

Toolbox Talks

State Generator Safety

STATE OF NEW HAMPSHIRE DEPARTMENT OF SAFETY

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OFFICE OF THE STATE FIRE MARSHAL

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INFORMATIONAL BULLETIN ON RESIDENTIAL GENERATOR SAFETY

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The State Fire Marshal has developed this informational document to provide homeowners & 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, & 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 & 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 & 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 & 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, & 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 & inspection may be required by the local jurisdiction for the installation of electrical wiring & 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 & the types of requirements they contain are:

- NFPA 37, Standard for the Installation & Use of Stationary Combustion Engines & Gas Turbines (2002 Edition)
- NFPA 54, National Fuel Gas Code (2003 Edition)
- The Manufacturers Instructions
- NFPA 37 requires stationary generator engines & 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 & 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 & 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 & approved in accordance with NFPA 555, verifying that a fire within the enclosure will not ignite combustible materials outside the enclosure.
- These allowances apply directly to the separation from the combustible wall surface & in no case shall reduce the minimum distance to a building opening.
- The fuel gas piping must be installed in accordance with both NFPA 37 & 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 & ignition source. Care must be given in placement of both the generator engine & delivery system piping to address the minimum separation distances.
- **Unless** you are the owner of, & 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 & codes.
- Installation permits & inspection may be required by the local jurisdiction for the installation of electrical wiring & equipment for connecting the generator to the premises wiring & 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.