



DEPARTMENT ORDER

**Bowdoin College  
Cumberland County  
Brunswick, Maine  
A-76-71-AA-A (SM)**

**Departmental  
Findings of Fact and Order  
Air Emission License  
Amendment**

**FINDINGS OF FACT**

After review of the air emission license amendment 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 (Department) finds the following facts:

**I. REGISTRATION**

A. Introduction

Bowdoin College was issued Air Emission License A-76-71-Z-R/A on August 14, 2015 for the operation of emission sources associated with their education facility.

Bowdoin College has requested an amendment to their license in order to add one new emergency generator to their facility.

The equipment addressed in this license amendment is located at 3800 College Station, Brunswick, Maine.

B. Emission Equipment

The following equipment is addressed in this air emission license amendment:

**Generators**

<u>Equipment</u>	<u>Max. Input Capacity (MMBtu/hr)</u>	<u>Rated Output Capacity (kW)</u>	<u>Fuel Type, % sulfur</u>	<u>Firing Rate (gal/hr)</u>	<u>Date of Manuf.</u>	<u>Date of Install.</u>
Heating Plant Generator No. 2	2.7	250	Distillate Fuel, 0.0015% sulfur by weight	19.6	2016	2016

### Insignificant Process Equipment

Bowdoin College utilizes three paint booths / ventilation hoods at the facility. All three are exempt from licensing and are being included here for completeness purposes only. They are exempt for the following reasons:

Bowdoin College has two paint booths / ventilation hoods located within their Art Department. These two booths are categorically exempt from requiring a license, per 06-096 C.M.R. Chapter 115, Appendix B, #104, *Kilns or Ventilating Hoods for Art or Ceramic Curricula at Colleges, Primary or Secondary Schools*.

Bowdoin College also has a third paint booth equipped with particulate filters that is located in the carpentry shop in Rhodes Hall. There they maintain wooden furniture and other miscellaneous items for their facility by applying low-VOC paints and urethane coatings. Since the painting done in this paint booth is for facility upkeep, the paint booth falls under the licensing exemption in 06-096 C.M.R. Chapter 115, Appendix B, – Insignificant Activities, #12 - *Plant upkeep including routine housekeeping, preparation for and painting of structures or equipment, retarring roofs, applying insulation to buildings in accordance with applicable environmental and health and safety requirements and paving or stripping of parking lots*.

#### C. Application Classification

The modification of a minor source is considered a major or minor modification based on whether or not expected emission increases exceed the “Significant Emission” levels as defined in the Department’s *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) 100. The emission increases are determined by subtracting the current licensed annual emissions preceding the modification from the maximum future licensed annual emissions, as follows:

<u>Pollutant</u>	<u>Current License (TPY)</u>	<u>Future License (TPY)</u>	<u>Net Change (TPY)</u>	<u>Significant Emission Levels</u>
PM	10.5	10.5	0	100
PM <sub>10</sub>	10.5	10.5	0	100
SO <sub>2</sub>	49.9	49.9	0	100
NO <sub>x</sub>	32.3	32.9	0.6	100
CO	11.6	11.7	0.1	100
VOC	1.1	1.2	0.1	50

This modification is determined to be a minor modification and has been processed as such.

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. 100. Separate control requirement categories exist for new and existing equipment.

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

B. Heating Plant Generator #2

As part of ongoing facility improvements, Bowdoin College is proposing to install a new emergency generator at the Heating Plant. This emergency generator will be designated as Heating Plant Generator #2, have an engine rated at 2.7 MMBtu/hr and will fire distillate fuel. The emergency generator was manufactured in 2016 and is expected to be installed in 2016 as well.

1. BACT Findings

The BACT emission limits for Heating Plant Generator #2 are based on the following:

- PM/PM<sub>10</sub> - 0.31 lb/MMBtu, from AP-42, Table 3.1-1 dated 10/96
- SO<sub>2</sub> - combustion of distillate fuel with a maximum sulfur content not to exceed 15 ppm (0.0015% sulfur by weight)
- NO<sub>x</sub> - 4.41 lb/MMBtu from AP-42 Table 3.1-1 dated 10/96
- CO - 0.95 lb/MMBtu from AP-42 Table 3.1-1 dated 10/96
- VOC - 0.36 lb/MMBtu from AP-42 Table 3.1-1 dated 10/96
- Opacity - 06-096 C.M.R. 115

<u>Unit</u>	<u>PM</u> <u>(lb/hr)</u>	<u>PM<sub>10</sub></u> <u>(lb/hr)</u>	<u>SO<sub>2</sub></u> <u>(lb/hr)</u>	<u>NO<sub>x</sub></u> <u>(lb/hr)</u>	<u>CO</u> <u>(lb/hr)</u>	<u>VOC</u> <u>(lb/hr)</u>
Heating Plant Generator #2 2.7 MMBtu/hr Distillate Fuel	0.83	0.83	0.01	11.82	2.55	0.96

Visible emissions from Heating Plant Generator #2 shall not exceed 20% opacity on a six-minute block average basis.

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

The federal regulation 40 C.F.R. Part 60, Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE)* 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 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. Emergency Engine Designation and Operating Criteria

Under 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 Subpart IIII, resulting in the engine being subject to requirements applicable to **non-emergency** engines.

(i) 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.

(ii) 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.

- (a) 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.

- (b) 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, non-emergency 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, unless:

- (1) The engine is dispatched by the local balancing authority or local transmission and distribution system operator.
- (2) The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region.
- (3) The dispatch follows reliability, emergency operation or similar protocols that follow specific North American Electric Reliability Corporation (NERC), regional, state, public utility commission, or local standards or guidelines.
- (4) The power is provided only to the facility itself or to support the local transmission and distribution system.
- (5) The owner or operator identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission, or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the engine owner or operator.

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

(i) Manufacturer Certification Requirement

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

(ii) Ultra-Low Sulfur Fuel Requirement

The fuel fired in the engine shall not exceed 15 ppm sulfur (0.0015% sulfur), except that any existing fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted. [40 C.F.R. §60.4207(b)]

(iii) 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)]

(iv) Operation and Maintenance Requirements

The engine shall be operated and maintained according to the manufacturer's emission-related written instructions or procedures developed by Bowdoin College that are approved by the engine manufacturer. Bowdoin College may only change those emission-related settings that are permitted by the manufacturer. [40 C.F.R. §60.4211(a)]

(v) 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, emergency demand response, and periods of voltage or frequency deviation from standards. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, non-emergency 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 unless the conditions in §60.4211(f)(3)(i) are met). [40 C.F.R. §60.4211(f)]

(vi) Initial Notification Requirement

No initial notification is required under Subpart IIII for emergency engines. [40 C.F.R. §60.4214(b)]

(vii) Recordkeeping

Bowdoin College 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, including what classified the operation as emergency, and the number of hours the unit operated for non-emergency purposes. If the engine is operated to supply power during a non-emergency situation as part of a financial arrangement with another entity as specified in

§60.4211(f)(3)(i), Bowdoin College shall keep records of the notification of the emergency situation, and the date, start time, and end time of engine operation for these purposes. [40 C.F.R. §60.4214(b)]

(viii) Annual Reporting Requirements for Demand Response Availability Over 15 Hours Per Year

If Bowdoin College operates or is contractually obligated to be available for more than 15 hours per calendar year to supply power during a non-emergency situation as part of a financial arrangement with another entity as specified in §60.4211(f)(3)(i), the facility shall submit an annual report containing the information in §60.4214(d)(1)(i) through (vii). The annual report for each calendar year must be submitted no later than March 31<sup>st</sup> of the following calendar year. The annual report must be submitted electronically using the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) ([www.epa.gov/cdx](http://www.epa.gov/cdx)). However, if the reporting form is not available in CEDRI at the time that the report is due, the written report must be submitted to the following address:

U.S. Environmental Protection Agency, Region I  
5 Post Office Square, Suite 100 (OES04-2)  
Boston, MA 02109-3912  
Attn: Air Compliance Clerk

[40 C.F.R. §60.4214(d)]

C. Annual Emissions

1. Total Annual Emissions

Bowdoin College shall be restricted to the following annual emissions, based on a 12-month rolling total. The tons per year limits were calculated based on 100 hrs/yr of running time for the new emergency generator.

The basis for the emission calculations for the equipment already included in the air emission license are listed below for reference:

- Central Heating Plant Boilers – 206,000 MMBtu/year heat input and 37.3 tons per year limit of SO<sub>2</sub>.
- Non-Central Heating Plant Boilers – 50,000 MMBtu/year heat input.
- Generators – 100 hours per year of running time per emergency generator.

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

<u>Equipment</u>	<u>PM</u>	<u>PM<sub>10</sub></u>	<u>SO<sub>2</sub></u>	<u>NO<sub>x</sub></u>	<u>CO</u>	<u>VOC</u>
Central Heating Plant Boilers	8.24	8.24	37.31	20.60	8.40	0.52
Non-Central Heating Plant Boilers	2.00	2.00	12.59	5.00	2.00	0.13
Existing Generators	0.26	0.26	Negl.	6.67	1.20	0.45
Heating Plant Generator #2	0.04	0.04	Negl.	0.59	0.13	0.05
<b>Total TPY</b>	<b>10.5</b>	<b>10.5</b>	<b>49.9</b>	<b>32.9</b>	<b>11.7</b>	<b>1.2</b>

**III. AMBIENT AIR QUALITY ANALYSIS**

The level of ambient air quality impact modeling required for a minor source is determined by the Department on a case-by case basis. In accordance with 06-096 C.M.R. 115, an ambient air quality impact analysis is not required for a minor source if the total licensed annual emissions of any pollutant released do not exceed the following levels and there are no extenuating circumstances:

<u>Pollutant</u>	<u>Tons/Year</u>
PM <sub>10</sub>	25
SO <sub>2</sub>	50
NO <sub>x</sub>	50
CO	250

The total licensed annual emissions for the facility are below the emission levels contained in the table above and there are no extenuating circumstances; therefore, an ambient air quality impact analysis is not required as part of this license amendment.

**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, and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.



The Department hereby grants Air Emission License Amendment A-76-71-AA-A subject to the conditions found in Air Emission License A-76-71-Z-R/A, and the following conditions.

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

**SPECIFIC CONDITIONS**

The following is a new Specific Condition in addition to those found in Air Emission License A-76-71-Z-R/A (August 14, 2015).

(1) **Heating Plant Generator #2**

- A. Heating Plant Generator #2 shall be limited to 100 hours of operation per calendar year, excluding operating hours during emergency situations. [06-096 C.M.R. 115, BPT]
- B. Emissions shall not exceed the following [06-096 C.M.R. 115, BACT]:

<u>Unit</u>	<u>PM (lb/hr)</u>	<u>PM<sub>10</sub> (lb/hr)</u>	<u>SO<sub>2</sub> (lb/hr)</u>	<u>NO<sub>x</sub> (lb/hr)</u>	<u>CO (lb/hr)</u>	<u>VOC (lb/hr)</u>
<b>Heating Plant Generator #2</b> 2.7 MMBtu/hr Distillate Fuel	0.83	0.83	0.01	11.82	2.55	0.96

C. **Visible Emissions**

Visible emissions from the Heating Plant Generator #2 shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. 115]

- D. Heating Plant Generator #2 shall meet the applicable requirements of 40 C.F.R. Part 60, Subpart IIII, including the following:
  - 1. **Manufacturer Certification**  
The engine shall be certified by the manufacturer as meeting the emission standards for new non-road 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), except that any existing fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted. 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. 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, emergency demand response, and periods of voltage or frequency deviation from standards. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, non-emergency 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 unless the conditions in §60.4211(f)(3)(i) are met). 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. 115]
  - b. Bowdoin College shall keep records that document 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, including what classified the operation as emergency, and the number of hours the unit operated for non-emergency purposes. If the engine is operated to supply power during a non-emergency situation as part of a financial arrangement with another entity as specified in §60.4211(f)(3)(i), Bowdoin College shall keep records of the notification of the non-emergency situation, and the date, start time, and end time of engine operation for these purposes, and shall comply with all requirements for a non-emergency engine, as applicable.
5. **Operation and Maintenance**

The engine shall be operated and maintained according to the manufacturer's emission-related written instructions or procedures developed by Bowdoin College that are approved by the engine manufacturer. Bowdoin College may only change those emission-related settings that are permitted by the manufacturer. [40 C.F.R. §60.4211(a)]

6. Annual Reporting For Non-Emergency Response Availability Over 15 Hours Per Year

If Bowdoin College operates or is contractually obligated to be available for more than 15 hours per calendar year to supply power during a non-emergency situation as part of a financial arrangement with another entity as specified in §60.4211(f)(3)(i), Bowdoin College shall submit an annual report containing the information in §60.4214(d)(1)(i) through (vii). The annual report for each calendar year must be submitted no later than March 31<sup>st</sup> of the following calendar year. The annual report must be submitted electronically using the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) ([www.epa.gov/cdx](http://www.epa.gov/cdx)). However, if the reporting form is not available in CEDRI at the time that the report is due, the written report must be submitted to the following address:

U.S. Environmental Protection Agency, Region I  
5 Post Office Square, Suite 100 (OES04-2)  
Boston, MA 02109-3912  
Attn: Air Compliance Clerk

[40 C.F.R. §60.4214(d)]

DONE AND DATED IN AUGUSTA, MAINE THIS 5 DAY OF October, 2016.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: *Paul Mercer*  
PAUL MERCER, COMMISSIONER

**The term of this amendment shall be concurrent with the term of Air Emission License A-76-71-Z-R/A.**

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: July 27, 2016

Date of application acceptance: July 29, 2016

Date filed with the Board of Environmental Protection:

This Order prepared by Patric J. Sherman, Bureau of Air Quality.

