



DEPARTMENT ORDER

**University of Maine System
Penobscot County
Orono, Maine
A-204-77-10-A**

**Departmental
Findings of Fact and Order
New Source Review
NSR #10**

FINDINGS OF FACT

After review of the New Source Review 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 (the Department) finds the following facts:

I. REGISTRATION

A. Introduction

FACILITY	University of Maine System
LICENSE TYPE	06-096 C.M.R. ch. 115, Minor Modification
NAICS CODES	611310
NATURE OF BUSINESS	Educational Facility
FACILITY LOCATION	5765 Service Building and throughout the Orono Campus

B. NSR License Description

The University of Maine (UMaine) has requested a New Source Review (NSR) license to amend NSR License A-204-77-3-A (6/9/2011) which licensed the combustion of landfill gases in Boilers #7 and #8, the installation of Boiler #8, and the removal of Boilers #3 and #4. The amendment established annual emission limits applicable to the steam plant boilers, based on the assumption that Boilers #7 and #8 would be firing landfill gases, which effectively lowered the annual #6 fuel oil limit for the steam plant. Although Boiler #8 was installed and Boilers #3 & #4 were removed, the project to pipe and allow for the combustion of landfill gases, including the conversion of the burner in Boiler #7 and the installation of a flue gas recirculation system, never came to fruition. Therefore, UMaine has applied to amend the conditions in A-204-77-3-A (6/9/2011) relating to the burning of landfill gases and maintain the #6 fuel oil limit contained in the Part 70 license, A-204-70-F-R (1/15/2009).

C. Emission Equipment

The following equipment is addressed in this NSR license:

Fuel Burning Equipment

Equipment	Maximum Capacity (MMBtu/hr)	Maximum Firing Rate	Fuel Type, % sulfur	Stack #
Boiler #5	86.8	579 gal/hr	#6 Fuel Oil, (0.5%)	4
Boiler #6	86.8	579 gal/hr	#6 Fuel Oil, (0.5%)	4
Boiler #7	86.8	579 gal/hr	#6 Fuel Oil, (0.5%)	1
		85,098 scf/hr	Natural gas	
Boiler #8	75	73,529 scf/hr	Natural Gas	1

D. Application Description

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.

Overview

UMaine currently holds a Part 70 air emission license, A-204-70-F-R (1/15/09). The Part 70 License identifies allowable annual emission levels from the steam plant boilers as well as from the campus as a whole, for purposes of annual license fee calculations. In 2011, UMaine was issued a Chapter 115 New Source Review (NSR) license for the installation of a new boiler (Boiler #8) coinciding with the removal of Boilers #3 and #4 and for the addition of landfill gas (LFG) as a licensed fuel at the steam plant. This NSR license established new, lower annual emission limits for the steam plant boilers as a result of an emissions netting calculation. The annual emission limits contained in the NSR license were to take effect once LFG was initially delivered to the steam plant. The plans for bringing the LFG fuel to the steam plant were not realized, leaving UMaine with two available fuel sources, natural gas and #6 fuel oil, instead of three.

In order to meet campus energy demands in the event of an interruption to the supply of natural gas to the steam plant, it is important for UMaine to have the flexibility to fire #6 fuel oil on a long-term basis, if necessary. Some of the conditions, including the annual emission limit for the boilers (A-204-77-3-A (6/9/2011), Condition (8)B.1), were established based on the installation of Boiler #8 and the combustion of LFG in the steam plant; these conditions did not allow for the exclusive use of #6 fuel oil on a year-round basis. UMaine has applied to amend NSR License A-204-77-3-A to establish new annual emission limits for the steam plant that reflect that LFG is not a licensed fuel and to allow UMaine to utilize up to the maximum amount of #6 fuel oil that is currently allowed by their

Part 70 License (3.5 million gallons per year). This amendment will not affect the reductions to sulfur dioxide (SO₂) and particulate matter (PM) emission rates that have taken effect as a result of a requirement to reduce the maximum allowable sulfur content of the #6 fuel oil from 2.0% to 0.5%, by weight.

This proposed licensing action does not involve any physical or operational changes to the steam plant boilers. UMaine intends to continue utilizing natural gas as its primary fuel as long as supply is available and economical.

The application for UMaine does not violate any applicable federal or state requirements and does not reduce monitoring, reporting, testing, or recordkeeping requirements.

The modification of a major source is considered a major or minor modification based on whether or not expected emissions increases exceed the "Significant Emission Increase" levels as given in *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100.

Pollutant	Licensed Emissions from Part 70 License (A-204-70-F-R) (Tons/Year)	Licensed Emissions from Boiler #8 & LFG NSR Amendment (A-204-77-3-A) (Tons/year)	Proposed Licensed Annual Emissions (Tons/Year)	Net change (Tons/Year)
PM	52.5	32.2	26.3	-5.9
PM ₁₀	52.5	21.2	26.3	5.1
SO ₂	551.3	135.8	136.5	0.7
NO _x	144.4	100.5	144.4	0
CO	157.5	116.3	157.5	0
VOC	26.3	26.3	26.3	0

Note: The above values are for Boilers #5, #6, #7 and #8 only. None of the other equipment at the facility is affected by this NSR license.

Because the conditions and limits in NSR license A-204-77-3-A (6/9/2011) were contingent upon the facility combusting landfill gases, and because that contingency did not come to pass, the applicability of the lower annual emissions values from the 2011 NSR license for NO_x, CO and VOC (in the table above) were never initiated. Thus, the annual emissions values for these three pollutants from the facility's Part 70 license (1/15/09) remain in effect.

Bolded are the emission limits that are presently in effect; the NO_x, CO, and VOC reductions indicated in the NSR license A-204-77-3-A have not occurred because the project to combust LFG in the steam plant has not taken place. The reductions of PM and SO₂ are based on a reduction in the #6 fuel oil maximum allowed

sulfur content required by the NSR amendment irrespective of the installation of LFG.

Therefore, this NSR license is determined to be a minor modification under *Minor and Major Source Air Emission License Regulations*, 06-096 C.M.R. ch. 115 since the changes being made are not addressed or prohibited in the Part 70 air emission license.

The terms and conditions of this NSR license shall be incorporated into the Part 70 air emission license renewal currently in process.

E. Annual Emissions

1. Emission Totals

UMaine shall be restricted to the following annual emissions from the facility:

- 3,500,000 gallons/year of #6 Fuel Oil total in Boilers #5, #6, and #7,
- 8760 hours/year operation each for the two Global Science Center Boilers, and
- 100 hours/year for each of the emergency generators, 500 hours per year for each non-emergency generator, and the established BPT for Printing Services.

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
Steam Plant Boilers (#5, #6, #7, and #8)	26.3	26.3	136.5	144.4	157.5	26.3
Global Science Boiler #1	1	1	0.01	1.9	1.6	0.1
Global Science Boiler #2	1	1	0.01	1.9	1.6	0.1
Portable Generator	0.02	0.02	0.01	0.4	0.1	0.01
Hitchner Hall Generator	0.02	0.02	0.01	0.5	0.2	0.01
Aubert Hall Generator	0.02	0.02	0.01	0.5	0.1	0.01
Barrows Hall Generator	0.02	0.02	0.01	0.5	0.1	0.01
Alfond Arena Generator	0.01	0.01	0.01	0.1	0.03	0.01
Neville Hall Data Center Generator	0.01	0.01	0.01	0.9	0.1	0.01
Memorial Gym Generator	0.01	0.01	0.01	0.01	0.02	0.02

	PM	PM ₁₀	SO ₂	NO _x	CO	VOC
York Hall Generator	0.01	0.01	0.01	0.06	0.94	0.01
Recreation Center Generator	0.1	0.1	0.01	1.5	0.2	0.03
Hilltop Commons Generator	0.2	0.2	0.01	2.9	0.2	0.03
Collins Center Generator	0.1	0.1	0.01	1.3	0.4	0.02
Printing Services	-	-	-	-	-	2
Total TPY	28.9	28.9	136.7	156.9	163.1	28.7

The total licensed annual emissions for the Steam Plant Boilers #5, #6, #7, and #8 has been revised to include the reduction of #6 fuel oil sulfur content, from 2% S to 0.5% S, affecting PM, PM₁₀ and SO₂ and no longer includes the combustion of landfill gas at the facility. This action will also replace the "Total Licensed Annual Emissions for the Facility" found in the Findings of Fact in the following NSR licenses.

- A-204-77-4-A (7/19/11): Alford Arena Generator
- A-204-77-5-A (10/12/11): Neville Hall Data Center Generator
- A-204-77-7-A (8/19/13): Memorial Gym Generator
- A-204-77-9-A (2/1/16): York Hall Generator

ORDER

The Department hereby grants New Source Review Amendment A-204-77-10-A pursuant to the preconstruction licensing requirements of 06-096 C.M.R. ch. 115 and subject to the specific conditions below.

Severability. The invalidity or unenforceability of any provision of this License or part thereof 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 CONDITIONS

All the conditions found in the Order Section of A-204-77-3-A are being replaced with the following:

(1) #6 Fuel Oil Sulfur Content

- A. The sulfur content of #6 fuel oil fired at the UMaine steam plant shall not exceed 0.5% sulfur by weight. [06-096 C.M.R. 115, BACT]
- B. Records shall be maintained documenting the sulfur content of the #6 fuel oil. The fuel oil specification sheets provided by the supplier may be used as sulfur content compliance documentation. [06-096 C.M.R. 115, BACT]

(2) Boilers #5 and #6

These conditions are in addition to the license conditions in air emission license A-204-70-F-R:

- A. UMaine is licensed to fire #6 fuel oil in Boilers #5 and #6. [06-096 C.M.R. 115, BACT]
- B. Boilers #5 and #6 shall each not exceed the following emission limits when firing 0.5% sulfur fuel oil:

Pollutant	lb/MMBtu	Origin and Authority
PM	0.10	06-096 C.M.R. 115, BACT
PM ₁₀	0.10	06-096 C.M.R. 115, BACT
NO _x (≤0.45% nitrogen)*	0.50	06-096 C.M.R. 138
NO _x (>0.45% nitrogen)*	0.55	06-096 C.M.R. 138

Pollutant	Lb/hr	Origin and Authority
PM	8.68	06-096 C.M.R. 115, BACT
PM ₁₀	8.68	06-096 C.M.R. 115, BACT
SO ₂	45.14	06-096 C.M.R. 115, BACT
NO _x (≤0.45% nitrogen)*	43.4	06-096 C.M.R. 140, BPT
NO _x (>0.45% nitrogen)*	47.7	06-096 C.M.R. 140, BPT
CO	52.1	06-096 C.M.R. 140, BPT
VOC	8.7	06-096 C.M.R. 140, BPT

* denotes the nitrogen content in the fuel

(3) Boiler #7

These conditions are in addition to the license conditions in air emission license A-204-70-F-R for firing #6 fuel oil and natural gas in Boiler #7:

A. Boiler #7 shall not exceed the following emission limits when firing #6 fuel oil:

Pollutant	lb/MMBtu	Origin and Authority
PM	0.10	06-096 C.M.R. 115, BACT
PM ₁₀	0.10	06-096 C.M.R. 115, BACT
NO _x (≤0.45% nitrogen)*	0.50	06-096 C.M.R. 138
NO _x (>0.45% nitrogen)*	0.55	06-096 C.M.R. 138

Pollutant	lb/hr	Origin and Authority
PM	8.68	06-096 C.M.R. 115, BACT
PM ₁₀	8.68	06-096 C.M.R. 115, BACT
SO ₂	45.14	06-096 C.M.R. 115, BACT
NO _x (≤0.45% nitrogen)*	43.4	06-096 C.M.R. 140, BPT
NO _x (>0.45% nitrogen)*	47.7	06-096 C.M.R. 140, BPT
CO	52.1	06-096 C.M.R. 140, BPT
VOC	8.7	06-096 C.M.R. 140, BPT

* denotes the nitrogen content in the fuel

B. Boiler #7 shall not exceed the following emission limits when firing natural gas:

Pollutant	lb/MMBtu	Origin and Authority
PM	0.01	06-096 C.M.R. 140, BPT
PM	0.20	06-096 C.M.R. 103
NO _x	0.20	06-096 C.M.R. 140, BPT

Pollutant	lb/hr	Origin and Authority
PM	0.87	06-096 C.M.R. 140, BPT
PM ₁₀	0.87	06-096 C.M.R. 140, BPT
SO ₂	0.52	06-096 C.M.R. 115, BACT
NO _x	17.4	06-096 C.M.R. 140, BPT
CO	13.0	06-096 C.M.R. 140, BPT
VOC	0.87	06-096 C.M.R. 140, BPT

C. UMaine shall keep monthly records of fuel use for natural gas, and #6 fuel oil in Boiler #7.

[06-096 C.M.R. 115, BACT and 06-096 C.M.R. 137]

(4) Removal of Boilers #3 and #4

UMaine shall no longer operate and shall remove Boilers #3 and #4 (37.9 MMBtu/hr each). [06-096 C.M.R. 115, BACT]

(5) Boiler #8

A. UMaine is licensed to fire natural gas in Boiler #8. [06-096 C.M.R. 115, BACT]

B. Boiler #8 shall not exceed the following emission limits when firing natural gas only:

Pollutant	lb/MMBtu	Origin and Authority
PM	0.01	06-096 C.M.R. 115, BACT
PM ₁₀	0.01	06-096 C.M.R. 115, BACT
NO _x	0.04	06-096 C.M.R. 115, BACT

Pollutant	lb/hr	Origin and Authority
PM	0.75	06-096 C.M.R. 115, BACT
PM ₁₀	0.75	06-096 C.M.R. 115, BACT
SO ₂	0.45	06-096 C.M.R. 115, BACT
NO _x	3.0	06-096 C.M.R. 115, BACT
CO	3.0	06-096 C.M.R. 115, BACT
VOC	0.75	06-096 C.M.R. 115, BACT

C. Emissions from Boiler #8 shall be controlled with a low NO_x burner, flue gas recirculation, and good combustion controls. [06-096 C.M.R. 115, BACT]

D. UMaine shall keep monthly records of fuel use for natural gas in Boiler #8. [06-096 C.M.R. 115, BACT and 06-096 C.M.R. 137, and 40 C.F.R. Part 60, Subpart Dc, § 60.48c (g)(2)]

E. NSPS 40 C.F.R. Part 60, Subpart Dc Requirements

UMaine shall meet the applicable requirements of 40 C.F.R Part 60, Subpart Dc, including initial notifications submittals, and maintaining records. [40 C.F.R. Part 60, Subpart Dc]

(6) Stack 1 Restrictions

- A. Visible emissions from stack 1 when Boiler #7 and #8 are operating alone or simultaneously on natural gas, shall not exceed 10% opacity on a six (6) minute block average basis.
- B. Visible emissions from stack 1 when Boiler #7 is on #6 fuel oil, operating alone or with Boiler #8, shall not exceed 20% opacity on a six (6) minute block average basis.
[06-096 C.M.R. 115, BACT]

DONE AND DATED IN AUGUSTA, MAINE THIS 21 DAY OF March, 2017.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Core for
PAUL MERCER, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: June 30, 2016

Date of application acceptance: July 1, 2016

Date filed with the Board of Environmental Protection:

This Order prepared by Lisa P. Higgins, Bureau of Air Quality.

