least 1.5 m (5 ft) from structures having combustible walls. A minimum separation shall not be required where the following conditions exist:

- (1) The adjacent wall of the structure has a fire resistance rating of at least 1 hour.
- (2)* The weatherproof enclosure is constructed of noncombustible materials and it has been demonstrated that a fire within the enclosure will not ignite combustible materials outside the enclosure."

Question No. 1: Is it the intent of Subsection 4.1.4 of NFPA 37 to require both conditions (1) and (2) to be complied with in order for an installation to be exempt from the minimum separation specified by 4.1.4?

Answer: No.

Question No. 2: If the answer to Question No 1 is "No", is it the intent of Subsection 4.1.4 of NFPA 37 to require either condition (1) or condition (2) to be complied with in order for an installation to be exempt from the minimum separation specified by 4.1.4?

Answer: Yes.

Issue Edition: 2006
Reference: 4.1.4
Issue Date: April 14, 2009
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