



DEPARTMENT ORDER

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

**Departmental
Findings of Fact and Order
Air Emission License
Amendment #4**

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 4, 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), and on August 30, 2019 (A-76-71-AC-A).

Bowdoin has requested an amendment to their license in order to add three new emergency generators and one new boiler, and to remove one existing boiler.

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

Equipment	Max. Capacity (MMBtu/hr)	Maximum Firing Rate	Fuel Type, % sulfur	Date of Manuf.	Date of Install.
Thorne Hall Boiler	1.01	990.2 scfh	Natural Gas, n/a	2019	2019

Boiler Being Removed

Equipment	Max. Capacity (MMBtu/hr)	Maximum Firing Rate	Fuel Type, % sulfur	Date of Manuf.	Date of Install.
MacMillan House Boiler	1.4	1,262 scfh	Natural Gas, n/a	2000	--

Stationary Emergency Engines

Equipment	Max. Input Capacity (MMBtu/hr)	Rated Output Capacity (kW)	Fuel Type, % sulfur	Firing Rate (gal/hr)	Date of Manuf.	Date of Install.
Bowdoin Warehouse Generator	3.04	300	Distillate Fuel, 0.0015%	22.2	2019	2019
Harpswell Apartments Generator	2.69	275	Distillate Fuel, 0.0015%	19.6	2019	2019
Park Row Generator	1.63	150	Distillate Fuel, 0.0015%	11.9	2019	2019

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. Definitions

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.

D. 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	10.5	10.6	0.1	100
PM ₁₀	10.5	10.6	0.1	100
SO ₂	36.3	36.3	0.0	100
NO _x	29.0	30.6	1.6	100
CO	12.0	12.4	0.4	100
VOC	1.2	1.3	0.1	50

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

E. 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. Thorne Hall Boiler

Bowdoin installed the new Thorne Hall Boiler in 2019 to replace an obsolete one that was previously removed from the facility and from their air emission license. This new boiler is used to provide building heat and fires natural gas. It has a maximum rated heat input of 1.01 MMBtu/hr, was installed in 2019, and exhausts through its own stack.

1. BACT Analysis

Bowdoin submitted the following BACT analysis for control of emissions from the new Thorne Hall Boiler.

a. Particulate Matter (PM / PM₁₀):

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 / PM₁₀ emissions from the Thorne Hall Boiler shall be the firing of natural gas, the use of good combustion practices, and the proper operation and maintenance of the boiler.

b. Sulfur Dioxide (SO₂):

SO₂ emissions from boilers are directly related to the sulfur content of the fuel being fired and the quantity of fuel combusted. The Thorne Hall Boiler fires natural gas exclusively, which is inherently low in sulfur content. The BACT determination for SO₂ emissions for the Thorne Hall Boiler is the exclusive firing of natural gas and for the boiler to be properly operated and maintained.

c. Nitrogen Oxides (NO_x):

Potentially available add-on control options for reducing NO_x emissions from natural gas-fired boilers and heaters are selective catalytic reduction (SCR) and non-selective catalytic reduction (NSCR). Both technologies can require significant investment and space for installation. Additionally, SCR and NSCR each can have potential negative environmental impacts by emitting unreacted ammonia. Due to its size and inherently low NO_x output, add-on controls are not economically feasible to further reduce NO_x emissions from the Thorne Hall Boiler. The Department finds that BACT for NO_x emissions from the Thorne Hall Boiler shall be the proper operation and maintenance of the boiler in conjunction with implementation of good combustion controls.

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 Thorne Hall Boiler shall be the use of good combustion controls and the proper operation and maintenance of this unit.

2. BACT Findings

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

Natural Gas

- PM/PM₁₀ – 0.05 lb/MMBtu based on 06-096 C.M.R. ch. 115, BACT
- SO₂ – 0.6 lb/MMscf based on AP-42 Table 1.4-2 dated 7/98
- NO_x – 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 Thorne Hall Boiler are the following:

Unit	PM (lb/hr)	PM₁₀ (lb/hr)	SO₂ (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Thorne Hall Boiler 1.01MMBtu/hr Natural Gas	0.05	0.05	negl.	0.1	0.08	0.01

3. Visible Emissions

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

4. Periodic Monitoring

Periodic monitoring for the Thorne Hall 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 that are 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 Thorne Hall 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 Thorne Hall 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. Bowdoin Warehouse Generator, Harpswell Apartments Generator and Park Row Generator

Bowdoin has requested the addition of three emergency generators to their existing air emission license to provide emergency power for their facility when necessary. The emergency generators are generator sets, each consisting of an engine and an electrical generator. The Bowdoin Warehouse Generator engine has a heat input rating of 3.04 MMBtu/hr, the Harpswell Apartments Generator engine has a heat input rating of 2.69 MMBtu/hr, and the Park Row Generator engine has a heat input rating of 1.63 MMBtu/hr. Each of these three emergency generators were manufactured in 2019 and each fires distillate fuel.

1. BACT Findings

The BACT emission limits for the three emergency generators are based on the following:

a. Particulate Matter (PM / PM₁₀):

Particulate matter emissions from distillate fuel-fired engines are generally controlled through proper operation and maintenance. Additionally, the emergency

engines for the Bowdoin Warehouse Generator, the Harpswell Apartments Generator, and the Park Row Generator are subject to 40 C.F.R. Part 60, Subpart IIII - *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*, which requires them to meet EPA emission standards for emergency stationary engines. Therefore, BACT for PM and PM₁₀ emissions from these three emergency generators shall be the use of EPA-certified emergency stationary engines as required in 40 C.F.R. § 60.4205(b), and the proper operation and maintenance of the emergency stationary engines.

b. Sulfur Dioxide (SO₂):

For emergency engines that fire distillate fuel and operate for less than 100 hours per year in a non-emergency capacity, the use of wet scrubbers or other SO₂ add-on control methods would not be economically feasible considering the minimal emissions that would be generated by the limited use engines. The most practical method for limiting SO₂ emissions is the use of low sulfur fuel, such as distillate fuel having a sulfur content of no greater than 0.0015% by weight, in conjunction with the use of EPA-certified emergency stationary engines as required in 40 C.F.R. § 60.4205(b).

c. Nitrogen Oxides (NO_x):

Potentially available add-on control options for reducing NO_x emissions from distillate fuel-fired engines include selective catalytic reduction (SCR) and non-selective catalytic reduction (NSCR).

SCR is a post-combustion NO_x reduction technology that uses ammonia to react with NO_x in the gas stream in the presence of a catalyst to form nitrogen and water. SCR has not been a demonstrated NO_x control technology for emergency engines, and is not technically feasible for engines requiring quick start-ups and short operating periods. Additionally, SCR would not be economically feasible considering the minimal emissions generated by the emergency engine within its operating hours restriction and the small amount of NO_x emissions that would be eliminated if SCR were installed.

NSCR is another post-combustion NO_x reduction technology that uses a catalyst to convert CO, NO_x and hydrocarbons into carbon dioxide, nitrogen and water without the use of an additional reagent. Engines operating with NSCR require strict air-to-fuel ratio control to maintain high reduction effectiveness without increasing hydrocarbon emissions. To achieve effective NO_x reduction performance with NSCR, the engines may need to run with a richer fuel mixture than normal, which means that the engines would have to run using less air per unit of fuel being combusted than they otherwise would. NSCR would not be economically feasible considering the minimal emissions generated by the emergency engine within its operating hours restriction, and the small amount of

NO_x emissions that would be eliminated if NSCR were installed. NSCR would also not be technically feasible because engines that fire distillate fuel inherently operate lean and therefore have exhaust oxygen levels higher than those required to effectively use NSCR.

Therefore, BACT for NO_x emissions from these three emergency generators shall be the installation of EPA-certified emergency stationary engines as required in 40 C.F.R. § 60.4205(b), in conjunction with the use of good combustion controls, and the proper operation and maintenance of the emergency stationary engines.

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

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

BACT for CO and VOC emissions from these three emergency engines shall be the installation of EPA-certified emergency stationary engines as required in 40 C.F.R. § 60.4205(b), in conjunction with the proper operation and maintenance of the units.

2. The BACT emission limits for the three new emergency engines are based on the following:

a. Bowdoin Warehouse Generator

PM/PM ₁₀	- 0.12 lb/MMBtu from 06-096 C.M.R. ch. 103
SO ₂	- combustion of distillate fuel with a maximum sulfur content not to exceed 15 ppm (0.0015% sulfur by weight)
NO _x	- 4.41 lb/MMBtu from AP-42, Table 3.3-1 dated 10/96
CO	- 0.95 lb/MMBtu from AP-42, Table 3.3-1 dated 10/96
VOC	- 0.36 lb/MMBtu from AP-42, Table 3.3-1 dated 10/96
Visible Emissions	- 06-096 C.M.R. ch. 101

b. Harpswell Apartments Generator and Park Row Generator

PM/PM ₁₀	- 0.31 lb/MMBtu from AP-42, Table 3.3-1 dated 10/96
SO ₂	- combustion of distillate fuel with a maximum sulfur content not to exceed 15 ppm (0.0015% sulfur by weight)
NO _x	- 4.41 lb/MMBtu from AP-42, Table 3.3-1 dated 10/96
CO	- 0.95 lb/MMBtu from AP-42, Table 3.3-1 dated 10/96
VOC	- 0.36 lb/MMBtu from AP-42, Table 3.3-1 dated 10/96
Visible Emissions	- 06-096 C.M.R. ch. 101

The BACT emission limits for these three emergency engines are the following:

Unit	Pollutant	lb/MMBtu
Bowdoin Warehouse Generator	PM	0.12

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Bowdoin Warehouse Generator	0.36	0.36	0.005	13.41	2.89	1.09
Harpswell Apartments Generator	0.83	0.83	0.004	11.86	2.56	0.97
Park Row Generator	0.51	0.51	0.003	7.19	1.55	0.59

Visible emissions from each of the three emergency engines shall not exceed 20% opacity on a six-minute block average basis.

3. 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 engines listed above since the units were 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 units also meet 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 III, 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 III, 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 III Requirements

(1) Manufacturer Certification Requirement

The engines 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 engines 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 each engine. [40 C.F.R. § 60.4209(a)]

(4) Operation and Maintenance Requirements

The engines shall be operated and maintained according to the manufacturer's emission-related written instructions. Bowdoin 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 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). [40 C.F.R. § 60.4211(f)]

(6) Initial Notification Requirement

No initial notification is required under 40 C.F.R. Part 60, Subpart III for emergency engines. [40 C.F.R. § 60.4214(b)]

(7) Recordkeeping

Bowdoin shall keep records that include maintenance conducted on the engines 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)]

D. Annual Emissions

Bowdoin shall be restricted to the following annual emissions, based on the following:

1. A combined total heat input of 206,000 MMBtu per year for the Central Heating Plant Units, based on a 12-month rolling total;
2. A combined total heat input of 50,000 MMBtu per year for the non-Central Heating Plant licensed units, based on a 12-month rolling total;
3. The firing of 500 gallons per year of waste oil, based on a 12-month rolling total;
4. 100 hours of operation per calendar year for each emergency engine; and
5. 500 hours of operation per calendar year for the Smith Union Generator.

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

	PM	PM ₁₀	SO ₂	NO _x	CO	VOC
Central Heating Plant Boilers Boiler #1 and Boiler #2	8.24	8.24	36.31	20.60	8.40	0.55
Non-Central Heating Plant Boilers Chamberlain Hall Hot Water Heater, Coffin Street Dorm West Hot Water Heater, 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	2.0	2.0	0.01	2.75	2.04	0.13
Generators						
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.
Harpwell Apartments	0.04	0.04	negl.	0.59	0.13	0.05
Kanbar Hall	negl.	negl.	negl.	0.12	0.01	negl.

	PM	PM ₁₀	SO ₂	NO _x	CO	VOC
Memorial Hall	0.03	0.03	negl.	0.41	0.09	0.03
Moulton Union 1	negl.	negl.	negl.	0.37	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.	0.37	0.03	0.01
Watson Ice Arena	0.02	0.02	negl.	0.34	0.07	0.03
Wellness Center	negl.	negl.	negl.	0.17	0.01	negl.
Total TPY	10.6	10.6	36.3	30.6	12.4	1.3

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 ₁₀	25
SO ₂	50
NO _x	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-AE-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, and A-76-71-AC-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 (17) of Air Emission License A-76-71-AC-A (August 30, 2019):

(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]:

<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>
Chamberlain Hall Hot Water Heater (1.6 MMBtu/hr, natural gas)	0.13	0.13	negl.	0.16	0.13	0.01
Coffin St. Dorm West Hot Water Heater (1.0 MMBtu/hr, natural gas)	0.08	0.08	negl.	0.10	0.08	0.01
Farley Field House Boiler (6.4 MMBtu/hr, natural gas)	0.32	0.32	negl.	0.70	0.52	0.03
Moulton Union Boiler (1.6 MMBtu/hr, natural gas)	0.08	0.08	negl.	0.16	0.13	0.01
Stowe Hall Boiler (1.0 MMBtu/hr, natural gas)	0.08	0.08	negl.	0.10	0.08	0.01
Thorne Hall Boiler (1.0 MMBtu, natural gas)	0.05	0.05	negl.	0.10	0.08	0.01

Unit	PM (lb/hr)	PM₁₀ (lb/hr)	SO₂ (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Watson Ice Arena Boiler 1 (2.0 MMBtu/hr, natural gas)	0.16	0.16	negl.	0.19	0.16	0.01
Watson Ice Arena Boiler 2 (2.0 MMBtu/hr, natural gas)	0.16	0.16	negl.	0.19	0.16	0.01
Watson Ice Arena Boiler 3 (2.0 MMBtu/hr, natural gas)	0.16	0.16	negl.	0.19	0.16	0.01
Watson Ice Arena Heater (1.5 MMBtu/hr, natural gas)	0.12	0.12	negl.	0.15	0.12	0.01
Wellness Center Boiler (2.0 MMBtu/hr, natural gas)	0.16	0.16	negl.	0.19	0.16	0.01

B. Visible Emissions

Visible emissions from each boiler shall be limited to no greater than 10% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BPT/BACT]

(19) Emergency Generators

The following condition shall replace Specific Condition (19)(A) of Air Emission License A-76-71-AC-A (August 30, 2019):

A. Emissions shall not exceed the following:

Unit	PM (lb/MMBtu)	Origin and Authority
Thorne Dining Generator	0.12	06-096 C.M.R. ch. 103
Bowdoin Warehouse		

The following condition shall replace Specific Condition (19)(B) of Air Emission License A-76-71-AC-A (August 30, 2019):

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

Unit	PM (lb/hr)	PM₁₀ (lb/hr)	SO₂ (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
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. (2.7 MMBtu/hr, distillate fuel)	0.83	0.83	0.01	11.82	2.55	0.96
Chamberlain Hall Gen. (2.1 MMBtu/hr, distillate fuel)	0.64	0.64	0.01	9.06	1.95	0.74
Druckenmiller Hall Gen. (1.5 MMBtu/hr, distillate fuel)	0.48	0.48	0.01	6.83	1.47	0.56
Farley Field House Gen. (0.6 MMBtu/hr, natural gas)	0.01	0.01	negl.	2.53	0.20	0.07
Harpswell Apartments Gen. (2.69 MMBtu/hr, distillate fuel)	0.83	0.83	0.004	11.86	2.56	0.97
Kanbar Hall Gen. (0.6 MMBtu/hr, natural gas)	0.01	0.01	negl.	2.42	0.19	0.07
Memorial Hall Gen. (1.8 MMBtu/hr, distillate fuel)	0.56	0.56	0.01	7.98	1.72	0.65
Moulton Union Gen. 1 (1.8 MMBtu/hr, natural gas)	0.02	0.02	negl.	7.31	0.57	0.21
Moulton Union Gen. 2 (outside) (2.6 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	0.003	7.19	1.55	0.59
Rhodes Hall Gen. (1.4 MMBtu/hr, natural gas)	0.01	0.01	negl.	5.71	0.44	0.17
Roux Hall Gen. (1.8 MMBtu/hr, natural gas)	0.09	0.09	0.001	1.11	2.22	0.55
Smith Union Generator 3.5 MMBtu/hr, natural gas	0.17	0.17	negl.	1.01	2.03	0.71
Stowe Hall Gen. (0.9 MMBtu/hr, natural gas)	0.01	0.01	0.001	3.86	0.30	0.11
Thorne Dining Gen. (4.0 MMBtu/hr, distillate fuel)	0.48	0.48	0.01	17.58	3.79	1.44
Walker Art Museum Gen. (1.8 MMBtu/hr) natural gas	0.02	0.02	negl.	7.31	0.57	0.21
Watson Ice Arena Gen. (1.6 MMBtu/hr, distillate fuel)	0.48	0.48	0.01	6.89	1.48	0.56
Wellness Center Gen. (0.8 MMBtu/hr, natural gas)	0.01	0.01	negl.	3.32	0.26	0.10

The following condition shall replace Specific Condition (19)(E) of Air Emission License A-76-71-AC-A (August 30, 2019):

E. 40 C.F.R. Part 60, Subpart III

The Bowdoin Warehouse, Central Heating Plant, Harpswell Apartments, Moulton Union 2, Park Row, and Watson Ice Arena Generators shall meet the applicable requirements of 40 C.F.R. Part 60, Subpart III, including the following:

1. Manufacturer Certification

The engines 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 engines shall not exceed 15 ppm sulfur (0.0015% sulfur) by weight. 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 each engine. [40 C.F.R. § 60.4209(a)]

4. 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). 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. 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)]

5. Operation and Maintenance

The engines shall be operated and maintained according to the manufacturer's emission-related written instructions or procedures developed by Bowdoin that are approved by the engine manufacturer. Bowdoin 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 29th DAY OF MAY, 2020.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:  for
GERALD D. REID, 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: December 4, 2019

Date of application acceptance: December 6, 2019

Date filed with the Board of Environmental Protection:

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

FILED
MAY 29, 2020
State of Maine
Board of Environmental Protection