



## PERMIT REVIEW SUMMARY

New Hampshire Department of Environmental Services  
Air Resources Division  
P.O. Box 95, 29 Hazen Drive  
Concord, NH 03302-0095  
Phone: 603-271-1370 Fax: 603-271-7053

<b>Facility:</b>	Internal Combustion Engines – Emergency Generators or Fire Pump Engines				
<b>Location:</b>	New Hampshire	<b>Engineer:</b>	MMK		
<b>AFS #:</b>	N/A	<b>Application #:</b>	N/A	<b>Date:</b>	June 17, 2020
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### PROJECT DESCRIPTION

This project is for the renewal of the General State Permit (GSP) for the source category *Internal Combustion Engines – Emergency Generators or Fire Pump Engines*. This GSP is designed to consolidate all applicable regulations for all types of internal combustion engines: **compression ignition** (typically diesel or fuel oil fired) and **spark ignition** (typically natural gas, gasoline, or liquefied petroleum gas); both those that are used in conjunction with **emergency generators** used to create electricity during an emergency situation or with **fire pump engines** used to provide mechanical power.

This GSP is NOT designed for engines used to generate electricity for prime power production, direct drive power (e.g. crusher or chipper engines) or peak shaving or demand response.

### CHANGES FROM PREVIOUS PERMIT

- Remove the option for engines to operate in a demand response program, as this is considered non-emergency use under both state and federal regulations. References to demand response have been removed.
- Add Condition VIII addressing the department's right to enter or access a facility.
- Updates to template language, including the state definition of emergency generator.

### FACILITY DESCRIPTION

Engines are commonly used at power and manufacturing plants to generate electricity and to power pumps and compressors. Engines are also used in emergencies to produce electricity and pump water for flood and fire control at industrial, commercial and institutional facilities. Engines are common combustion sources that collectively can have a significant impact on air pollution. Engines emit the conventional air pollutants created when fuel is burned, including sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOCs), and particulate matter (PM) as well as hazardous air pollutants (HAPs) such as formaldehyde.

### PROCESS/DEVICE DESCRIPTION

The permitting threshold for this GSP is one or more internal combustion engines at a source where:

- Each device combusts liquid fuel oil, including but not limited to #2 fuel oil and diesel fuel, and has a design gross heat input greater than 0.15 MMBtu/hr, and the combined total design gross heat input for all such devices is greater than or equal to 1.5 MMBtu/hr; or
- Each device combusts gaseous or liquefied petroleum gas (LPG) fuel and has a design gross heat input greater than 1.5 MMBtu/hr, and the combined total design gross heat input of all such devices is greater than or equal to 10 MMBtu/hr.

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This GSP is applicable ONLY to devices that operate as emergency engines as defined in both the federal and state regulations. Therefore, each engine covered under the GSP is limited to 500 hours of total operation during any consecutive 12-month period. This includes:

- Operation during emergency situations. This includes any unforeseeable condition that is beyond the control of the owner or operator that:
  - Results in an interruption of electrical power from the electricity supplier to the premises;
  - Requires an interruption of electrical power from the electricity supplier to the premises in order to enable the owner or operator to repair damage from fire, flood, or any other catastrophic event, natural or man-made; or
  - Requires operation of an emergency engine to minimize damage from fire, flood, or any other catastrophic event, natural or man-made.
- Operation for 100 hours per calendar year for maintenance checks and readiness testing.

The following table has been created to assist GSP holders in identifying what category their emergency engine(s) fits for NSPS and NESHAP rule applicability. Both the date construction commenced **and** the date of manufacture, as defined in the permit, must be met to fit the category.

**Table 1 - Emission Unit Identification**

<b>Emission Unit ID</b>	<b>Description of Emission Unit</b>	<b>Permitted Fuel Type</b>	<b>Date Construction Commenced</b>	<b>Date of Manufacture</b>	<b>Applicable NSPS and/or NESHAP Regulation</b>
EU01	All Internal Combustion Engines	Diesel and Gas-fired	On or before July 11, 2005	On or before April 1, 2006	40 CFR Part 63 Subpart ZZZZ (existing)
EU02	All Diesel-fired (CI) Internal Combustion Engines that are <b>NOT</b> Fire Pumps	Diesel-fired	After July 11, 2005	On or before April 1, 2006	40 CFR Part 63 Subpart ZZZZ (existing)
EU03	All Diesel-fired (CI) Internal Combustion Engines that are <b>NOT</b> Fire Pumps	Diesel-fired	After July 11, 2005 but on or before June 12, 2006	After April 1, 2006	40 CFR Part 63 Subpart ZZZZ (existing) <b>AND</b> 40 CFR Part 60 Subpart IIII
EU04	All Diesel-fired (CI) Internal Combustion Engines that are <b>NOT</b> Fire Pumps	Diesel-fired	After June 12, 2006	After April 1, 2006	40 CFR Part 60 Subpart IIII
EU05	Certified National Fire Protection Association Fire Pumps	Diesel-fired	After July 11, 2005 but on or before June 12, 2006	On or before July 1, 2006	40 CFR Part 63 Subpart ZZZZ (existing)
EU06	Certified National Fire Protection Association Fire Pumps	Diesel-fired	After July 11, 2005 but on or before June 12, 2006	After July 1, 2006	40 CFR Part 63 Subpart ZZZZ (existing) <b>AND</b> 40 CFR Part 60 Subpart IIII

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EU07	Certified National Fire Protection Association Fire Pumps	Diesel-fired	After June 12, 2006	On or before July 1, 2006	None
EU08	Certified National Fire Protection Association Fire Pumps	Diesel-fired	After June 12, 2006	After July 1, 2006	40 CFR Part 60 Subpart IIII
EU09	All Gas-fired (SI) Internal Combustion Engines	Gas-fired	Before June 12, 2006	Before January 1, 2009	40 CFR Part 63 Subpart ZZZZ (existing)
EU10	All Gas-fired (SI) Internal Combustion Engines	Gas-fired	After June 12, 2006	Before January 1, 2009	None
EU11	All Gas-fired (SI) Internal Combustion Engines	Gas-fired	After June 12, 2006	On or after January 1, 2009	40 CFR Part 60 Subpart JJJJ

**POLLUTION CONTROL EQUIPMENT**

None required for emergency engines under the applicable regulations.

**EMISSION CALCULATIONS**

This GSP shall only be issued to a stationary source, area source, or device whose facility-wide actual emissions are less than the major source thresholds (Env-A 610.02(b)). In addition, Env-A 610.05(3)(c) requires that when a source category is established, the stationary sources, area sources, or devices that would be covered by the proposed source category are all subject to the same regulatory requirements. Therefore, NHDES is limiting facility-wide emissions of NOx in this GSP to less than 50 tons per year (tpy) to exclude any source that would otherwise be subject to Nitrogen Oxides Reasonably Available Control Technology (NOx RACT Env-A 1301.02(n)). Owners and/or operators shall also be required to limit fuel utilization at the facility to avoid exceeding these emission limitations.

**MODELING**

Pursuant to Env-A 606.02(c), an air pollutant emission dispersion modeling analysis for regulated criteria air pollutants shall not be required for an emergency engine or other engines used for mechanical power in emergencies, such as fire pump engines, where the hours of operation are limited to 500 hours per year or less by an enforceable permit condition. Pursuant to Env-A 1402.01, the emissions of regulated toxic air pollutants (RTAPs) resulting from the combustion of virgin petroleum products at stationary sources shall be exempt from regulation under RSA 125-I and Env-A 1400.

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### EMISSION TESTING

*For 40 CFR 60, Subpart IIII (CI diesel-fired emergency engines):*

Except for engines  $\geq 30$  liters per cylinder displacement, performance testing is not required. The owner and/or operator achieve compliance by:

- Purchasing a new engine that has been certified by USEPA, and
- Install, configure, operate, and maintain the engine per the manufacturer's instructions.

*For 40 CFR 60, Subpart JJJJ (SI gas-fired emergency engines):*

For certain SI engines manufactured on/after July 1, 2008, the engine manufacturer is required to certify that the engine meets emission limits. Owners and/or operators of these engines can comply by purchasing a certified engine and operating it according to manufacturer's instructions. These SI engine types include:

- All SI engines  $\leq 25$  hp;
- Gasoline-fired engines  $> 25$  hp; and
- Rich burn LPG engines  $> 25$  hp.

For other SI engines, USEPA made it optional for the manufacturer to certify that their engines meet the applicable emission limits. Owners or operators can comply either by purchasing an engine that the manufacturer has voluntarily certified, or by conducting performance testing to demonstrate that the engine meets the applicable emission limits.

NHDES is limiting the GSP to only those devices which are **certified** and installed, configured, operated or maintained according to the manufacturer's emission related written instructions or has only changed emission-related settings in a way that is permitted by the manufacturer. Any other engine that meets any of the above requirements for stack testing shall notify NHDES of such applicability and apply for a Temporary Permit which will contain the applicable source specific stack testing requirements.

### COMPLIANCE STATUS

#### Inspections

Pursuant to 125-C:6 Powers and Duties of the Commissioner, the commissioner shall have and may exercise the following powers and duties: [including but not limited to] entering at all reasonable times in or upon any private or public property, except private residences, for the purpose of inspecting or investigating any condition which is believed to be either an air pollution source or in violation of any of the rules or orders promulgated hereunder. Therefore, NHDES personnel shall be granted access to any facility covered by this GSP, in accordance with RSA 125-C:6, VII for the purposes of: inspecting the proposed or permitted site; investigating a complaint; and assuring compliance with any applicable requirement found in the New Hampshire Rules Governing the Control of Air Pollution and/or conditions of any permit issued pursuant to Chapter Env-A 600.

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**Reports**

GSP permit holders are not required to submit an annual emission report and annual emission based fees. However, facilities with actual annual NOx emissions greater than 10 tpy, including engines operated under this GSP, are still required to submit the NOx Emission Statements report specified in Env-A 909.

Emergency engines are not required to submit an Initial Notification pursuant to 40 CFR 60, Subpart IIII §60.4214(b) and 40 CFR 63, Subpart ZZZZ §63.6645(a)(5). In addition, 40 CFR 60, Subpart JJJJ §60.4245(c) only requires an Initial Notification be submitted by owners and operators of stationary SI engines greater than or equal to 500 hp that have not been certified by an engine manufacturer to meet the emission standards.

**Fees**

Owners or operators seeking to operate under the GSP shall submit a registration fee calculated in accordance with Env-A 702.05(b) together with the registration package.

**REVIEW OF REGULATIONS****State Regulations****Env-A 100 – Organizational Rules**

- 101.671 – Applicable – Definition of emergency generator

**Env-A 600 – Permitting**

- 607.01(d) – Applicable
- 610 – Applicable – *General State Permits and General Permits Under Title V*

**Env-A 700 – Permit Fee System**

- 702.05 – Applicable – *General State Permit (GSP) Registration Fee for Emergency Generators*

**Env-A 800 - Testing and Monitoring Procedures** – Applicable

**Env-A 900 – Owner or Operator Recordkeeping and Reporting Obligations** – Applicable<sup>1</sup>

**Env-A 1300 – Nitrogen Oxides (NOx) Reasonably Available Control Technology (RACT)**

- 1301.02(n) – Facility-wide NOx is limited by a permit condition to < 50tpy. Therefore, NOx RACT does not apply.

**Env-A 1400 – Regulated Toxic Air Pollutants**

- 1402.01 – Not applicable to sources burning virgin fuel.

**Env-A 1600 – Fuel Specifications**

- 1603.03 – Applicable if the engine is burning #2 fuel oil - #2 fuel oil is limited to 0.0015% sulfur by weight.

**Env-A 2000 – Fuel Burning Devices**

- 2002.01 – Applicable – *Visible Emission Standard for Fuel Burning Devices Installed on or Prior to May 13, 1970.*
- 2002.02 – Applicable – *Visible Emission Standard for Fuel Burning Devices Installed After May 13, 1970.*
- 2003.01 – Applicable – *Particulate Emission Standards for Fuel Burning Devices Installed on or Prior to May 13,*

<sup>1</sup> A rule of thumb for determining applicability of the recordkeeping and reporting requirements of the annual NOx Emission Statement is that actual annual NOx emissions of 10 tons per year (tpy) would conservatively equate to 33,000 gallons per year of diesel or gasoline fuel burned in the emergency engines. This number was derived from the most conservative US EPA AP-42 NOx emission factor for small, uncontrolled diesel fired engines (4.41 lb/MMBtu from Table 3.3-1). Most facilities with a small number of emergency engines that have small design ratings (hp or kW) or which operate cleaner, newer engines subject to 40 CFR Part 60, Subparts IIII and JJJJ will not reach this applicability threshold. However, if the facility has other devices that emit NOx (i.e. boilers), multiple emergency engines, or larger or older emergency engines, the NOx emission threshold may be reached even when operating less than 500 hours per year. Therefore, the owner or operator shall keep records sufficient to determine facility wide NOx emissions for applicability of these recordkeeping and reporting requirements.

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1970.

- 2003.02 – Applicable – *Particulate Emission Standards for Fuel Burning Devices Installed after May 13, 1970 but before January 1, 1985.*
- 2003.03 – Applicable – *Particulate Emission Standards for Fuel Burning Devices Installed on or after January 1, 1985.*

**Federal Regulations**

40 CFR 60, Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines* – Applicable depending on age of engine.

40 CFR 60, Subpart JJJJ, *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines* – Applicable depending on age of engine.

40 CFR 63, Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines* – Applicable

Per an August 9, 2010 USEPA Memo by Melanie King titled "Guidance Regarding Definition of Residential, Commercial, and Institutional Emergency Stationary RICE in the NESHAP for Stationary RICE"<sup>2</sup>, an engine(s) located at a residential, commercial or institutional facility is exempt from the requirements of Subpart ZZZZ provided the device is:

- an existing engine;
- located at an area source of HAP emissions; and
- does not operate for non-emergency situations as part of a financial arrangement with another entity.

The device must still meet the requirements associated with the definition of “emergency engine” under Subpart ZZZZ.

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<sup>2</sup> Residential emergency stationary engines include those used in residential establishments such as homes or apartment buildings. Commercial emergency stationary engines are used in commercial establishments such as office buildings, hotels, stores, telecommunications facilities, restaurants, financial institutions such as banks, doctor’s offices, and sports and performing arts facilities. Institutional emergency stationary engines are used in institutional establishments such as medical centers, nursing homes, research centers, institutions of higher education, correctional facilities, elementary and secondary schools, libraries, religious establishments, police and fire stations. More information can be found in the memorandum [Guidance Regarding Definition of Residential, Commercial, and Institutional Emergency Stationary RICE in the NESHAP for Stationary RICE from USEPA.](#)