



DEPARTMENT ORDER

**Unum Corporation  
Cumberland County  
Portland, Maine  
A-657-71-O-A**

**Departmental  
Findings of Fact and Order  
Air Emission License  
Amendment #3**

**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

Unum Corporation (Unum) was issued Air Emission License A-657-71-L-R/M on May 3, 2013, for the operation of emission sources associated with their insurance office building complex. The license was subsequently amended on September 25, 2017 (A-657-71-M-M) and on December 21, 2020 (A-657-71-N-A).

Unum has requested an amendment to their license in order to add a condensing boiler to their 2211 Building (formerly Home Office #1).

The equipment addressed in this license amendment is located at 2211 Congress Street, Portland, Maine.

B. Emission Equipment

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

**Boiler**

<b>Equipment</b>	<b>Max. Capacity (MMBtu/hr)</b>	<b>Maximum Firing Rate</b>	<b>Fuel Type</b>	<b>Date of Manuf.</b>	<b>Date of Install.</b>	<b>Stack #</b>
2211-Boiler #1	1.0	970.9 scf/hr	Natural Gas	2020	2020	2211-1

C. Application Classification

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

The modification of a minor source is considered a major or minor modification based on whether or not expected emission increases exceed the “Significant Emission” levels as defined in the Department’s *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100. The emission increases are determined by subtracting the current licensed annual emissions preceding the modification from the future licensed annual emissions, as follows:

Pollutant	Current License (TPY)	Future License (TPY)	Net Change (TPY)	Significant Emission Levels
PM	3.1	3.1	0.0	100
PM <sub>10</sub>	3.1	3.1	0.0	100
SO <sub>2</sub>	0.1	0.1	0.0	100
NO <sub>x</sub>	9.9	9.9	0.0	100
CO	5.3	5.3	0.0	100
VOC	0.8	0.8	0.0	50

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

#### D. Facility Classification

With the annual fuel limit on the boilers and the operating hours restriction on the emergency generators, the facility remains licensed as follows:

- As a synthetic minor source of air emissions, because Unum 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. 2211-Boiler #1

Unum currently has 12 boiler units in their air emission license, each having a rated input capacity between 1.0 and 4.52 MMBtu/hr. These boilers all fire natural gas and are subject to a combined annual fuel limit of 100,000,000 standard cubic feet per calendar year.

This amendment adds 2211-Boiler #1, a new natural gas-fired unit, to Unum's air emission license. The new boiler will be located in their 2211 Building (formerly known as Home Office #1) and was manufactured in 2020. It will have a maximum heat input capacity of 1.0 MMBtu/hr and a maximum firing rate of 970.9 scf/hr.

The new boiler will come equipped with a low NO<sub>x</sub> burner and is designed to operate at efficiencies of between 87% to 98%, requiring less fuel to be fired than standard boilers do to produce the desired thermal output. Because this amendment does not increase Unum's facility-wide limit for natural gas usage in its boilers, the licensed emissions from Unum's boilers are not increased in this amendment.

1. BACT Findings

Following is a BACT analysis for control of emissions from 2211-Boiler #1.

a. Particulate Matter: PM / PM<sub>10</sub>

Particulate matter emissions from natural gas-fired boilers of this size are generally controlled through their proper operation and maintenance and by the use of good combustion practices. The Department finds that BACT for PM / PM<sub>10</sub> emissions from 2211-Boiler #1 shall be the firing of natural gas, the use of good combustion practices, the proper operation and maintenance of the boiler, and the emission limits listed in the tables below.

b. Sulfur Dioxide: SO<sub>2</sub>

SO<sub>2</sub> emissions from boilers are directly related to the sulfur content of the fuel being fired. Because natural gas is inherently low in sulfur content, the BACT determination for SO<sub>2</sub> for this boiler is to fire natural gas exclusively, for it to be properly operated and maintained, and the emission limits listed in the tables below.

c. Nitrogen Oxides: NO<sub>x</sub>

As purchased, 2211-Boiler #1 is equipped with a low NO<sub>x</sub> burner. Other potentially available control options for reducing NO<sub>x</sub> emissions from this boiler include selective catalytic reduction (SCR) and non-selective catalytic reduction (NSCR). SCR and NSCR are add-on controls that can require significant investment and space for installation.

The Department finds that add-on controls are not economically feasible for NO<sub>x</sub> emissions for 2211-Boiler #1, based on its size and inherently low NO<sub>x</sub> output.

BACT for NO<sub>x</sub> emissions from 2211-Boiler #1 shall be utilization of a low NO<sub>x</sub> burner, proper operation and maintenance of the boiler, good combustion controls, and the emission limits listed in the tables below.

d. Carbon Monoxide and Volatile Organic Compounds: CO and 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 expected emission rates, the Department finds that BACT for CO and VOC emissions from 2211-Boiler #1 shall be the proper operation and maintenance of this unit and the emission limits listed in the tables below.

2. Emission Limits

The BACT emission limits for 2211-Boiler #1 were based on the following:

Natural Gas

PM/PM <sub>10</sub>	- 0.05 lb/MMBtu, based on 06-096 C.M.R. ch. 115, BACT
SO <sub>2</sub>	- 0.6 lb/MMscf based on AP-42 Table 1.4-2 dated 7/98
NO <sub>x</sub>	- 100 lb/MMscf based on AP-42 Table 1.4-1 dated 7/98
CO	- 84 lb/MMscf based on AP-42 Table 1.4-1 dated 7/98
VOC	- 5.5 lb/MMscf based on AP-42 Table 1.4-2 dated 7/98
Visible Emissions	- 06-096 C.M.R. ch. 101

The BACT emission limits for 2211-Boiler #1 are the following:

Unit	PM (lb/hr)	PM <sub>10</sub> (lb/hr)	SO <sub>2</sub> (lb/hr)	NO <sub>x</sub> (lb/hr)	CO (lb/hr)	VOC (lb/hr)
2211-Boiler #1 Natural Gas	0.05	0.05	0.01	0.10	0.08	0.01

3. Visible Emissions

Visible emissions from the stack serving 2211-Boiler #1 shall not exceed 10% opacity on a six-minute block average basis.

4. Periodic Monitoring

Periodic monitoring for 2211-Boiler #1 shall include recordkeeping to document fuel use both on a monthly and calendar year total basis. Documentation shall include the type and quantity of fuel used.

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

Due to the size of 2211-Boiler #1, it 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

2211-Boiler #1 is classified as a gas-fired boiler as defined in 40 C.F.R. § 63.11237. As such, it is exempt from the requirements of *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources*, 40 C.F.R. Part 63, Subpart JJJJJ. [40 C.F.R. § 63.11195(e)]

C. Annual Emissions

This license amendment will not change the facility's licensed annual emissions.

**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-657-71-O-A subject to the conditions found in Air Emission License A-657-71-L-R/M, in amendments A-657-71-M-M and A-657-71-N-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 specific condition replaces Specific Condition (16)(C) in Air Emission License A-657-71-L-R/M (May 3, 2013).

#### (16) Boilers

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

Emission Unit	PM (lb/hr)	PM <sub>10</sub> (lb/hr)	SO <sub>2</sub> (lb/hr)	NO <sub>x</sub> (lb/hr)	CO (lb/hr)	VOC (lb/hr)
2211-Boiler #1	0.05	0.05	0.01	0.10	0.08	0.01
HO2-Boiler #1a	0.18	0.18	0.01	0.34	0.28	0.02
HO2-Boiler #1b	0.18	0.18	0.01	0.34	0.28	0.02
HO2-Boiler #2a	0.10	0.10	0.01	0.20	0.17	0.01
HO2-Boiler #2b	0.10	0.10	0.01	0.20	0.17	0.01
HO2-Boiler #2c	0.10	0.10	0.01	0.20	0.17	0.01
HO2-Boiler #2d	0.10	0.10	0.01	0.20	0.17	0.01
HO2-Boiler #2e	0.10	0.10	0.01	0.20	0.17	0.01
HO2-Boiler #3	0.05	0.05	0.01	0.10	0.08	0.01
HO3-Boiler #1	0.23	0.23	0.01	0.44	0.37	0.02
HO3-Boiler #2	0.23	0.23	0.01	0.44	0.37	0.02
HO3-Boiler #3	0.23	0.23	0.01	0.44	0.37	0.02
HO3-Boiler #4	0.23	0.23	0.01	0.44	0.37	0.02

The following new specific condition (16)(E) is being added to Air Emission License A-657-71-L-R/M (May 3, 2013)

E. Unum shall ensure that the new 2211-Boiler #1 is equipped with a factory-installed low NO<sub>x</sub> burner, and shall utilize this burner (or equivalent, if replaced) whenever the boiler is in service. Unum shall also ensure that the boiler is properly operated and maintained to promote good combustion in the boiler.

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The following new specific condition (16)(F) is being added to Air Emission License A-657-71-L-R/M (May 3, 2013)

F. Visible emissions from the stack serving 2211-Boiler #1 shall not exceed 10% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 101 (3)(A)(3)]

DONE AND DATED IN AUGUSTA, MAINE THIS 25<sup>th</sup> DAY OF MAY, 2021.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:  for  
MELANIE LOYZIM, COMMISSIONER

**The term of this amendment shall be concurrent with the term of Air Emission License A-657-71-L-R/M.**

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: April 16, 2021

Date of application acceptance: April 22, 2021

Date filed with the Board of Environmental Protection:

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

