



DEPARTMENT ORDER

The University of Maine
Penobscot County
Orono, Maine
A-204-77-11-A

Departmental
Findings of Fact and Order
New Source Review
NSR #11

FINDINGS OF FACT

After review of the air emission license application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes (M.R.S.) § 344 and § 590, the Maine Department of Environmental Protection (the Department) finds the following facts:

I. REGISTRATION

A. Introduction

FACILITY	The University of Maine
LICENSE TYPE	06-096 C.M.R. ch. 115, Minor Modification
NAICS CODES	611310
NATURE OF BUSINESS	Educational Facility
FACILITY LOCATION	5765 Service Building and throughout the Orono Campus

B. NSR License Description

The University of Maine has requested a New Source Review (NSR) license to install and operate a new 500 kW distillate-fired emergency generator located at Wells Commons.

C. Emission Equipment

The following equipment is addressed in this NSR license:

Generator

<u>Equipment</u>	<u>Max. Heat Input Capacity (MMBtu/hr)</u>	<u>Max. Firing Rate (gal/hr)</u>	<u>Output</u>	<u>Fuel Type, % sulfur</u>	<u>Mfr. Date</u>	<u>Install. Date</u>
Wells Commons Generator	5.0	36.2	500 kW	Distillate fuel, 0.0015%	2018	2018

D. Definitions

Distillate Fuel. For the purposes of this license, *distillate fuel* means the following:

- Fuel oil that complies with the specifications for fuel oil numbers 1 or 2, as defined by the American Society for Testing and Materials (ASTM) in ASTM D396;
- Diesel fuel oil numbers 1 or 2, as defined in ASTM D975;
- Kerosene, as defined in ASTM D3699;
- Biodiesel, as defined in ASTM D6751; or
- Biodiesel blends, as defined in ASTM D7467.

E. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the issued date of this license.

The application for the University of Maine does not violate any applicable federal or state requirements and does not reduce monitoring, reporting, testing, or recordkeeping requirements.

The modification of a major source is considered a major or minor modification based on whether or not expected emissions increases exceed the “Significant Emission Increase” levels as given in *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100.

The emission increases due to the proposed Wells Commons Generator were calculated based on an operational limit of 100 hours per year of non-emergency operation. The results of the calculations are as follows:

Pollutant	Future Generator License Allowed (ton/year)	Significant Emissions Increase Levels (ton/year)
PM	0.004	25
PM ₁₀	0.004	15
PM _{2.5}	0.004	10
SO ₂	0.0004	40
NO _x	0.41	40
CO	0.10	100
VOC	0.004	40
CO _{2e}	<75,000	75,000

Note: The above values are for the Wells Commons Generator only. No other equipment at the facility is affected by this NSR license.

Therefore, this NSR license is determined to be a minor modification under *Minor and Major Source Air Emission License Regulations*, 06-096 C.M.R. ch. 115 since the changes being made are not addressed or prohibited in the Part 70 air emission license. An application to incorporate the requirements of this NSR license into the Part 70 air emission license has been submitted.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in 06-096 C.M.R. ch. 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

B. Wells Commons Generator

The University of Maine has proposed the installation of a new 500 kW emergency generator to be located at Wells Commons. The emergency generator will be manufactured by Caterpillar in 2018, and will be equipped with a distillate fuel fired model C15 engine having a maximum heat input capacity of 5.0 MMBtu/hr.

1. BACT Findings

BACT for PM, NO_x, CO, and VOC emissions will be met through an engine design that is compliant with 40 C.F.R. Part 60, Subpart IIII requirements. BACT for SO₂ will be met by using distillate fuel containing a maximum sulfur content of 0.0015% by weight.

The BACT emissions limits for the Wells Commons Emergency Generator are based on the following:

- PM/PM₁₀ - 0.08 lb/hr, based on manufacturer's data. This calculates to 0.02 lb/MMBtu which is below the limit in 06-096 C.M.R. ch. 103.
- SO₂ - 0.01 lb/hr, based on combustion of distillate fuel with a maximum sulfur content not to exceed 15 ppm (0.0015% sulfur by weight).

NO _x	- 8.17 lb/hr, based on manufacturer's data
CO	- 1.93 lb/hr, based on manufacturer's data
VOC	- 0.07 lb/hr, based on manufacturer's data
Opacity	- 06-096 C.M.R. ch. 115, BACT

Visible emissions from the distillate fuel-fired generator shall not exceed 10% opacity on a six-minute block average basis.

2. 40 C.F.R. Part 60, Subpart IIII

Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 40 C.F.R. Part 60, Subpart IIII is applicable to the emergency engine listed above since the unit was ordered after July 11, 2005, and manufactured after April 1, 2006. [40 C.F.R. § 60.4200] By meeting the requirements of 40 C.F.R. Part 60, Subpart IIII, the unit also meets the requirements found in the *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, 40 C.F.R. Part 63, Subpart ZZZZ. [40 C.F.R. § 63.6590(c)]

A summary of the currently applicable federal 40 C.F.R. Part 60, Subpart IIII requirements is listed below.

a. Emergency Engine Designation and Operating Criteria

Under 40 C.F.R. Part 60, Subpart IIII, a stationary reciprocating internal combustion engine (ICE) is considered an **emergency** stationary ICE (emergency engine) as long as the engine is operated in accordance with the following criteria. Operation of an engine outside of the criteria specified below may cause the engine to no longer be considered an emergency engine under 40 C.F.R. Part 60, Subpart IIII, resulting in the engine being subject to requirements applicable to **non-emergency** engines.

(1) Emergency Situation Operation (On-Site)

There is no operating time limit on the use of an emergency engine to provide electrical power or mechanical work during an emergency situation. Examples of use of an emergency engine during emergency situations include the following:

- Use of an engine to produce power for critical networks or equipment (including power supplied to portions of a facility) because of failure or interruption of electric power from the local utility (or the normal power source, if the facility runs on its own power production);
- Use of an engine to mitigate an on-site disaster or equipment failure;

- Use of an engine to pump water in the case of fire, flood, natural disaster, or severe weather conditions; and
- Similar instances.

(2) Non-Emergency Situation Operation

An emergency engine may be operated up to a maximum of 100 hours per calendar year for maintenance checks, readiness testing, and other non-emergency situations as described below.

- (i) An emergency engine may be operated for a maximum of 100 hours per calendar year for maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government; the manufacturer; the vendor; the regional transmission organization or equivalent balancing authority and transmission operator; or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE more than 100 hours per calendar year.
- (ii) An emergency engine may be operated for up to 50 hours per calendar year for other non-emergency situations. **However, these operating hours are counted as part of the 100 hours per calendar year operating limit described in paragraph (2) and (2) (i) above.**

The 50 hours per calendar year operating limit for other non-emergency situations cannot be used for peak shaving, demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

[40 C.F.R. §§ 60.4211(f) and 60.4219]

b. 40 C.F.R. Part 60, Subpart IIII Requirements

(1) Manufacturer Certification Requirement

The engine shall be certified by the manufacturer as meeting the emission standards for new nonroad compression ignition engines found in 40 C.F.R. § 60.4202. [40 C.F.R. § 60.4205(b)]

(2) Ultra-Low Sulfur Fuel Requirement

The fuel fired in the engine shall not exceed 15 ppm sulfur (0.0015% sulfur). [40 C.F.R. § 60.4207(b)]

- (3) **Non-Resettable Hour Meter Requirement**
A non-resettable hour meter shall be installed and operated on the engine. [40 C.F.R. § 60.4209(a)]
- (4) **Operation and Maintenance Requirements**
The engine shall be operated and maintained according to the manufacturer's emission-related written instructions or procedures developed by The University of Maine that are approved by the engine manufacturer. The University of Maine may only change those emission-related settings that are permitted by the manufacturer. [40 C.F.R. § 60.4211(a)]
- (5) **Annual Time Limit for Maintenance and Testing**
As an emergency engine, the unit shall be limited to 100 hours/year for maintenance checks and readiness testing. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity). [40 C.F.R. § 60.4211(f)]
- (6) **Initial Notification Requirement**
No initial notification is required under 40 C.F.R. Part 60, Subpart IIII for emergency engines. [40 C.F.R. § 60.4214(b)]
- (7) **Recordkeeping**
The University of Maine shall keep records that include maintenance conducted on the engine and the hours of operation of the engine recorded through the non-resettable hour meter. Documentation shall include the number of hours the unit operated for emergency purposes, the number of hours the unit operated for non-emergency purposes, and the reason the engine was in operation during each time. [40 C.F.R. § 60.4214(b)]

C. Incorporation Into the Part 70 Air Emission License

The requirements in this 06-096 C.M.R. ch. 115 New Source Review license shall apply to the facility upon issuance. Per *Part 70 Air Emission License Regulations*, 06-096 C.M.R. ch. 140 § 1(C)(8), for a modification at the facility that has undergone NSR requirements or been processed through 06-096 C.M.R. ch. 115, the source must apply for an amendment to their Part 70 license within one year of commencing the proposed operations, as provided in 40 C.F.R. Part 70.5. An application to incorporate the requirements of this NSR license into the Part 70 air emission license has been submitted to the Department.

D. Annual Emissions

1. Emission Totals

The University of Maine shall be restricted to the following annual emissions, based on a 12-month rolling total. The tons per year limits were calculated based on 3,500,000 gallons/year of #6 fuel oil total in Boilers #5, #6, and #7, 8,760 hours/year operation each for the two Global Science Center Boilers, 100 hours/year operation for each of the emergency generators, 500 hours/year operation for each of the non-emergency generators, and the established BPT for Printing Services:

Total Licensed Annual Emissions for the Facility
Tons/year
 (used to calculate the annual license fee)

	PM	PM₁₀	SO₂	NO_x	CO	VOC
Steam Plant Boilers (#5, #6, #7, and #8)	26.3	26.3	136.5	144.4	157.5	26.3
Global Science Boiler #1	1.0	1.0	0.01	1.9	1.6	0.1
Global Science Boiler #2	1.0	1.0	0.01	1.9	1.6	0.1
Portable Generator	0.02	0.02	0.01	0.4	0.1	0.01
Hitchner Hall Generator	0.02	0.02	0.01	0.5	0.2	0.01
Aubert Hall Generator	0.02	0.02	0.01	0.5	0.1	0.01
Barrows Hall Generator	0.02	0.02	0.01	0.5	0.1	0.01
Alfond Arena Generator	0.01	0.01	0.01	0.1	0.03	0.01
Neville Hall Data Center Generator	0.01	0.01	0.01	0.9	0.1	0.01
Memorial Gym Generator	0.01	0.01	0.01	0.01	0.02	0.02
York Hall Generator	0.01	0.01	0.01	0.06	0.94	0.01
Recreation Center Generator	0.1	0.1	0.01	1.5	0.2	0.03
Hilltop Commons Generator	0.2	0.2	0.01	2.9	0.2	0.03

	<u>PM</u>	<u>PM₁₀</u>	<u>SO₂</u>	<u>NO_x</u>	<u>CO</u>	<u>VOC</u>
Collins Center Generator	0.1	0.1	0.01	1.3	0.4	0.02
Wells Commons Generator	0.004	0.004	0.0004	0.41	0.10	0.004
Printing Services	-	-	-	-	-	2.0
Total TPY	28.9	28.9	136.7	157.3	163.2	28.7

III. AMBIENT AIR QUALITY ANALYSIS

Based on the proposed emission limits and no extenuating circumstances surrounding the generator and its location, the Department has determined that ambient air quality impact modeling is not required for this licensing action.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards,
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants New Source Review License A-204-77-11-A pursuant to the preconstruction licensing requirements of 06-096 C.M.R. ch. 115 and subject to the specific conditions below.

Severability. The invalidity or unenforceability of any provision of this License or part thereof shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

SPECIFIC CONDITIONS

(1) Wells Commons Generator

- A. The emergency generator shall be limited to 100 hours of operation per calendar year, excluding operating hours during emergency situations. [06-096 C.M.R. ch. 115, BACT]

B. Emissions shall not exceed the following:

<u>Unit</u>	<u>Pollutant</u>	<u>lb/MMBtu</u>	<u>Origin and Authority</u>
Wells Commons Generator	PM	0.02	06-096 C.M.R. ch. 115, BACT

C. Emissions shall not exceed the following [06-096 C.M.R. ch. 115, BACT]:

<u>Unit</u>	<u>PM (lb/hr)</u>	<u>PM₁₀ (lb/hr)</u>	<u>SO₂ (lb/hr)</u>	<u>NO_x (lb/hr)</u>	<u>CO (lb/hr)</u>	<u>VOC (lb/hr)</u>
Wells Commons Generator (5.0 MMBtu/hr) distillate fuel	0.08	0.08	0.01	8.17	1.93	0.07

D. Visible Emissions

Visible emissions from the Wells Commons Generator shall not exceed 10% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BACT]

E. The Generator shall meet the applicable requirements of 40 C.F.R. Part 60, Subpart IIII, including the following: [incorporated under 06-096 C.M.R. ch. 115, BACT]

1. Manufacturer Certification

The engine shall be certified by the manufacturer as meeting the emission standards for new nonroad compression ignition engines found in § 60.4202. [40 C.F.R. § 60.4205(b)]

2. Ultra-Low Sulfur Fuel

The fuel fired in the engine shall not exceed 15 ppm sulfur (0.0015% sulfur). Compliance with the fuel sulfur content limit shall be based on fuel records from the supplier documenting the type of fuel delivered and the sulfur content of the fuel. [40 C.F.R. § 60.4207(b) and 06-096 C.M.R. ch. 115]

3. Non-Resettable Hour Meter

A non-resettable hour meter shall be installed and operated on the engine. [40 C.F.R. § 60.4209(a)]

4. Annual Time Limit for Maintenance and Testing

a. As an emergency engine, the unit shall be limited to 100 hours/year for maintenance checks and readiness testing. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity).

These limits are based on a calendar year. Compliance shall be demonstrated by records (electronic or written log) of all engine operating hours.
[40 C.F.R. § 60.4211(f) and 06-096 C.M.R. ch. 115]

- b. The University of Maine shall keep records that include maintenance conducted on the engine and the hours of operation of the engine recorded through the non-resettable hour meter. Documentation shall include the number of hours the unit operated for emergency purposes, the number of hours the unit operated for non-emergency purposes, and the reason the engine was in operation during each time.
[40 C.F.R. § 60.4214(b)]
5. Operation and Maintenance
The engine shall be operated and maintained according to the manufacturer's emission-related written instructions or procedures developed by The University of Maine that are approved by the engine manufacturer. The University of Maine may only change those emission-related settings that are permitted by the manufacturer.
[40 C.F.R. § 60.4211(a)]

DONE AND DATED IN AUGUSTA, MAINE THIS 24 DAY OF May, 2018.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Cone for
PAUL MERCER, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: April 25, 2018

Date of application acceptance: April 27, 2018

Date filed with the Board of Environmental Protection:

This Order prepared by Benjamin Goundie, Bureau of Air Quality.

