



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

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COMMISSIONER

City of Portland – King Middle School
Cumberland County
Portland, Maine
A-417-71-H-A

Departmental
Findings of Fact and Order
Air Emission License
Amendment #1

After review of the air emissions license amendment application, staff investigation reports and other documents in the applicant’s file in the Bureau of Air Quality, pursuant to 38 M.R.S.A., §344 and §590, the Department finds the following facts:

I. REGISTRATION

A. Introduction

1. City of Portland – King Middle School (City of Portland) was issued Air Emission License A-417-71-G-N on November 17th, 2009, permitting the operation of emission sources associated with their educational facility.
2. City of Portland has requested an amendment to their license in order to allow the use of natural gas as a fuel for Boilers #1 and #2.
3. The equipment addressed in this license is located at 92 Deering Avenue, Portland, ME.

B. Emission Equipment

The following equipment is addressed in this air emission license:

Boilers

<u>Equipment</u>	<u>Maximum Capacity (MMBtu/hr)</u>	<u>Maximum Firing Rate</u>	<u>Fuel Type, % sulfur</u>	<u>Instal. Date</u>	<u>Stack #</u>
Boiler #1	8.4	60.0 gal/hr 8235 scf/hr	#2 oil, 0.5%S Natural gas, Neg. S.	2001	1
Boiler #2	8.4	60.0 gal/hr 8235 scf/hr	#2 oil, 0.5%S Natural gas, Neg. S.	2001	1

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312 CANCO ROAD
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PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04679-2094
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C. Application Classification

The modification of a minor source is considered a major or minor modification based on whether or not expected emission increases exceed the “Significant Emission Levels” as defined in the Department’s regulations. The emission increases are determined by subtracting the current licensed emissions preceding the modification from the maximum future licensed allowed emissions, as follows:

<u>Pollutant</u>	<u>Current License (TPY)</u>	<u>Future License (TPY)</u>	<u>Net Change (TPY)</u>	<u>Significance Level</u>
PM	0.6	0.6	0.0	100
PM ₁₀	0.6	0.6	0.0	100
SO ₂	3.5	3.5	0.0	100
NO _x	2.5	2.5	0.0	100
CO	0.3	0.3	0.0	100
VOC	0.1	0.1	0.0	50
CO ₂ e	-	1139	1139	100,000

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

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

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

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

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.

B. Boilers #1 and #2

Boilers #1 and #2 are each rated at 8.4 MMBtu/hr, firing #2 fuel oil at 60.0 gallons per hour, or natural gas at 8,235 standard cubic feet per hour. The boilers were both installed in 2001 and exhaust through common Stack #1.

Due to the size of the boilers, they are not subject to the New Source Performance Standards (NSPS) 40 CFR Part 60, Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*, for units greater than 10 MMBtu/hr manufactured after June 9, 1989.

1. BACT/BPT Findings

The BPT emission limits for the boilers firing #2 fuel oil are based on the following:

PM/PM ₁₀	– 0.08 lb/MMBtu based on 06-096 CMR 103
SO ₂	– based on firing ASTM D396 compliant #2 fuel oil (0.5% sulfur); 0.5 lb/MMBtu
NO _x	– 0.35 lb/MMBtu based on previous licenses
CO	– 5 lb/1000 gal, AP-42, Table 1.3-1, dated 5/10
VOC	– 0.34 lb/1000 gal, AP-42, Table 1.3-3, dated 5/10
Opacity	– Visible emissions from the common stack serving Boilers #1 and #2 firing fuel oil shall not exceed 20% opacity on a six (6) minute block average, except for no more than one (1) six (6) minute block average in a three (3) hour period.

The BACT emission limits for the boilers firing natural gas are based on the following:

- PM/PM₁₀ – 0.05 lb/MMBtu based on 06-096 CMR 103
- SO₂ – 0.6 lb/MMscf: AP-42, Table 1.4-2, dated 7/98
- NO_x – 100 lb/MMscf: AP-42, Table 1.4-1, dated 7/98
- CO – 84 lb/MMscf: AP-42, Table 1.4-1, dated 7/98
- VOC – 5.5 lb/MMscf: AP-42, Table 1.4-2, dated 7/98)
- Opacity – Visible emissions from the common stack serving Boilers #1 and #2 firing natural gas shall not exceed 10% opacity on a six (6) minute block average, except for no more than one (1) six (6) minute block average in a three (3) hour period.

The BPT/BACT emission limits for the boilers are the following:

<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>
Boilers #1 - #2 fuel	0.67	0.67	4.23	2.94	0.30	0.02
Boilers #2 - #2 fuel	0.67	0.67	4.23	2.94	0.30	0.02
Boilers #1 - natural gas	0.42	0.42	0.01	0.82	0.69	0.04
Boilers #2 - natural gas	0.42	0.42	0.01	0.82	0.69	0.04

2. Fuel

The City of Portland shall be limited to 14,000 million British thermal units per year of fuel for the boilers, comprised of no more than 100,000 gallons of #2 fuel oil, or no more than 13.7 million standard cubic feet of natural gas, or a combination thereof.

Prior to January 1, 2016, the fuel oil fired in Boilers #1 and #2 shall be ASTM D396 compliant #2 fuel oil (maximum sulfur content of 0.5% by weight). Per 38 MRS §603-A(2)(A)(3), beginning January 1, 2016, the facility shall fire #2 fuel oil with a maximum sulfur content limit of 0.005% by weight (50 ppm), and beginning January 1, 2018, the facility shall fire #2 fuel oil with a maximum sulfur content limit of 0.0015% by weight (15 ppm).

Periodic Monitoring

Periodic monitoring for the boilers shall include recordkeeping to document fuel use both on a monthly and calendar year basis. Documentation shall include the type of fuel used and sulfur content of the fuel.

3. 40 CFR Part 63 Subpart JJJJJ

Boilers #1 and #2 may be subject to the *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources* (40 CFR Part 63 Subpart JJJJJ). The units are considered existing oil-fired boilers.

For informational purposes, a summary of the current applicable federal 40 CFR Part 63 Subpart JJJJJ requirements is listed below. At this time, the Maine Department of Environmental Protection has not taken delegation of this area source MACT (Maximum Achievable Control Technology) rule promulgated by EPA, however the City of Portland is still subject to the requirements. Notification forms and additional rule information can be found on the following website:

<http://www.epa.gov/ttn/atw/boiler/boilerpg.html>.

a. Compliance Dates, Notifications, and Work Practice Requirements

i. Initial Notification of Compliance

An Initial Notification submittal to EPA was due on September 17, 2011 according to the rule currently in place. [40 CFR Part 63.11225(a)(2)]

ii. Boiler Tune-Up Program

(a) A boiler tune-up program shall be implemented to include the tune-up of applicable boilers by March 21, 2012. [40 CFR Part 63.11196(a)(1)] However, a No Action Assurance letter was issued on March 13, 2012 stating that EPA will exercise its enforcement discretion to not pursue enforcement action for failure to complete the required tune-up by the stated compliance date. The rule is expected to have a future compliance date in 2013 or 2014 once the final revisions are promulgated.

(b) The boiler tune-up program, conducted to demonstrate continuous compliance, shall be performed as specified below:

1. 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; however, the burner must be inspected at least once every 36 months. [40 CFR Part 63.11223(b)(1)]

2. Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern, consistent with the manufacturer's specifications. [40 CFR Part 63.11223(b)(2)]
 3. Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure it is correctly calibrated and functioning properly. [40 CFR Part 63.11223(b)(3)]
 4. Optimize total emissions of CO, consistent with manufacturer's specifications. [40 CFR Part 63.11223(b)(4)]
 5. Measure the concentration in the effluent stream of CO in parts per million (ppm), by volume, and oxygen in volume percent, before and after adjustments are made. [40 CFR Part 63.11223(b)(5)]
 6. If a unit is not operating on the required date for a tune-up, the tune-up must be conducted within one week of start-up. [40 CFR Part 63.11223(b)(7)]
- (c) A Notification of Compliance Status shall be submitted to EPA no later than 120 days after conducting the initial boiler tune-up. [40 CFR Part 63.11225(a)(4) and 40 CFR Part 63.11214(b)]
- (d) The facility shall implement a boiler tune-up program after the initial tune-up and initial compliance report has been submitted.
1. Each tune-up shall be conducted at a frequency specified by the rule, based on the size and age of the boiler. [40 CFR Part 63.11223(a)]
 2. The tune-up compliance report shall be maintained onsite and submitted to EPA, if requested. The report shall contain the concentration of CO in the effluent stream (ppmv) and oxygen in volume percent, measured before and after the boiler tune-up, a description of any corrective actions taken as part of the tune-up of the boiler, and the type and amount of fuel used over the 12 months prior to the tune-up of the boiler. [40 CFR Part 63.11223(b)(6)] The compliance report shall also include the company name and address; a compliance statement signed by a responsible official certifying truth, accuracy, and completeness; and a description of any deviations and corrective actions. [40 CFR Part 63.11225(b)]

b. Recordkeeping

Records shall be maintained consistent with the requirements of 40 CFR Part 63 Subpart JJJJJ including the following [40 CFR Part 63.11225(c)]: copies of notifications and reports with supporting compliance documentation; 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; documentation of fuel type(s) used monthly by each boiler; the occurrence and duration of each malfunction of the boiler; and actions taken during periods of malfunction to minimize emissions and actions taken to restore the malfunctioning boiler to its usual manner of operation. Records shall be in a form suitable and readily available for expeditious review.

C. Annual Emissions

1. The City of Portland shall be restricted to the following annual emissions, based on a calendar year, and a fuel limit of 14,000 million British thermal units per year of #2 fuel oil, or natural gas, or a combination thereof.

Total Licensed Annual Emissions for the Facility

Tons per year

(Used to calculate the annual license fee)

	PM	PM ₁₀	SO ₂	NO _x	CO	VOC
Boilers #1 & #2	0.56	0.56	3.53	2.45	0.58	0.04
Total TPY	0.6	0.6	3.5	2.5	0.6	0.1

2. Greenhouse Gases

Greenhouse gases are considered regulated pollutants as of January 2, 2011 through 'Tailoring' revisions made to EPA's *Approval and Promulgation of Implementation Plans*, 40 CFR Part 52, Subpart A, §52.21 Prevention of Significant Deterioration of Air Quality rule. "Greenhouse gases" as defined in 06-096 CMR 100 (as amended) means the aggregate group of the following gases: Carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Greenhouse gases (GHG) for purposes of licensing are calculated and reported as carbon dioxide equivalents (CO₂e).

Based on the facility's fuel use limit(s), the worst case emission factors from AP-42, IPCC (Intergovernmental Panel on Climate Change), and *Mandatory Greenhouse Gas Reporting*, 40 CFR Part 98, and the global warming potentials contained in 40 CFR Part 98, City of Portland is below the major source threshold of 100,000 tons of CO₂e per year. Therefore, no additional licensing requirements are needed to address GHG emissions at this time.

ORDER

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

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

The Department hereby grants Air Emission License A-417-71-H-A subject to the conditions found in Air Emission License A-417-71-G-N, in the following conditions:

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

Specific Condition (16) in License A-417-71-G-N shall be amended to read:

(16) Boilers #1 and #2

A Fuel

1. Total fuel use for Boilers #1 and #2 shall not exceed 14,000 million British thermal units per year, comprised of no more than 100,000 gallons of #2 fuel oil, or no more than 13.7 million cubic feet of natural gas, or a combination thereof, based on a calendar year.
2. Prior to January 1, 2016, the #2 fuel oil fired in the boiler shall be ASTM D396 compliant (max. sulfur content of 0.5% by weight). [06-096 CMR 115, BPT]

3. Beginning January 1, 2016, the facility shall fire #2 fuel oil with a maximum sulfur content limit of 0.005% by weight (50 ppm). [38 MRSA §603-A(2)(A)(3)]
4. Beginning January 1, 2018, the facility shall fire #2 fuel oil with a maximum sulfur content limit of 0.0015% by weight (15 ppm). [38 MRSA §603-A(2)(A)(3)]
5. Compliance shall be demonstrated by fuel records from the supplier showing the quantity, type, and the percent sulfur of the fuel delivered (if applicable). Records of annual fuel use shall be kept on a monthly and calendar year basis. [06-096 CMR 115, BPT]

B. Emissions shall not exceed the following when firing #2 fuel: [06-096 CMR 115, BPT]:

<u>Unit</u>	<u>Pollutant</u>	<u>lb/MMBtu</u>	<u>Origin and Authority</u>
Boiler #1 - #2 fuel	PM	0.08	06-096 CMR 103(2)(B)(1)(a)
Boiler #2 - #2 fuel	PM	0.08	06-096 CMR 103(2)(B)(1)(a)

<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>
Boiler #1 - #2 fuel	0.67	0.67	4.23	2.94	0.30	0.02
Boiler #2 - #2 fuel	0.67	0.67	4.23	2.94	0.30	0.02

C. Emissions shall not exceed the following when firing natural gas: [06-096 CMR 115, BPT]

<u>Unit</u>	<u>Pollutant</u>	<u>lb/MMBtu</u>	<u>Origin and Authority</u>
Boiler #1 - nat. gas	PM	0.05	06-096 CMR 103(2)(B)(1)(a)
Boiler #2 - nat. gas	PM	0.05	06-096 CMR 103(2)(B)(1)(a)

<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>
Boiler #1 - nat. gas	0.42	0.42	0.01	0.82	0.69	0.04
Boiler #2 - nat. gas	0.42	0.42	0.01	0.82	0.69	0.04

D. Visible Emissions

1. Visible emissions from the common stack serving Boilers #1 and #2, firing #2 fuel oil, shall not exceed 20% opacity on a six (6) minute block average, except for no more than one (1) six (6) minute block average in a three (3) hour period. [06-096 CMR 101]

2. Visible emissions from the common stack serving Boilers #1 and #2, firing natural gas, shall not exceed 10% opacity on a six (6) minute block average basis, except for no more than one (1) six (6) minute block average in a three (3) hour period. [06-096 CMR 101]

DONE AND DATED IN AUGUSTA, MAINE THIS 1st DAY OF June, 2012.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Melanie L. Lajoie for
PATRICIA W. AHO, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-417-71-G-N.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 03/02/2012

Date of application acceptance: 03/05/2012

Date filed with the Board of Environmental Protection:

This Order prepared by N. Lynn Cornfield, Bureau of Air Quality.

