STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

Bowdoin College **Cumberland County** **Brunswick, Maine** **A-76-71-AB-M (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 (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).

Bowdoin has requested a minor revision to their air emission license to:

- Add natural gas as a licensed fuel for their Smith Union Generator;
- Remove No. 3 Boiler from the license;
- Document the recent removal of the Admissions Building Boiler and its replacement with two boilers having capacities below the licensing threshold;
- Remove the Smith Union Boiler, Hubbard Hall Generator and Rhodes Hall 1 Generator from the license;
- Reduce the maximum allowable sulfur content of the distillate fuel fired in their boilers from 0.5% by weight to 0.35% by weight; and
- Document the name change of existing Central Heating Plant Generator 1 to Portable Generator 3.
- Correct the nameplate data for Portable Generator 2 and Stowe Hall Generator.
- Update their current roster of equipment on site to reflect equipment upgrades and changes that have recently been undertaken at Bowdoin.

This minor revision does not include the licensing of any new emission sources.

The equipment addressed in this license amendment is installed in various buildings on the Bowdoin College campus located in Brunswick, Maine.

B. Emission Equipment

1. Changes to the following equipment are addressed in this minor revision, and the impacts of these changes are factored into the annual emission calculations and licensed emission limits.

Stationary Engines

Equipment (Changes Made)	Max. Input Capacity (MMBtu/hr)	Rated Output Capacity (kW)	Fuel Type	Firing Rate (scf/hr)	Date of Manuf.
Smith Union Generator (Added Natural Gas as Licensed Fuel)	0.7	45	Propane	7.84 gal/hr	1994
	0.6	39	Natural Gas	546 scf/hr	
Stowe Hall Generator (Corrected Rated Output)	0.9	70	Natural Gas	928 scf/hr	2005
Rhodes Hall 1 Generator (Removed from Service)	1.1	75	Propane	11.84 gal/hr	1995
Hubbard Hall Generator (Removed from Service)	1.3	125	Distillate Fuel	9.5 gal/hr	2004
Portable Generator 2 (Corrected Rated Input)	3.3	300	Distillate Fuel	23.5 gal/hr	2005
Portable Generator 3 (Name Change Only, formerly Central Heating Plant Generator 1)	2.0	200	Distillate Fuel	14.5 gal/hr	2003

2. The following boilers have been removed from the facility and are being listed solely for the purposes of documenting the equipment history. Their removal does not affect the facility's existing licensed emission limits, as the boilers' emissions are based on a sitewide total heat input into the boilers and not on individual boiler contributions.

Boilers Removed

Equipment	Max. Capacity (MMBtu/hr)	Maximum Firing Rate	Fuel Type	Date of Manuf.	Stack #
Boiler #3	48.8	348.6 gal/hr	Distillate Fuel	1973	1
	51.3	50,294 scf/hr	Natural Gas		
Admissions Building Boiler	1.2	8.3 gal/hr	Distillate Fuel	2000	N/A
Smith Union Boiler	2.4	26.0 gal/hr	Propane	1994	N/A

3. Bowdoin has requested to lower the limit in their air emission license for the maximum allowable sulfur content in the distillate fuel fired in their licensed boilers. Reducing the maximum allowable sulfur content limit of the fuel from the current limit of 0.5% sulfur by weight to the proposed limit of 0.35% sulfur by weight will ensure that Bowdoin remains under the ambient air quality analysis modeling SO_2 threshold of 50 tons per year, provided they do not exceed the annual heat input restrictions for their licensed boilers. This change will not affect how Bowdoin presently operates, as they are currently procuring distillate fuel for their licensed boilers well below the proposed sulfur limit. The change is being made so the SO_2 tons per year limit in the air emission license can be eliminated, thus simplifying the recordkeeping and documentation necessary for Bowdoin to demonstrate compliance. In accordance with State of Maine Statute M.R.S. § 603-A, beginning July 1, 2018, all distillate fuel purchased or otherwise obtained by Bowdoin for firing in their distillate fuel-burning equipment shall have a maximum sulfur content of 0.0015% (15 ppm) by weight.

4. The Memorial Hall Generator was manufactured in 1999, and not 2004. This change is administrative only and does not impact the existing air emission license conditions or limits. It is being documented here solely for the purpose of correcting the data for this equipment.

5. With the removal of the Rhodes Hall 1 Generator having taken place, Bowdoin has requested that the Rhodes Hall 2 Generator be designated as "Rhodes Hall Generator" going forward.

C. 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.

This amendment will increase emissions by less than 4 ton/year for each single pollutant not including greenhouse gases (GHG) and less than 8 ton/year for all pollutants combined not including GHG. Therefore, this modification is determined to be a minor revision 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. ch. 100. Separate control requirement categories exist for new and existing equipment.

BPT for existing emissions equipment means that method which controls or reduces emissions to the lowest possible level considering:

- the existing state of technology;
- the effectiveness of available alternatives for reducing emissions from the source being considered; and
- the economic feasibility for the type of establishment involved.

The following BPT addresses not only the specific changes identified in this license amendment, but also provides relevant existing license language that is necessary to provide context and to consolidate the related information into one location.

B. Central Heating Plant Boilers

1. Boiler #3

   Boiler #3 has been removed from service and is hereby removed from this license.

2. Boilers #1 and #2

   With the removal of Boiler #3 from the facility, Bowdoin now operates two primary boilers at the Central Heating Plant, designated as Boilers #1 and #2.

   The BPT emission limits for Boilers #1 and #2 are based on the following:

Distillate Fuel

PM/PM_{10}	- 0.08 lb/MMBtu, Air License A-76-71-W-N (November 6, 2009), BPT
SO_2	- based on firing distillate fuel with a maximum sulfur content of 0.35% sulfur content by weight
NO_X	- 0.20 lb/MMBtu, 06-096 C.M.R. ch. 115, Air License A-76-71-Z-R/A (August 14, 2015)
CO	- 5 $lb/10^3$ gal, based on AP-42, Table 1.3-1, dated 5/10
VOC	- 0.2 $lb/10^3$ gal, based on AP-42, Table 1.3-3, for industrial boilers, dated 5/10
Visible Emissions	- 06-096 C.M.R. ch. 115, BPT

Natural Gas

PM/PM_{10}	- 0.08 lb/MMBtu, Air License A-76-71-W-N (November 6, 2009), BPT
SO_2	- 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, BPT

The BPT emission limits for the Central Heating Plant Boilers are the following:

Unit	Pollutant	Fuel, % sulfur	lb/MMBtu	Origin and Authority
Boiler #1 and Boiler #2	PM	Distillate Fuel, 0.35%	0.08	Air License A-76-71-W-N (November 6, 2009), BPT
		Natural Gas, negl.	0.08	Air License A-76-71-W-N (November 6, 2009), BPT
	NO_X	Distillate Fuel, 0.35%	0.20	Air License A-76-71-Z-R/A (August 14, 2015), BPT
		Natural Gas, negl.	0.10	Air License A-76-71-Z-R/A (August 14, 2015), BPT

The BPT emission limits for the Central Heating Plant Boilers are the following:

Unit	Fuel	PM (lb/hr)	PM10 (lb/hr)	SO2 (lb/hr)	NOX (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #1	Distillate Fuel	5.76	5.76	25.38	14.40	2.57	0.10
	Natural Gas	5.92	5.92	0.04	7.18	6.03	0.40
Boiler #2	Distillate Fuel	5.76	5.76	25.38	14.40	2.57	0.10
	Natural Gas	5.92	5.92	0.04	7.18	6.03	0.40

Visible emissions from Boilers #1 and #2 shall be limited to no greater than 10% opacity on a six-minute block average basis, except for periods of startup, shutdown, or malfunction during which time the unit operator may elect to comply with the work practice requirements of 06-096 C.M.R. ch. 101 (3)(A) in lieu of this visible emission standard.

3. Central Heating Plant Fuel Requirements

The Central Heating Plant Boilers shall be limited to a combined annual heat input of 206,000 MMBtu/year. Distillate fuel fired in the Central Heating Plant Boilers #1 and #2 shall have a maximum sulfur content of 0.35% by weight.

C. Small Boilers and Hot Water Heaters

1. The Admissions Building Boiler and the Smith Union Boiler have been removed from service.

2. BPT Findings

The BPT emission limits for the licensed small boilers and hot water heaters were based on the following:

Natural Gas

PM/PM_{10}	- 0.08 lb/MMBtu based on BACT for the older boilers, 0.05 lb/MMBtu based on BACT for the newer boilers (Farley Field House, MacMillan House, Moulton Union)
SO_2	- 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, Farley Field House based on manufacturer's data of 0.11 lb/MMBtu
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. 101

Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Chamberlain Hall Hot Water Heater (1.6 MMBtu/hr)	0.13	0.13	negl.	0.16	0.13	0.01
Coffin St. Dorm West Hot Water Heater (1.0 MMBtu/hr)	0.08	0.08	negl.	0.10	0.08	0.01
Farley Field House Boiler (6.4 MMBtu/hr)	0.32	0.32	negl.	0.70	0.53	0.03
MacMillan House Boiler (1.4 MMBtu/hr)	0.07	0.07	negl.	0.14	0.11	0.01
Moulton Union Boiler (1.6 MMBtu/hr)	0.08	0.08	negl.	0.16	0.13	0.01

Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Stowe Hall Boiler (1.0 MMBtu/hr)	0.08	0.08	negl.	0.1	0.08	0.01
Thorn Hall Boiler (3.2 MMBtu/hr)	0.26	0.26	negl.	0.31	0.26	0.02
Watson Ice Arena Boiler 1 (2.0 MMBtu/hr)	0.16	0.16	negl.	0.19	0.16	0.01
Watson Ice Arena Boiler 2 (2.0 MMBtu/hr)	0.16	0.16	negl.	0.19	0.16	0.01
Watson Ice Arena Boiler 3 (2.0 MMBtu/hr)	0.16	0.16	negl.	0.19	0.16	0.01
Watson Ice Arena Heater (1.5 MMBtu/hr)	0.12	0.12	negl.	0.15	0.12	0.01
Wellness Center Boiler (2.0 MMBtu/hr)	0.16	0.16	negl.	0.19	0.16	0.01

3. Visible Emissions

   Visible emissions from each boiler shall not exceed 10% opacity on a 6-minute block average basis. [06-096 C.M.R. 115, BPT]

D. Facility Fuel and SO_2 tons/year Requirements

1. Distillate Fuel Limits

   a. The distillate fuel fired in the licensed boilers and hot water heaters at Bowdoin shall have a maximum sulfur content of 0.35% by weight.

   b. Per 38 M.R.S. § 603-A(2)(A)(3), as of July 1, 2018, no person shall import, distribute, or offer for sale any distillate fuel with a sulfur content greater than 0.0015% by weight (15 ppm). Therefore, beginning July 1, 2018, the distillate fuel purchased or otherwise obtained by Bowdoin for use in their fuel-burning equipment shall not exceed 0.0015% by weight (15 ppm).

   c. Compliance shall be demonstrated by fuel records from the supplier showing the quantity and the percent sulfur of the fuel delivered.

2. Central Heating Plant Boilers Restriction

   a. The Central Heating Plant Boilers shall be limited to a combined annual heat input of 206,000 MMBtu/year on a 12-month rolling total basis.

   b. Bowdoin shall keep fuel records documenting the amount, type, and sulfur content by weight of fuel fired in the Central Heating Plant Boilers on a monthly and 12-month rolling total basis.

c. Bowdoin shall calculate the annual heat input value for the Central Heating Plant Boilers, in MMBtu per year, on a 12-month rolling total basis to be updated monthly.

3. Small Boilers and Hot Water Heaters Fuel Restriction

The non-Central Heating Plant units shall have a facility-wide heat input limit of 50,000 MMBtu/year. Fuel use records and supporting calculations shall be maintained to document compliance with this limit on a monthly and 12-month rolling total basis.

E. Generators

1. The Hubbard Hall Generator and Rhodes Hall 1 Generator have been removed from service.

2. The Central Heating Plant 1 Generator has been renamed Portable 3 Generator, and was placed in storage to be available for future use.

3. Smith Union Generator

The Smith Union Generator is an emergency generator that is currently licensed to fire propane fuel. Bowdoin has requested to add natural gas as a fuel for the Smith Union Generator. The Department has determined that no additional controls or restrictions are appropriate when firing natural gas in this generator, and that the following emission limits constitute BACT when firing natural gas in the Smith Union Generator.

The BACT emission limits for the Smith Union Generator while firing natural gas are based on the following:

PM/PM_{10}	- 0.05 lb/MMBtu, based on 06-096 C.M.R. ch. 115, BPT
SO_2	- 0.0006 lb/MMBtu, from AP-42 Table 3.2-2 dated 07/2000
NO_x	- 4.08 lb/MMBtu from AP-42 Table 3.2-2 dated 07/2000
CO	- 0.317 lb/MMBtu from AP-42 Table 3.2-2 dated 07/2000
VOC	- 0.118 lb/MMBtu from AP-42 Table 3.2-2 dated 07/2000
Visible Emissions	- 06-096 C.M.R. ch. 115

The BACT emission limits for the Smith Union Generator while firing natural gas are the following:

Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Smith Union Generator 0.6 MMBtu/hr	0.01	0.01	0.001	2.29	0.18	0.07

Visible emissions from the Smith Union Generator shall not exceed 10% opacity on a six-minute block average basis while firing natural gas.

4. Portable 2 Generator

The Portable 2 Generator was incorrectly listed as having a rated heat input capacity of 3.1 MMBtu/hr in air emission license A-76-71-Z/R-A. Bowdoin reports that this generator actually has a rated heat input capacity of 3.3 MMBtu/hr. Based on this updated information, the emission limits for Portable 2 Generator are the following:

Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Portable 2 Generator 3.3 MMBtu/hr	0.39	0.39	0.01	14.51	3.13	1.18

5. Stowe Hall Generator

The Stowe Hall Generator was incorrectly listed as having a rated output capacity of 75 kW in air emission license A-76-71-Z/R-A. Bowdoin reports that this generator actually has a rated output capacity of 70 kW. Based on this updated information, the emission limits for Stowe Hall Generator are the following:

Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Stowe Hall Generator 0.9 MMBtu/hr	0.01	0.01	0.001	3.86	0.30	0.11

6. Annual Reporting for Demand Response Availability Over 15 Hours per Year (for engines greater than 100 brake hp)

Emergency generators are no longer allowed to participate in Demand Response Programs and retain their emergency generator status. Therefore, this condition has been removed from Air Emission License A-76-71-Z-R/A.

F. Annual Emissions

Total licensed annual emissions for Bowdoin are based on the following:

- A heat input limit of 206,000 MMBtu per year from the Central Heating Plant boilers;
- A heat input limit of 50,000 MMBtu per year from the non-Central Heating Plant licensed units;
- A maximum of 100 hours of non-emergency operating time per year per emergency generator; and
- The firing of a maximum of 500 gallons per year of waste oil.

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

Unit	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, MacMillan House Boiler, Moulton Union Boiler, Stowe Hall Boiler, Thorn 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	2.04	0.13
Generators						
Central Heating Plant 2	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.
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.	0.37	0.03	0.01
Moulton Union 2 (outside)	0.04	0.04	negl.	0.59	0.13	0.05
Portable 1	0.02	0.02	negl.	0.23	0.05	0.02
Portable 2	0.02	0.02	negl.	0.73	0.16	0.06
Portable 3 (formerly Central Heating Plant 1)	0.03	0.03	negl.	0.45	0.10	0.04
Rhodes Hall (formerly Rhodes Hall 2)	negl.	negl.	negl.	0.29	0.02	0.01
Smith Union	negl.	negl.	negl.	0.14	0.01	negl.
Stowe Hall	negl.	negl.	negl.	0.19	0.02	0.01
Thorn 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	10.5	10.5	36.3	30.3	11.7	1.1

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

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-AB-M subject to the conditions found in Air Emission License A-76-71-Z-R/A, in amendment A-76-71-AA-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 replaces Specific Condition (16) in Air Emission License A-76-71-Z-R/A (August 14, 2015):

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

A. Boilers 1 and 2 may fire distillate fuel, natural gas, or specification waste oil. [06-096 C.M.R. ch. 115, BPT]

B. Omitted. Boiler 3 has been removed from service.

C. Emissions from Boilers 1 and 2 shall not exceed the following [06-096 C.M.R. ch. 115, BPT]:

Unit	Fuel	Pollutant	lb/MMBtu
Boiler 1	Distillate Fuel or Natural Gas	PM	0.08
	Distillate Fuel	NO_X	0.20
	Natural Gas		0.10
Boiler 2	Distillate Fuel or Natural Gas	PM	0.08
	Distillate Fuel	NO_X	0.20
	Natural Gas		0.10

D. Emissions from Boilers 1 and 2 shall not exceed the following [06-096 C.M.R. ch. 115, BPT]:

Unit	Fuel	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler 1 (72 MMBtu/hr oil) (73.3 MMBtu/hr gas)	Distillate Fuel	5.76	5.76	25.38	14.40	2.57	0.10
	Natural Gas	5.92	5.92	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	25.38	14.40	2.57	0.10
	Natural Gas	5.92	5.92	0.04	7.18	6.03	0.40

E. Visible Emissions

Visible emissions from Boilers 1 and 2 shall be limited to no greater than 10% opacity on a six-minute block average basis, except for periods of startup, shutdown, or malfunction during which time the unit operator may elect to comply with the work practice requirements of 06-096 C.M.R. ch. 101 (3)(A) in lieu of this visible emission standard. [06-096 C.M.R. ch. 115, BPT]

F. 40 C.F.R. Part 60, Subpart Dc

Bowdoin shall comply with all requirements of 40 C.F.R. Part 60, Subpart Dc applicable to Boilers 1 and 2 including, but not limited to the following notifications, initial performance testing, and reporting and recordkeeping requirements:

1. Bowdoin submitted a Notification of the date of construction and anticipated startup for Boiler 2 to EPA and the Department on August 25, 2016. This notification included the design heat input capacity of the boiler and the type of fuel to be combusted. [40 C.F.R. § 60.48c(a)]

2. Bowdoin submitted a Notification to EPA and the Department of the date of actual start-up of Boiler 2 on March 30, 2017. [40 C.F.R. § 60.48c(a)]

3. Bowdoin was required to perform an initial performance test for opacity on Boiler 2 using 40 C.F.R. Part 60, Method 9 of Appendix A-4 within 180 days after the initial start-up of the facility. Bowdoin was required to perform an initial performance test for SO_2 on Boiler 2, consisting of fuel supplier certification on the sulfur content of the fuel fired in Boiler 2. Bowdoin completed the initial performance test for opacity on April 17, 2017. Bowdoin submitted an initial performance test for SO_2 on Boiler 2 to EPA and the Department, which included the fuel supplier certification on the sulfur content of the fuel fired in Boiler 2. [40 C.F.R. § 60.44c(h) and 40 C.F.R. § 60.47c(a)]

4. Bowdoin shall continue to perform monitoring of opacity from Boilers 1 and 2 according to the procedures in § 60.47c, including, but not limited to the following for each subsequent performance test:

   a. 40 C.F.R. Part 60, Method 9 of Appendix A-4 [40 C.F.R. § 60.47c(a)(1)]

      i. If no visible emissions are observed, a subsequent 40 C.F.R. Part 60, Method 9 of Appendix A-4 performance test must be completed within 12 calendar months from the date that the most recent performance test was conducted;

      ii. If visible emissions are observed but the maximum 6-minute average opacity is less than or equal to 5%, a subsequent 40 C.F.R. Part 60, Method 9 of Appendix A-4 performance test must be completed within 6 calendar months from the date that the most recent performance test was conducted;

      iii. If the maximum 6-minute average opacity is greater than 5%, but less than or equal to 10%, a subsequent 40 C.F.R. Part 60, Method 9 of Appendix A-4 performance test must be completed within 3 calendar months from the date that the most recent performance test was conducted; or

      iv. If the maximum 6-minute average opacity is greater than 10%, a subsequent 40 C.F.R. Part 60, Method 9 of Appendix A-4 performance test must be completed within 45 days from the date that the most recent performance test was conducted.

   b. 40 C.F.R. Part 60, Method 22, Appendix A-7 [40 C.F.R. § 60.47c(a)(2)]

      If the maximum 6-minute opacity is less than 10% during the most recent 40 C.F.R. Part 60, Method 9 of Appendix A-4, Bowdoin may, as an alternative to performing subsequent 40 C.F.R. Part 60, Method 9 of Appendix A-4 performance tests, elect to perform subsequent monitoring using 40 C.F.R. Part 60, Method 22, Appendix A-7 according to the procedure specified in § 60.47c(a)(2)(i-ii).

5. Bowdoin shall record and maintain records of the amounts of each fuel combusted each month, along with fuel certifications. [40 C.F.R. § 60.48c(g)(2)]

6. Bowdoin shall submit to EPA and the Department semi-annual reports for Boilers 1 and 2. These reports shall include the calendar dates covered in the reporting period and records of fuel supplier certifications. The semi-annual reports are due within 30 days of the end of each 6-month period. [40 C.F.R. § 60.48c]

7. The following address for EPA shall be used for any reports or notifications required to be copied to them;

   U.S. Environmental Protection Agency, Region 1
   5 Post Office Square, Suite 100 (OES04-2)
   Boston, MA 02109-3912
   ATTN: Air Compliance Clerk

G. 40 C.F.R. Part 63, Subpart JJJJJJ

Bowdoin shall comply with all requirements of 40 C.F.R. Part 63, Subpart JJJJJJ applicable to Boilers 1 and 2 including, but not limited to, the following:

1. An Initial Notification for Boiler 2 was submitted to EPA on March 23, 2018, upon becoming subject to the standard. [40 C.F.R. Part 63.11225(a)(2)]

2. The facility shall implement a boiler tune-up program. [40 C.F.R. Part 63.11223]
   a. Each tune-up shall be conducted at a frequency specified by the rule and based on the size, age, and operations of the boiler. See chart below [40 C.F.R. Part 63.11223(a) and Table 2]:

Boiler Category	**Tune-Up Frequency**
Boiler with oxygen trim system which maintains an optimum air-to-fuel ratio that would otherwise be subject to a biennial tune up	Every 5 years

   b. The boiler tune-up program, conducted to demonstrate continuous compliance, shall be performed as specified below:
      i. As applicable, inspect the burner, and clean or replace any component of the burner as necessary. Delay of the burner inspection until the next scheduled shutdown is permitted, but shall not exceed 72 months from the previous inspection for oil fired Boilers #1 and #2, as they are equipped with oxygen trim systems. [40 C.F.R. Part 63.11223(b)(1)]
      ii. Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern, consistent with the manufacturer's specifications. [40 C.F.R. Part 63.11223(b)(2)]
      iii. Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure it is correctly calibrated and functioning properly. Delay of the inspection until the next scheduled shutdown is permitted, but shall not exceed 72 months from the previous inspection for oil fired Boilers #1 and #2, as they are equipped with utilize oxygen trim systems. [40 C.F.R. Part 63.11223(b)(3)]
      iv. Optimize total emissions of CO, consistent with manufacturer's specifications. [40 C.F.R. Part 63.11223(b)(4)]
      v. Measure the concentration in the effluent stream of CO in parts per million by volume (ppmv), and oxygen in volume percent, before and after adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer. [40 C.F.R. Part 63.11223(b)(5)]

vi. If a unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 days of start-up. [40 C.F.R. Part 63.11223(b)(7)]

c. Tune-Up Report: A tune-up report shall be maintained onsite and, if requested, submitted to EPA. The report shall contain the following information:

i. The concentration of CO in the effluent stream (ppmv) and oxygen (volume percent) measured at high fire or typical operating load both **before** and **after** the boiler tune-up;

ii. A description of any corrective actions taken as part of the tune-up of the boiler; and

iii. The types and amounts of fuels used over the 12 months prior to the tune-up of the boiler, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel use by each unit.

[40 C.F.R. §63.11223(b)(6)]

3. Compliance Report

A compliance report shall be prepared by March 1st every five years. The report shall be maintained by the source and submitted to the Department and to the EPA upon request, unless the source experiences any deviations from the applicable requirements of this Subpart during the previous calendar year, then the report must be submitted to the Department and to the EPA by March 15th. The report must include the items contained in §63.11225(b)(1) through (4), including the following: [40 C.F.R. §63.11225(b)]

a. Company name and address;

b. A statement of whether the source has complied with all the relevant requirements of this Subpart;

c. A statement certifying truth, accuracy, and completeness of the notification and signed by a responsible official and containing the official's name, title, phone number, email address, and signature;

d. The following certifications, as applicable:

i. "This facility complies with the requirements in 40 C.F.R. §63.11223 to conduct tune-ups of each boiler in accordance with the frequency specified in this Subpart."

ii. "No secondary materials that are solid waste were combusted in any affected unit."

iii. "This facility complies with the requirement in 40 C.F.R. §§63.11214(d) to conduct a tune-up of each applicable boiler according to 40 C.F.R. §63.11223(b)."

e. If the source experiences any deviations from the applicable requirements during the reporting period, include a description of deviations, the time periods during which the deviations occurred, and the corrective actions taken; and

f. The total fuel use by each affected boiler subject to an emission limit for each calendar month within the reporting period.

4. Records shall be maintained consistent with the requirements of 40 C.F.R. Part 63, Subpart JJJJJJ including the following [40 C.F.R. Part 63.11225(c)]:

   a. Copies of notifications and reports with supporting compliance documentation;

   b. Identification of each boiler, the date of tune-up, procedures followed for tune-up, and the manufacturer's specifications to which the boiler was tuned;

   c. Records of the occurrence and duration of each malfunction of each applicable boiler; and

   d. Records of actions taken during periods of malfunction to minimize emissions, including corrective actions to restore the malfunctioning boiler.

   Records shall be in a form suitable and readily available for expeditious review.

The following replaces Specific Condition (17) in Air Emission License A-76-71-Z-R/A (August 14, 2015):

(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]:

Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
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
MacMillan House Boiler (1.4 MMBtu/hr, natural gas)	0.07	0.07	negl.	0.14	0.11	0.01
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.	0.1	0.08	0.01

Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Thorn Hall Boiler (3.2 MMBtu/hr, natural gas)	0.26	0.26	negl.	0.31	0.26	0.02
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, except for periods of startup, shutdown, or malfunction during which time the unit operator may elect to comply with the work practice requirements of 06-096 C.M.R. ch. 101 (3)(A) in lieu of this visible emission standard. [06-096 C.M.R. ch. 115, BPT]

The following replaces Specific Condition (18) in Air Emission License A-76-71-Z-R/A (August 14, 2015):

(18) **Facility Fuel and SO_2 tons/year Requirements**

A. Distillate Fuel Limits

1. The distillate fuel fired in the licensed boilers and hot water heaters at Bowdoin shall have a maximum sulfur content of 0.35% by weight.
2. Prior to July 1, 2018, Bowdoin shall fire distillate fuel with a maximum sulfur content not to exceed 0.35% by weight in their boilers.
3. Beginning July 1, 2018, Bowdoin shall not purchase or otherwise obtain distillate fuel with a maximum sulfur content that exceeds 0.0015% by weight (15 ppm).
4. 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]

B. Central Heating Plant

1. Bowdoin shall be limited to a combined annual heat input of 206,000 MMBtu/year from the Central Heating Plant Boilers on a calendar year basis.
2. Bowdoin shall keep fuel records documenting the amount, type, and sulfur content by weight (for distillate fuel) of the fuels fired (either distillate fuel or natural gas) on a monthly and calendar year basis, and the supporting calculations documenting the compliance with the annual heat input limit.

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

C. Non-Central Heating Plant Units (Small Boilers and Water Heaters)

1. Bowdoin shall be limited to a combined annual heat input of 50,000 MMBtu/year from the non-Central Heating Plant licensed units on a calendar year basis.
2. Bowdoin shall keep fuel records documenting the amount of natural gas fired in the non-Central Heating Plant units on a monthly and calendar year basis, and the supporting calculations documenting compliance with the 50,000 MMBtu/year limit.

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

The following replaces Specific Condition (19) in Air Emission License A-76-71-Z-R/A (August 14, 2015):

(19) **Generators**

A. Emissions shall not exceed the following:

Unit	PM (lb/MMBtu)	Origin and Authority
Thorn Dining Generator	0.12	06-096 C.M.R. ch. 103
Portable 2 Generator	0.12	06-096 C.M.R. ch. 103

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

Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Central Heating Plant 2 Gen. (2.5 MMBtu/hr, distillate)	0.04	0.04	negl.	0.59	0.13	0.05
Chamberlain Hall Gen. (2.1 MMBtu/hr, distillate)	0.64	0.64	0.01	9.06	1.95	0.74

Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Druckenmiller Hall Gen. (1.5 MMBtu/hr, distillate)	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
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)	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)	0.81	0.81	0.01	11.54	2.49	0.94
Portable 1 Gen. (1.0 MMBtu/hr, distillate)	0.32	0.32	0.01	4.53	0.98	0.37
Portable 2 Gen. (3.2 MMBtu/hr, distillate)	0.39	0.39	0.01	14.51	3.13	1.18
Portable 3 Gen. (2.0 MMBtu/hr, distillate)	0.63	0.63	0.01	8.95	1.93	0.73
Rhodes Hall Gen. (1.4 MMBtu/hr, natural gas)	0.01	0.01	negl.	5.71	0.44	0.17
Smith Union Gen. (0.7 MMBtu/hr, propane)	0.09	0.09	negl.	3.25	0.70	0.27
Smith Union Gen. (0.6 MMBtu/hr, natural gas)	0.01	0.01	0.001	2.29	0.18	0.07
Stowe Hall Gen. (0.9 MMBtu/hr, natural gas)	0.01	0.01	0.001	3.86	0.30	0.11
Thorn Dining Gen. (4.0 MMBtu/hr, distillate)	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)	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

C. Visible Emissions

1. Visible emissions from each of the distillate fuel-fired generators shall not exceed 20% opacity on a 6-minute block average basis. [06-096 C.M.R. ch. 115, BPT]
2. Visible emissions from each of the natural gas and propane-fired generators shall not exceed 10% on a 6-minute block average basis. [06-096 C.M.R. ch. 115, BPT]

D. Requirements for the Generators not Subject to Federal Rules

The Chamberlain Hall, Druckenmiller Hall, Kanbar Hall, Memorial Hall, Moulton Union 1, Portable 1, Portable 2, Portable 3, Smith Union, Stowe Hall, Thorn Dining and Walker Art Museum Generators shall meet the following:

1. Each of the emergency generators listed shall be limited to 100 hours of operation per calendar year, excluding operating hours during emergency situations. The emergency generators are only to be operated for maintenance purposes and for situations arising from sudden and reasonably unforeseeable events beyond the control of the source. The emergency generators are not to be used for prime power when reliable offsite power is available.
2. Each emergency generator shall be equipped with a non-resettable hour meter to record operating time.
3. To demonstrate compliance with the operating hours limit, Bowdoin shall keep records of the total hours of operation and the hours of emergency operation for each unit. Records shall 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 hours spent for emergency operation, including what classified the operation as emergency and how many hours spent for non-emergency.
4. The fuel sulfur content for the distillate fuel-fired emergency generators shall be limited to 0.0015% sulfur by weight. Compliance shall be demonstrated by fuel records from the supplier documenting the type of fuel delivered and the sulfur content of the fuel.

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

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

The Central Heating Plant 2, Moulton Union 2 and Watson Ice Arena Generators shall meet the applicable requirements of 40 C.F.R. Part 60, Subpart IIII, 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)]

6. Annual Reporting for Demand Response Availability Over 15 Hours per Year (for engines greater than 100 brake hp)

   This condition has been removed from Air Emission License A-76-71-Z-R/A.

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

The Farley Field House, 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]

5. Annual Reporting for Demand Response Availability Over 15 Hours per Year (for engines greater than 100 brake hp)

   This condition has been removed from Air Emission License A-76-71-Z-R/A.

DONE AND DATED IN AUGUSTA, MAINE THIS 8 DAY OF June , 2018.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Cone for
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: June 20, 2017
Date of application acceptance: June 20, 2017

Filed
JUN 0 8 2018
State of Maine
Board of Environmental Protection

Date filed with the Board of Environmental Protection:

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