



DEPARTMENT ORDER

**Bowdoin College  
Cumberland County  
Brunswick, Maine  
A-76-71-AF-A**

**Departmental  
Findings of Fact and Order  
Air Emission License  
Amendment # 5**

**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 (Bowdoin) 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. The license was subsequently amended on October 5, 2016 (A-76-71-AA-A), on June 8, 2018 (A-76-71-AB-M), on August 30, 2019 (A-76-71-AC-A), and on May 29, 2020 (A-76-71-AE-A).

Bowdoin has requested an amendment to their license in order to add one new emergency generator and one new boiler, and to remove the existing Chamberlain Hall Hot Water Heater from their license.

Bowdoin has also requested to remove waste oil as a boiler fuel from their license, and that their license conditions and limits be updated to reflect the regulatory change that reduced the maximum allowable sulfur content of the distillate fuels fired in its boilers and heating equipment to 0.0015% by weight.

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

B. Emission Equipment

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

**New Boiler**

<b><u>Equipment</u></b>	<b><u>Max. Capacity (MMBtu/hr)</u></b>	<b><u>Maximum Firing Rate</u></b>	<b><u>Fuel Type, % sulfur</u></b>	<b><u>Date of Manuf.</u></b>	<b><u>Date of Install.</u></b>	<b><u>Stack #</u></b>
Druckenmiller Boiler	4.18	4,102 scf/hr	Natural Gas, n/a	2019	2019	Druck #1

**Equipment Being Removed**

<u>Equipment</u>	<u>Max. Capacity (MMBtu/hr)</u>	<u>Maximum Firing Rate</u>	<u>Fuel Type, % sulfur</u>	<u>Date of Manuf.</u>
Chamberlain Hall Hot Water Heater	1.6	1,569 scf/hr	Natural Gas, n/a	1999

**New Stationary Emergency Engine**

<u>Equipment</u>	<u>Max. Input Capacity (MMBtu/hr)</u>	<u>Rated Output Capacity (kW)</u>	<u>Fuel Type, % sulfur</u>	<u>Firing Rate (scf/hr)</u>	<u>Date of Manuf.</u>	<u>Date of Install.</u>
H & L Library Generator	0.8	60	Natural Gas, n/a	789	2020	2020

Bowdoin may operate small stationary engines smaller than 0.5 MMBtu/hr. These engines are considered insignificant activities and are not required to be included in this license. However, they are still subject to applicable State and Federal regulations. More information regarding requirements for small stationary engines is available on the Department’s website at the link below.

<http://www.maine.gov/dep/air/publications/docs/SmallRICEGuidance.pdf>

Additionally, Bowdoin may operate portable engines used for maintenance or emergency-only purposes. These engines are considered insignificant activities and are not required to be included in this license. However, they may still be subject to applicable State and Federal regulations.

**C. Application Classification**

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

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.) ch. 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:

Pollutant	Current License (TPY)	Future License (TPY)	Net Change (TPY)	Significant Emission Levels
PM	10.6	10.6	0.0	100
PM <sub>10</sub>	10.6	10.6	0.0	100
SO <sub>2</sub>	36.3	0.2	-36.1	100
NO <sub>x</sub>	30.6	30.6	0.0	100
CO	12.4	12.4	0.0	100
VOC	1.3	1.4	0.1	50

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

#### D. Facility Classification

With the annual heat input limits on the new and existing heating equipment, the operating hours restriction on the new and existing emergency generators, and the operating hours restriction on the existing non-emergency generator, the facility is licensed as follows:

- As a synthetic minor source of air emissions, because Bowdoin is subject to license restrictions that keep facility emissions below major source thresholds for criteria pollutants; and
- As an area source of hazardous air pollutants (HAP), because the licensed emissions are below the major source thresholds for HAP.

## 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.

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. ch. 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental, and energy impacts.

### B. Druckenmiller Boiler

Bowdoin is requesting to add an H Series Boiler to the Druckenmiller Science Center. The boiler has a rated heat input capacity of 4.18 MMBtu/hr and will fire natural gas at a maximum rate of 4,102 scf/hr. The boiler design incorporates low NO<sub>x</sub> burner technology to minimize potential emissions of nitrogen oxides.

1. BACT Analysis

a. Particulate Matter (PM / PM<sub>10</sub>)

Particulate matter emissions from natural gas-fired boilers and heaters of this size are generally controlled through their proper operation and maintenance and by the use of good combustion practices. The Department finds that BACT for PM / PM<sub>10</sub> emissions from the Druckenmiller Boiler shall be the firing of natural gas, the use of good combustion practices, the proper operation and maintenance of the boiler, and an emission limit of 0.21 lb/hr.

b. Sulfur Dioxide (SO<sub>2</sub>)

SO<sub>2</sub> emissions from boilers are directly related to the sulfur content of the fuel being fired and the quantity of fuel combusted. The Druckenmiller Boiler fires natural gas exclusively, which is inherently low in sulfur content. The BACT determination for SO<sub>2</sub> emissions for the Druckenmiller Boiler is the exclusive firing of natural gas and for the boiler to be properly operated and maintained.

c. Nitrogen Oxides (NO<sub>x</sub>)

The Druckenmiller Boiler incorporates low NO<sub>x</sub> burners into its design to minimize the generation of nitrogen oxides created during the combustion process. Other potentially available add-on control options for reducing NO<sub>x</sub> emissions from natural gas-fired boilers and heaters are selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR). Both of these technologies can require significant investment and space for installation. Additionally, SCR and SNCR each can have potential negative environmental impacts by emitting unreacted ammonia. Due to the boiler's size and its already low NO<sub>x</sub> output resulting from its enhanced burner design, add-on controls are not economically feasible to further reduce NO<sub>x</sub> emissions from the Druckenmiller Boiler. The Department finds that BACT for NO<sub>x</sub> emissions from the Druckenmiller Boiler shall be the proper operation and maintenance of the boiler in conjunction with implementation of good combustion controls and an emission limit of 0.41 lb/hr.

d. Carbon Monoxide (CO) and Volatile Organic Compounds (VOC)

CO and VOC emissions result from incomplete fuel combustion, which is typically caused by conditions such as insufficient residence time or limited oxygen availability in the boiler. CO and VOC emissions from natural gas-fired boilers of this size are generally managed through good combustion controls and proper operation and maintenance of the units.

Based on its size and its relatively low emission rates, the Department finds that BACT for CO and VOC emissions from the Druckenmiller Boiler shall be the use of good combustion controls and its proper operation and maintenance, along with emission limits of 0.34 lb/hr and 0.02 lb/hr, for CO and VOC respectively.

2. BACT Findings

The BACT emission limits for the Druckenmiller Boiler were based on the following:

Natural Gas

PM/PM <sub>10</sub>	– 0.05 lb/MMBtu based on 06-096 C.M.R. ch. 115, BACT
SO <sub>2</sub>	– 0.6 lb/MMscf based on AP-42 Table 1.4-2 dated 7/98
NO <sub>x</sub>	– 100 lb/MMscf based on AP-42 Table 1.4-1 dated 7/98
CO	– 84 lb/MMscf based on AP-42 Table 1.4-1 dated 7/98
VOC	– 5.5 lb/MMscf based on AP-42 Table 1.4-2 dated 7/98
Visible Emissions	– 06-096 C.M.R. ch. 115, BACT

The BACT emission limits for the Druckenmiller Boiler are the following:

Unit	PM (lb/MMBtu)	Origin and Authority
Druckenmiller Boiler	0.05	06-096 C.M.R. ch. 115, BACT

Unit	PM (lb/hr)	PM <sub>10</sub> (lb/hr)	SO <sub>2</sub> (lb/hr)	NO <sub>x</sub> (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Druckenmiller Boiler 4.18 MMBtu/hr Natural Gas	0.21	0.21	0.002	0.41	0.34	0.02

3. Visible Emissions

Visible emissions from the Druckenmiller Boiler shall not exceed 10% opacity on a six-minute block average basis.

4. Periodic Monitoring

Periodic monitoring for the Druckenmiller Boiler shall include recordkeeping to document fuel use both on a monthly and 12-month rolling total basis. Documentation shall include the type and quantity of fuel fired, for inclusion in their non-Central Heating Plant heat input calculations used to demonstrate compliance with the licensed limit.

5. New Source Performance Standards (NSPS): 40 C.F.R. Part 60, Subpart Dc

Due to its size, the Druckenmiller Boiler is not subject to *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* 40 C.F.R. Part 60, Subpart Dc for units greater than 10 MMBtu/hr manufactured after June 9, 1989. [40 C.F.R. § 60.40c]

6. National Emission Standards for Hazardous Air Pollutants (NESHAP): 40 C.F.R. Part 63, Subpart JJJJJ

The Druckenmiller Boiler fires natural gas exclusively, and as such is exempt from the requirements of 40 C.F.R. Part 63, Subpart JJJJJ. [40 C.F.R. § 63.11195(e)]

C. H & L Library Generator

Bowdoin is requesting to add one new 60 kW emergency generator to their campus, to be designated the H & L Library Generator. The new generator will have been manufactured in 2020 and is expected to have a maximum heat input capacity of 0.8 MMBtu/hr. The H & L Library Generator will fire natural gas at a maximum firing rate of 789 scf/hr.

1. BACT Findings

The BACT emission limits for the new generator are based on the following:

a. Particulate Matter (PM and PM<sub>10</sub>)

PM emissions from natural gas-fired engines are generally controlled through proper operation and maintenance. Additionally, this engine will be subject to 40 C.F.R. Part 60, Subpart JJJJ, which means that it will be required to meet EPA emission standards for emergency stationary engines as discussed below. Given the operating hours restriction included in 40 C.F.R. Part 60, Subpart JJJJ for emergency engines, the use of add-on controls for PM is not economically feasible. The Department finds proper operation and maintenance of an engine certified to meet the requirements of Subpart JJJJ, and an emission limit of 0.01 lb/hr to constitute BACT for PM and PM<sub>10</sub> emissions from the H & L Library Generator.

b. Sulfur Dioxide (SO<sub>2</sub>)

The H & L Library Generator is being licensed as an emergency generator, and as such it is limited by 40 C.F.R. Part 60, Subpart JJJJ to an operating hours limitation of 100 hours per year for non-emergency use. This unit will fire natural gas, which inherently has a low fuel sulfur content. Emergency engines of this size that fire natural gas and that are licensed to operate only for short periods of time have a limited potential for generating SO<sub>2</sub> emissions, making the use of wet scrubbers or other additional SO<sub>2</sub> add-on control methods economically unfeasible. The most

practical method for limiting SO<sub>2</sub> emissions from the H & L Library Generator is the use of a low sulfur fuel, such as natural gas. The Department finds the use of natural gas to constitute BACT for SO<sub>2</sub> emissions from the H & L Library Generator.

c. Nitrogen Oxides (NO<sub>x</sub>)

Potentially available control options for reducing emissions of NO<sub>x</sub> from natural gas-fired generators include combustion controls, selective catalytic reduction (SCR), and selective non-catalytic reduction (SNCR). Combustion controls are typically implemented through design features such as electronic ignition controls, injection systems, combustion chamber geometry, and turbocharging systems. Most new engines are designed with these features as standard equipment. SCR and SNCR are both post-combustion NO<sub>x</sub> reduction technologies. SCR uses ammonia to react with NO<sub>x</sub> in the gas stream in the presence of a catalyst to form nitrogen and water. SNCR uses a catalyst to convert CO, NO<sub>x</sub> and hydrocarbons into carbon dioxide, nitrogen, and water without the use of an additional reagent, and requires strict air-to-fuel control to maintain high reduction effectiveness without increasing hydrocarbon emissions. For a unit installed for use as an emergency back-up engine, neither SCR nor SNCR would be economically feasible considering the minimal emissions due to the limited use of the engine.

The Department finds that the proper operation and maintenance of an engine certified to meet the requirements of Subpart JJJJ, along with good combustion controls and an emission limit of 3.28 lb/hr to constitute BACT for NO<sub>x</sub> emissions from the H & L Library Generator.

d. Carbon Monoxide (CO) and Volatile Organic Compounds (VOC)

CO and VOC emissions from emergency engines are the result of incomplete combustion, caused by conditions such as insufficient residence time or limited oxygen availability. CO and VOC emissions from natural gas-fired emergency engines are generally controlled through proper operation and maintenance. Oxidation catalysts have been used on large engines to reduce CO and VOC emission levels in the exhaust, but like SCR and SNCR, use of an oxidation catalyst on an emergency engine with limited yearly use would not provide a significant environmental benefit and would not be economically feasible.

The Department finds that proper operation and maintenance of an engine certified to meet the requirements of Subpart JJJJ, and an emissions limit of 0.26 lb/hr for CO and 0.09 lb/hr for VOC to constitute BACT for CO and VOC emissions from the H & L Library Generator.

e. Visible Emissions

Visible emissions from the H & L Library Generator shall not exceed 10% opacity on a six-minute block average basis.

2. BACT Findings

The BACT emission limits for the H & L Library Generator were based on the following:

Natural Gas

PM/PM <sub>10</sub>	- 0.00991 lb/MMBtu, from AP-42, Table 3.2-2, dated 7/2000
SO <sub>2</sub>	- 0.000588 lb/MMBtu, from AP-42, Table 3.2-2, dated 7/2000
NO <sub>x</sub>	- 4.08 lb/MMBtu, from AP-42, Table 3.2-2, dated 7/2000
CO	- 0.317 lb/MMBtu, from AP-42, Table 3.2-2, dated 7/2000
VOC	- 0.118 lb/MMBtu, from AP-42, Table 3.2-2, dated 7/2000
Visible Emissions	- 06-096 C.M.R. ch. 115, BACT

The BACT emission limits for the H & L Library Generator are the following:

Unit	PM (lb/hr)	PM <sub>10</sub> (lb/hr)	SO <sub>2</sub> (lb/hr)	NO <sub>x</sub> (lb/hr)	CO (lb/hr)	VOC (lb/hr)
H & L Library Generator 0.8 MMBtu/hr Natural Gas	0.01	0.01	--	3.28	0.26	0.09

Visible emissions from the H & L Library Generator shall not exceed 10% opacity on a six-minute block average basis.

3. 40 C.F.R. Part 60, Subpart JJJJ

*Standards of Performance for Spark Ignition Internal Combustion Engines*, 40 C.F.R. Part 60, Subpart JJJJ is applicable to the H & L Library Generator since it was ordered after June 12, 2006, and manufactured after January 1, 2009. [40 C.F.R. § 60.4230] By meeting the requirements of 40 C.F.R. Part 60, Subpart JJJJ, 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 JJJJ requirements is listed below.

a. Emergency Engine Designation and Operating Criteria

Under 40 C.F.R. Part 60, Subpart JJJJ, 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 JJJJ, 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. §§ 60.4243(d) and 60.4248]

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

(1) Manufacturer Certification Requirement

The engine shall be certified by the manufacturer as meeting the emission standards for new nonroad spark ignition engines found in 40 C.F.R. Part 60, Subpart JJJJ, Table 1. [40 C.F.R. § 60.4233]

(2) Non-Resettable Hour Meter Requirement

A non-resettable hour meter shall be installed and operated on the engine. [40 C.F.R. § 60.4237]

(3) Operation and Maintenance Requirement

The engine shall be operated and maintained according to the manufacturer's written instructions or procedures developed by Bowdoin that are approved by the engine manufacturer. Bowdoin may only change those settings that are permitted by the manufacturer. [40 C.F.R. § 60.4243]

(4) Annual Time Limit for Maintenance and Testing

As an emergency engine, the unit shall be limited to 100 hours/year for maintenance and testing. The emergency engine may operate up to 50 hours per year in non-emergency situations, but those 50 hours are included in the 100 hours total allowed for maintenance and testing. The 50 hours for non-emergency use cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. [40 C.F.R. § 60.4243(d)]

(5) Recordkeeping

Bowdoin 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. § 60.4245(b)]

**D. Annual Emissions**

The table below provides an estimate of facility-wide annual emissions for the purposes of calculating the facility’s annual air license fee. Only licensed equipment is included, i.e., emissions from insignificant activities are excluded. Similarly, unquantifiable fugitive particulate matter emissions are not included. Maximum potential emissions were calculated based on the following assumptions:

- A combined total heat input limit of 206,000 MMBtu per year for the Central Heating Plant Units, based on a 12-month rolling total;
- A combined total heat input limit of 50,000 MMBtu per year for the non-Central Heating Plant licensed units, based on a 12-month rolling total;
- An operating hours limit of 100 hours per calendar year for each emergency generator; and
- A total operating hour limit of 500 hours per calendar year for the Smith Union Generator.

Please note, this information provides the basis for fee calculation only and should not be construed to represent a comprehensive list of license restrictions or permissions. That information is provided in the Order section of this license.

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

	<b>PM</b>	<b>PM<sub>10</sub></b>	<b>SO<sub>2</sub></b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>VOC</b>
<b>Central Heating Plant Boilers</b> Boiler #1 and Boiler #2	8.24	8.24	0.16	20.60	8.48	0.56
<b>Non-Central Heating Plant Boilers</b> Coffin Street Dorm West Hot Water Heater, Druckenmiller Science Center Boiler, Farley Field House Boiler, Moulton Union Boiler, Stowe Hall Boiler, Thorne Hall Boiler, Watson Ice Arena Boilers #1, #2, and #3, Watson Ice Arena Heater, and Wellness Center Boiler	2.00	2.00	0.01	2.75	2.06	0.13
<b>Generators</b>						
Bowdoin Warehouse	0.02	0.02	negl.	0.67	0.14	0.05
Central Heating Plant	0.04	0.04	negl.	0.61	0.13	0.05
Chamberlain Hall	0.03	0.03	negl.	0.46	0.10	0.04
Druckenmiller Hall	0.02	0.02	negl.	0.35	0.08	0.03
Farley Field House	negl.	negl.	negl.	0.13	0.01	negl.
H & L Library	negl.	negl.	negl.	0.16	0.01	negl.
Harpwell Apartments	0.04	0.04	negl.	0.59	0.13	0.05

	PM	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC
Kanbar Hall	negl.	negl.	negl.	0.12	0.01	negl.
Memorial Hall	0.03	0.03	negl.	0.41	0.09	0.03
Moulton Union 1	negl.	negl.	negl.	0.36	0.03	0.01
Moulton Union 2 (outside)	0.04	0.04	negl.	0.59	0.13	0.05
Park Row	0.03	0.03	negl.	0.36	0.08	0.03
Rhodes Hall	negl.	negl.	negl.	0.29	0.02	0.01
Roux Hall Generator	negl.	negl.	negl.	0.06	0.11	0.03
Smith Union Generator	0.04	0.04	negl.	0.25	0.51	0.18
Stowe Hall	negl.	negl.	negl.	0.19	0.02	0.01
Thorne Dining	0.02	0.02	negl.	0.90	0.19	0.07
Walker Art Museum	negl.	negl.	negl.	0.36	0.03	0.01
Watson Ice Arena	0.02	0.02	negl.	0.35	0.08	0.03
Wellness Center	negl.	negl.	negl.	0.16	0.01	negl.
<b>Total TPY</b>	<b>10.6</b>	<b>10.6</b>	<b>0.2</b>	<b>30.6</b>	<b>12.4</b>	<b>1.4</b>

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

### 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. ch. 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:

Pollutant	Tons/Year
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-AF-A subject to the conditions found in Air Emission License A-76-71-Z-R/A; in amendments A-76-71-AA-A, A-76-71-AB-M, A-76-71-AC-A, and A-76-71-AE-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 condition shall replace Specific Condition (16)(D) of Air Emission License A-76-71-AB-M (June 8, 2018):

**(16) Central Heating Plant Boilers (Boilers 1 and 2)**

D. Emissions from Boilers 1 and 2 shall not exceed the following:

<b>Unit</b>	<b>Fuel</b>	<b>PM (lb/hr)</b>	<b>PM<sub>10</sub> (lb/hr)</b>	<b>SO<sub>2</sub> (lb/hr)</b>	<b>NO<sub>x</sub> (lb/hr)</b>	<b>CO (lb/hr)</b>	<b>VOC (lb/hr)</b>
Boiler 1 (72 MMBtu/hr oil) (73.3 MMBtu/hr gas)	Distillate Fuel	5.76	5.76	0.11	14.40	2.57	0.10
	Natural Gas	5.86	5.86	0.04	7.18	6.03	0.40
Boiler 2 (72 MMBtu/hr oil) (73.3 MMBtu/hr gas)	Distillate Fuel	5.76	5.76	0.11	14.40	2.57	0.10
	Natural Gas	5.86	5.86	0.04	7.18	6.03	0.40

[06-096 C.M.R. ch. 115, BPT]

The following condition shall replace Specific Condition (17)(A) of Air Emission License A-76-71-AE-A (May 29, 2020):

**(17) Small Boilers and Hot Water Heaters**

A. All licensed small boilers and hot water heaters at Bowdoin are licensed to fire natural gas exclusively. These small boilers and hot water heaters shall not exceed the following emission limits [06-096 C.M.R. ch. 115, BPT / BACT]:

<b>Unit</b>	<b>PM (lb/hr)</b>	<b>PM<sub>10</sub> (lb/hr)</b>	<b>SO<sub>2</sub> (lb/hr)</b>	<b>NO<sub>x</sub> (lb/hr)</b>	<b>CO (lb/hr)</b>	<b>VOC (lb/hr)</b>
Coffin St. Dorm West Hot Water Heater (1.00 MMBtu/hr, natural gas)	0.08	0.08	--	0.10	0.08	0.01
Druckenmiller Science Center Boiler (4.18 MMBtu/hr, natural gas)	0.21	0.21	--	0.41	0.34	0.02
Farley Field House Boiler (6.40 MMBtu/hr, natural gas)	0.32	0.32	--	0.70	0.52	0.03
Moulton Union Boiler (1.60 MMBtu/hr, natural gas)	0.08	0.08	--	0.16	0.13	0.01
Stowe Hall Boiler (1.00 MMBtu/hr, natural gas)	0.08	0.08	--	0.10	0.08	0.01
Thorne Hall Boiler (1.00 MMBtu, natural gas)	0.05	0.05	--	0.10	0.08	0.01
Watson Ice Arena Boiler 1 (2.00 MMBtu/hr, natural gas)	0.16	0.16	--	0.19	0.16	0.01
Watson Ice Arena Boiler 2 (2.00 MMBtu/hr, natural gas)	0.16	0.16	--	0.19	0.16	0.01
Watson Ice Arena Boiler 3 (2.00 MMBtu/hr, natural gas)	0.16	0.16	--	0.19	0.16	0.01
Watson Ice Arena Heater (1.50 MMBtu/hr, natural gas)	0.12	0.12	--	0.15	0.12	0.01
Wellness Center Boiler (2.00 MMBtu/hr, natural gas)	0.16	0.16	--	0.19	0.16	0.01

The following condition shall replace Specific Condition (18)(A) of Air Emission License A-76-71-AB-M (June 8, 2018):

**(18) Facility Fuel Requirements**

**A. Distillate Fuel Limits**

1. The distillate fuel fired in equipment at Bowdoin shall have a maximum sulfur content of 0.0015% by weight.
2. Bowdoin shall not purchase or otherwise obtain distillate fuel with a maximum sulfur content that exceeds 0.0015% by weight.
3. Compliance shall be demonstrated by fuel records from the supplier showing the quantity and the percent sulfur of the fuel delivered.

[06-096 C.M.R. ch. 115, BPT]

The following condition shall replace Specific Condition (19)(B) of Air Emission License A-76-71-AE-A (May 29, 2020):

**(19) Emergency Generators**

B. Emissions shall not exceed the following [06-096 CMR 115, BPT/BACT]:

<b>Unit</b>	<b>PM (lb/hr)</b>	<b>PM<sub>10</sub> (lb/hr)</b>	<b>SO<sub>2</sub> (lb/hr)</b>	<b>NO<sub>x</sub> (lb/hr)</b>	<b>CO (lb/hr)</b>	<b>VOC (lb/hr)</b>
Bowdoin Warehouse Gen. (3.04 MMBtu/hr, distillate fuel)	0.36	0.36	0.005	13.41	2.89	1.09
Central Heating Plant Gen. (2.70 MMBtu/hr, distillate fuel)	0.83	0.83	0.01	11.82	2.55	0.96
Chamberlain Hall Gen. (2.10 MMBtu/hr, distillate fuel)	0.64	0.64	0.01	9.06	1.95	0.74
Druckenmiller Hall Gen. (1.50 MMBtu/hr, distillate fuel)	0.48	0.48	0.01	6.83	1.47	0.56
Farley Field House Gen. (0.60 MMBtu/hr, natural gas)	0.01	0.01	--	2.53	0.20	0.07
Harpwell Apartments Gen. (2.69 MMBtu/hr, distillate fuel)	0.83	0.83	--	11.86	2.56	0.97
H & L Library Gen. (0.80 MMBtu/hr, natural gas)	0.01	0.01	--	3.28	0.26	0.09
Kanbar Hall Gen. (0.60 MMBtu/hr, natural gas)	0.01	0.01	--	2.42	0.19	0.07
Memorial Hall Gen. (1.80 MMBtu/hr, distillate fuel)	0.56	0.56	0.01	7.98	1.72	0.65
Moulton Union Gen. 1 (1.80 MMBtu/hr, natural gas)	0.02	0.02	--	7.31	0.57	0.21
Moulton Union Gen. 2 (outside) (2.60 MMBtu/hr, distillate fuel)	0.81	0.81	0.01	11.54	2.49	0.94

Park Row Gen. (1.63 MMBtu/hr, distillate fuel)	0.51	0.51	--	7.19	1.55	0.59
Rhodes Hall Gen. (1.40 MMBtu/hr, natural gas)	0.01	0.01	--	5.71	0.44	0.17
Roux Hall Gen. (1.80 MMBtu/hr, natural gas)	0.09	0.09	--	1.11	2.22	0.55
Smith Union Generator (3.50 MMBtu/hr, natural gas)	0.17	0.17	--	1.01	2.03	0.71
Stowe Hall Gen. (0.90 MMBtu/hr, natural gas)	0.01	0.01	--	3.86	0.30	0.11
Thorne Dining Gen. (4.00 MMBtu/hr, distillate fuel)	0.48	0.48	0.01	17.58	3.79	1.44
Walker Art Museum Gen. (1.80 MMBtu/hr, natural gas)	0.02	0.02	--	7.31	0.57	0.21
Watson Ice Arena Gen. (1.60 MMBtu/hr, distillate fuel)	0.48	0.48	0.01	6.89	1.48	0.56
Wellness Center Gen. (0.80 MMBtu/hr, natural gas)	0.01	0.01	--	3.32	0.26	0.10

The following condition shall replace Specific Condition (19)(F) of Air Emission License A-76-71-AB-M (June 8, 2018):

**F. 40 C.F.R. Part 60, Subpart JJJJ**

The Farley Field House, H & L Library, Rhodes Hall, and Wellness Center Generators shall meet the applicable requirements of 40 C.F.R. Part 60, Subpart JJJJ, including the following:

**1. Manufacturer Certification**

The engines shall be certified by the manufacturer as meeting the emission standards for new nonroad spark ignition engines found in 40 C.F.R. Part 60, Subpart JJJJ, Table 1.

**2. Non-Resettable Hour Meter**

A non-resettable hour meter shall be installed and operated on each engine. [40 C.F.R. § 60.4237 and 06-096 C.M.R. 115, BPT]

**3. Annual Time Limit for Maintenance and Testing**

a. As emergency engines, the units shall each 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). The 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]

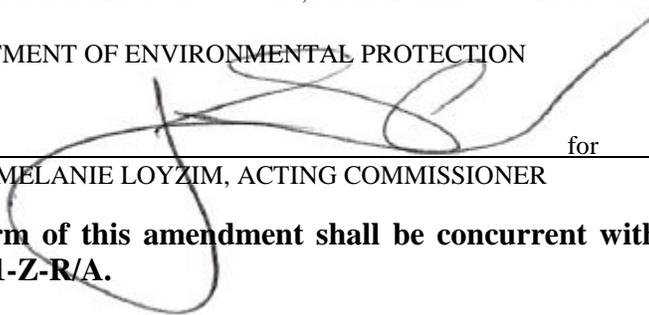
- b. Bowdoin shall keep records that include maintenance conducted on each engine and the hours of operation of each engine recorded through the non-resettable hour meter. Documentation shall include the number of hours each unit operated for emergency purposes, the number of hours each unit operated for non-emergency purposes, and the reason each engine was in operation during each time. [40 C.F.R. § 60.4214(b)]

4. Operation and Maintenance

The engines shall be operated and maintained according to the manufacturer's written instructions or procedures developed by Bowdoin that are approved by the engine manufacturer. Bowdoin may only change those settings that are permitted by the manufacturer. [40 C.F.R. § 60.4243]

DONE AND DATED IN AUGUSTA, MAINE THIS 30<sup>th</sup> DAY OF NOVEMBER, 2020.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:  for  
MELANIE LOYZIM, ACTING 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: October 5, 2020

Date of application acceptance: October 5, 2020

Date filed with the Board of Environmental Protection:

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

**FILED**  
NOV 30, 2020  
State of Maine  
Board of Environmental Protection