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Guide to Permitting and Installation for Residential Whole House Generators

Please use this guide to provide general information for the placement of Whole HouseGenerators on residential property and to provide for consistency in the installation and enforcement of required code provisions. These guidelines provide but a few considerations and can not possibly provide for every installation; be sure to consult the manufacturers' installation instructions.

Generator installation will generally be most impacted by; (1) manufacturer's installation instructions, (2) NEC electric code, (3) NFPA 54 & NFPA58 Gas codes , if power source is with liquid propane, (4) ICC/IRC, and other provisions effecting life safety.

Permits are required:

- • An electrical permit must be obtained prior to installation.
- • Propane tank and/or liquid propane gas piping installation work also requires a permit and must be performed by a certified installer.

Once the installation is completed the permit applicant must request for a inspection.

Additional Requirements and Information:

- Generators must be installed at least 5 feet away from any building openings (windows, doors etc.) . This includes all "open-able windows and doors. Generators should never be installed under manufactured homes.
  Note: Carbon monoxide (CO) is a colorless, odorless, toxic gas byproduct of combustion. People have died from CO poisoning because their generator was not adequately ventilated. Provide 15' of clearance to all opening to help ensure adequate ventilation; during inclement weather stay aware of snow buildup and wind directions. Never use a generator indoors or in enclosed spaces such as garages, crawl spaces, closed decks or basements.

- Insure the placement of the generator is readily accessible for maintenance, repair, and fire fighting.

- Be sure to prevent generator flue gas products from being drawn from stacks or flues of boilers or other combustion devices.

- LP-Gas shall not be installed in areas of open flame

- NFPA 37 Section 4.1.4Engines 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.

- Engines shall be supported on foundations or secured to a noncombustible framework. This generally requires that the generator is placed on a proper pad.

- Consider the installation location – directly under eaves within the runoff concentration of water and ice from the roof may not be the best location. Be far enough away from the building to prevent ice damage to the unit.

- Minimum 8 feet from lawn furniture and sensitive materials-such as plastics. Exhaust is not to be generated to play areas. Exhaust is to be pointed away from or parallel to the (any) structure

- A weed barrier of a minimum of 3 feet to prevent weed and grasses from growing adjacent to the unit; thus providing for outside fire of grassy, leafy product spaces.

- Minimum of 5 feet to combustible material and/or a minimum of 3 feet clearance to any material (for purpose of adequate cooling).

Electrical

- Grounding of generator to control and from control to main panel – this is generally done through the wiring.

- A service rated disconnect is required on the outside to provide for emergency shut-off of electric service. This disconnect must be within site of the generator.

- The installation will require the installation of a transfer switch. Properly isolating designated circuits from the supply grid is critical – "backfeeding" is dangerous and it's illegal.

- Key circuits to consider are heat, water pump, sump pump, refrigeration and freezers, some amount of general lighting, and provisions for any emergency medical equipment that is uniquely required.

- Generators should be placed as close as possible to the building electric service meter/main disconnect.

- Any attempt at "whole house" generator back up sytstem must be accompanied with proper calculation as required by NEC.

- Grounding of the generator is "generally" accomplished through the equipment grounding conductor of the circuitry for the generator; therefore providing a secondary grounding electrode is "generally" not allowed.

LP Gas Piping and Installations

- Outside gas piping (LP) is to be protected against damage – this requires that piping be buried or otherwise protected from damage. Underground minimum depth to 18" (unless damage is unlikely than 12" minimum is acceptable. When 12" cannot be met the pipe is to be installed in conduit or bridged (shielded). Tracer wire or tracer tape is to be used whenever plastic pipe is buried.

- Flexible Gas line connector to accommodate vibration and movement. Flexible connectors are limited to 36".

- A shut-off is required at the generator - this should be installed just prior to the flexible piping.

- Manufacturers requirements for CSST requires bonding for all CSST installation

- Sediment traps are required – positioned as close to the inlet as practical.

- Testing and inspection of the piping system is required prior to connection to LP source. A sticker is applied by the inspector for approval to the supplier to connect service.

- If propane – locate conversion sticker or manufacturer label – manufacturer requirements must be adhered to during conversion – i.e. Kohler system requires disconnect of Digital Spark-advance Module (DSAM)

- Protection is required for all piping. Various methods may be deployed to do this; however horizontal and vertical projections of gas piping is not allowed without proper protection.

Portable generators that supply power to connected electrical equipment directly through the built in receptacles mounted on the generator with the use of extension cords would not require a permit. However they must still be placed a safe distance from all openings to avoid the dangers of carbon monoxide poisoning. Running of extension cords through open windows and doors and plugging too many appliances into numerous outlets can create an unsafe situation.