

GUIDANCE DOCUMENT

Title: **Approval of Diesel Generators**

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Approved By: _____ **Derrick Maddocks, Director**

1.0 SUBJECT:

Approval of Diesel Generators

2.0 OBJECTIVE:

To outline the approval requirements for diesel generators within the province.

3.0 LEGISLATION:

Applicable Legislation:

- Environmental Protection Act
- Air Pollution Control Regulations, 2004

4.0 DEFINITIONS:

Department: Newfoundland and Labrador Department of Environment and Conservation, and its successors.

Generating facility: An existing or planned location or site at which electricity is or will be produced through the operation of one or more generators.

Name plate capacity: The maximum rated output of a generator under specific conditions designated by the manufacturer.

NO_x: Nitrogen oxides.

NO₂: Nitrogen dioxide.

Prime power generator: A generator that is designed to supply power on a continuous basis and for long periods of time between shutdowns.

Standby generator: A generator that is operated in the event of failure of normal power. It is not designed for continuous use.

Total installed capacity: The summation of the name plate capacities of all the units of the generating facility.

5.0 BACKGROUND:

Air emissions from diesel engines pose a potential threat to the environment and human health. Acute exposure to diesel combustion emissions can cause acute irritation (e.g., eye, throat, bronchial), neurophysiological symptoms and respiratory symptoms, while chronic exposure to diesel exhaust is considered likely to pose a lung-cancer hazard and may trigger a variety of other lung and respiratory illnesses. ¹

The primary pollutants of concern from diesel engines are NO_x (as NO₂) and particulate matter. The high temperatures in the fuel combustion processes cause nitrogen in the air to combine with available oxygen to form NO_x. Particulate matter emissions result from fuel droplets that have not completely combusted, and also from lubrication oil that enters engine cylinders. Other by-products emitted due to incomplete combustion include carbon monoxide and hydrocarbons. ²

Section 6.0 of this guidance document outlines the approval requirements for diesel generating facilities within the province.

6.0 DIESEL GENERATORS REQUIRING APPROVAL:

A Certificate of Approval is required for prime power generating facilities having a total installed capacity greater than 100 kW, and for standby generating facilities having a total installed capacity greater than 100 kW and which operate or are anticipated to operate more than 500 hours per year.

Exceptions to this requirement may be made at the Department's discretion, where it is deemed warranted. For example, an Approval may not be required for the temporary operation of generating units during repairs or upgrades of power transmission infrastructure, or for the temporary provision of power during short-term construction activities.

An application for Approval for a diesel generating facility shall include the following:

- completed registration forms (contained in Appendix A of this guidance document) for the diesel generators; and
- ground level ambient air concentrations for NO₂ and particulate matter resulting from the facility's emissions, as determined using the AERMOD modelling system.

For further information on the terms and conditions that are to be adhered to when conducting the atmospheric dispersion modelling, refer to the Department's Guidance Document GD-PPD-019.1 "Guideline for Plume Dispersion Modelling," or its successor.

7.0 REFERENCES:

1. U.S. Environmental Protection Agency, "Health Assessment Document For Diesel Engine Exhaust," National Center for Environmental Assessment, EPA/600/8-90/057F (Washington, DC: May, 2002).
2. United States Environmental Protection Agency, "AP 42 Section 3.3: Gasoline and Diesel Industrial Engines," (Washington, DC: 2000). Online at (<http://www.epa.gov/ttn/chief/ap42/ch03/final/c03s03.pdf>)

APPENDIX A

DIESEL GENERATOR REGISTRATION FORM



GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

DIESEL GENERATOR REGISTRATION FORM

Site Information

Owner / Operator: _____
Mailing Address: _____ Location of Generator(s)*: _____

Phone #: _____ Total # of Generators on Site: _____

* Please attach a location map and site drawings, if available.

Please Provide the Following Information for Each Generator Located at the Site.

Unit 1 of

Engine Manufacturer: _____ Model #: _____
kW Rating of Engine: _____ @ _____ RPM kW Rating of Generator Driven by Engine: _____
Date of Installation: _____ Date of Engine Manufacture: _____

Generator Application: Prime Power Standby

If Standby, Indicate The Maximum Number of Hours of Operation Anticipated For The Generator:

_____ hours/day _____ hours/month _____ hours/year

Exhaust Stack Parameters:

Exhaust Discharge Height: _____ meters above ground Stack Inner Diameter: _____ cm.

Exhaust Gas Flow Rate*: _____ m³/s Exhaust Gas Temperature*: _____ °C

Exhaust Direction at Discharge Point: Vertical Horizontal

Exhaust Stack Location: Stack Through Building Roof
 Stack Attached to Side of Building / Structure

Dimensions of Building Housing the Generator(s): Length: _____ meters Width: _____ Meters

Peak Height of Roof: _____ Meters

Is a Rain Cap (Other Than a Flapper) Present On The Exhaust Stack? Yes No

Pollutant Emission Rates*:

NOx: _____ g/s Particulate Matter: _____ g/s CO: _____ g/s

* Obtained from manufacturer emission data guarantees for 100% load.

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GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

DIESEL GENERATOR REGISTRATION FORM (Continued)

Unit of

Engine Manufacturer: _____ Model #: _____
kW Rating of Engine: _____ @ _____ RPM kW Rating of Generator Driven by Engine: _____
Date of Installation: _____ Date of Engine Manufacture: _____
Generator Application: Prime Power Standby
If Standby, Indicate The Maximum Number of Hours of Operation Anticipated For The Generator:
_____ hours/day _____ hours/month _____ hours/year

Exhaust Stack Parameters:

Exhaust Discharge Height: _____ meters above ground Stack Inner Diameter: _____ cm.
Exhaust Gas Flow Rate*: _____ m³/s Exhaust Gas Temperature*: _____ °C
Exhaust Direction at Discharge Point: Vertical Horizontal
Exhaust Stack Location: Stack Through Building Roof
 Stack Attached to Side of Building / Structure
Dimensions of Building Housing the Generator(s): Length: _____ meters Width: _____ Meters
Peak Height of Roof: _____ Meters
Is a Rain Cap (Other Than a Flapper) Present On The Exhaust Stack? Yes No

Pollutant Emission Rates*:

NOx: _____ g/s Particulate Matter: _____ g/s CO: _____ g/s

* Obtained from manufacturer emission data guarantees for 100% load.

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