



DEPARTMENT ORDER

The University of Maine System
Penobscot County
Orono, Maine
A-204-77-18-A

Departmental
Findings of Fact and Order
New Source Review
NSR #18

FINDINGS OF FACT

After review of the air emission license 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	The 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 System (UMaine, the University) has requested a New Source Review (NSR) license to license and install a new distillate fuel-fired emergency generator at the GEM Research Factory of the Future facility.

C. Emission Equipment

The following equipment is addressed in this NSR license:

Generator

Equipment	Max. Heat Input Capacity (MMBtu/hr)	Max. Firing Rate (gal/hr)	Output	Fuel Type	Mfr. Date	Install. Date
GEM Generator	4.23	30.9	410 kW	Distillate fuel	2025	2025

D. 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.

Records or Logs mean either hardcopy or electronic records.

E. 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.

The application for installation of the new emergency generator 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. For a major stationary source, the expected emissions increase from each new, modified, or affected unit may be calculated as equal to the difference between the post-modification projected actual emissions and the baseline actual emissions for each NSR regulated pollutant.

1. Baseline Actual Emissions

Baseline actual emissions (BAE) for existing affected emission units are equal to the average annual emissions from any consecutive 24-month period within the ten years prior to submittal of a complete license application. The selected 24-month baseline period can differ on a pollutant-by-pollutant basis. However, there are no existing emission units which are considered “affected” by this project.

The only equipment addressed by this license are new emission units. Baseline actual emissions for new equipment are considered to be zero for all pollutants; therefore, the selection of a baseline year is unnecessary.

2. Projected Actual Emissions

New emission units must use potential to emit (PTE) emissions for projected actual emissions (PAE). Those emissions are presented in the following table.

Projected Actual Emissions

Equipment	PM (tpy)	PM ₁₀ (tpy)	PM _{2.5} (tpy)	SO ₂ (tpy)	NO _x (tpy)	CO (tpy)	VOC (tpy)
GEM Generator	0.03	0.03	0.03	--	0.68	0.18	0.02
Total	0.03	0.03	0.03	--	0.68	0.18	0.02

3. Emissions Increases

Emissions increases are calculated by subtracting BAE from the PAE. The emission increase is then compared to the significant emissions increase levels.

Pollutant	Baseline Actual Emissions (ton/year)	Projected Actual Emissions (ton/year)	Emissions Increase (ton/year)	Significant Emissions Increase Levels (ton/year)
PM	0	0.03	0.03	25
PM ₁₀	0	0.03	0.03	15
PM _{2.5}	0	0.03	0.03	10
SO ₂	0	--	--	40
NO _x	0	0.68	0.68	40
CO	0	0.18	0.18	100
VOC	0	0.02	0.02	40

4. Classification

Since emissions increases do not exceed significant emissions increase levels, 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.

This NSR license is not licensing a new major stationary source of an NSR pollutant that is not greenhouse gases (GHG) nor is it authorizing a major modification for an NSR pollutant to an existing major stationary source. Therefore, greenhouse gases are not considered subject to regulation in this license pursuant to 40 C.F.R. §§ 51.166(b)(48)(iii - iv).

UMaine has submitted an application to incorporate the requirements of this NSR license into the facility's Part 70 air emission license.

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 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 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. GEM Generator

UMaine has proposed the installation of a new emergency generator. The emergency generator is a generator set consisting of an engine and electrical generator. The emergency generator has an engine rated at 4.23 MMBtu/hr which fires distillate fuel. The emergency generator was manufactured in 2025.

1. BACT Findings

The BACT emission limits for the GEM Generator are based on the following:

PM/PM ₁₀ /PM _{2.5}	–	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	–	3.2 lb/MMBtu from AP-42 Table 3.4-1 dated 4/25
CO	–	0.85 lb/MMBtu from AP-42 Table 3.4-1 dated 4/25
VOC	–	0.09 lb/MMBtu from AP-42 Table 3.4-1 dated 4/25
Visible Emissions	–	06-096 C.M.R. ch. 101

The BACT emission limits for the GEM Generator are the following:

Unit	Pollutant	lb/MMBtu
GEM Generator	PM	0.12

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
GEM Generator	0.51	0.51	0.51	0.01	13.54	3.60	0.38

Visible emissions from the GEM Generator shall not exceed 20% opacity on a six-minute block average basis.

BACT for the GEM Generator includes recordkeeping of all maintenance conducted on the engine.

2. Chapter 169

Stationary Generators, 06-096 C.M.R. ch. 169 (Chapter 169), is applicable to the GEM Generator. It is an emergency generator powered by an engine with a rated output of less than 1,000 brake horsepower (747 kW). Chapter 169 identifies emission standards for generator engines subject to this chapter and stack height requirements for certain generator engines subject to this chapter.

a. Chapter 169 Emission Standards Requirements

For the GEM Generator, UMaine shall comply with the emission standards for emergency generators by complying with the applicable standards contained in 40 C.F.R. Part 60, Subpart IIII. [06-096 C.M.R. ch. 169, § 4(B)(1)]

b. Chapter 169 Stack Height Requirements

Chapter 169 identifies stack height requirements for any stack used to exhaust a generator engine or combination of generator engines with a combined rated output equal to or greater than 1,000 brake horsepower (747 kW). Individual generator engines with a maximum power capacity of less than 300 kW are not included in the assessment of the combined generator power capacity exhausted through a common stack. [06-096 C.M.R. ch. 169, § 6]

There are no stack height requirements in Chapter 169 applicable to the GEM Generator because it exhausts through its own stack and its rated output is less than 1,000 brake horsepower (747 kilowatts). [06-096 C.M.R. ch. 169, § 6]

3. New Source Performance Standards

Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 40 C.F.R. Part 60, Subpart IIII is applicable to the emergency engine listed above since the unit was 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 unit also meets 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 IIII, 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 IIII, 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;
- 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 IIII Requirements

(1) Manufacturer Certification Requirement

The engine 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. UMaine has provided a copy of the engine certification to the Department. [40 C.F.R. § 60.4205(b)]

(2) Ultra-Low Sulfur Fuel Requirement

The fuel fired in the engine 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 the engine. [40 C.F.R. § 60.4209(a)]

(4) Operation and Maintenance Requirements

The engine shall be operated and maintained according to the manufacturer's emission-related written instructions. UMaine may only change those emission-related settings that are permitted by the manufacturer. [40 C.F.R. § 60.4211(a)]

UMaine shall have available for review by the Department a copy of the manufacturer's emission-related written instructions for engine operation and maintenance. [06-096 C.M.R. ch. 115, BPT]

(5) Annual Time Limit for Maintenance and Testing

As an emergency engine, the unit shall 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 IIII for emergency engines. [40 C.F.R. § 60.4214(b)]

(7) Recordkeeping

UMaine shall keep records that include the hours of operation of the engine recorded through the non-resettable hour meter. Documentation shall include the number of hours the unit operated for emergency purposes, the number of hours the unit operated for non-emergency purposes, and the reason the engine was in operation during each time.

[40 C.F.R. § 60.4214(b)]

C. Incorporation Into the Part 70 Air Emission License

Pursuant to *Part 70 Air Emission License Regulations*, 06-096 C.M.R. ch. 140 § 1(C)(8), for a modification at the facility that has undergone NSR requirements or been processed through 06-096 C.M.R. ch. 115, the source must apply for an amendment to their Part 70 license within one year of commencing the proposed operations, as provided in 40 C.F.R. Part 70.5. An application to incorporate the requirements of this NSR license into the Part 70 air emission license has been submitted to the Department.

D. Annual Emissions

The table below provides an estimate of facility-wide annual emissions for the purposes of calculating the facility's annual air license fee and establishing the facility's potential to emit (PTE). Only licensed equipment is included, i.e., emissions from insignificant activities are excluded. Similarly, unquantifiable fugitive particulate matter emissions are not included except when required by state or federal regulations. Maximum potential emissions were calculated based on the following assumptions:

- 8,760 hours/year of operation for each of the Global Science Boilers and Small Boilers;
- 100 hours/year of operation for each emergency generator;
- 500 hours/year for each non-emergency generator;
- an annual No. 6 fuel oil use limit of 3,500,000 gallons per year based on a 12-month rolling total; and
- the established BPT for the Printing Services Department.

This information does not represent a comprehensive list of license restrictions or permissions. That information is provided in the Order section of this license, previously issued NSR licenses, and the facility's Part 70 license and amendments to that license.

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	1.0	1.0	0.01	1.9	1.6	0.1
Global Science Boiler #2	1.0	1.0	0.01	1.9	1.6	0.1
Small Boilers (< 3.2 MMBtu/hr)	1.71	0.88	0.4	11.39	9.55	0.53
Portable Generator #2 (Model 3406C)	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
Wells Commons Generator	0.01	0.01	0.01	0.41	0.1	0.01
York Hall Generator	0.01	0.01	0.01	0.06	0.94	0.01
Estabrooke Hall Generator	0.01	0.01	0.01	0.01	0.71	0.01
Small Generators (<3 MMBtu/hr) firing natural gas/propane	0.01	0.01	0.01	1.12	1.73	0.01
Small Generators (<3 MMBtu/hr) firing distillate fuel	0.04	0.04	0.01	1.3	0.28	0.10
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
Steam Plant Generator	0.001	0.001	0.0001	0.115	0.008	0.001
EEDC Generator	0.01	0.01	--	0.01	0.06	0.01
GEM Generator	0.03	0.03	--	0.68	0.18	0.02
Printing Services	--	--	--	--	--	2.0
Total TPY	30.6	29.8	137.1	171.9	175.7	29.4

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

III. AMBIENT AIR QUALITY ANALYSIS

UMaine previously submitted an ambient air quality impact analysis outlined in air emission license A-204-77-3-A (dated June 9, 2011) demonstrating that emissions from the facility, in

conjunction with all other sources, do not violate ambient air quality standards (AAQS). An additional ambient air quality impact analysis is not required for this NSR license.

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 New Source Review License A-204-77-18-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

(1) GEM Generator

A. Emissions shall not exceed the following:

Unit	Pollutant	lb/MMBtu	Origin and Authority
GEM Generator	PM	0.12	06-096 C.M.R. ch. 103, § (2)(B)(1)(a)

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

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
GEM Generator	0.51	0.51	0.51	0.01	13.54	3.60	0.38

C. Visible emissions from the GEM Generator shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 101, § 4(A)(4)]

D. UMaine shall keep records of all maintenance conducted on the engine associated with the GEM Generator. [06-096 C.M.R. ch. 115, BACT]

The following Condition (2) addresses applicable requirements unrelated to NSR and shall expire upon incorporation of this NSR license into UMaine's Part 70 air emission license:

(2) GEM Generator 40 C.F.R. Part 60, Subpart IIII

The GEM Generator shall meet the applicable requirements of 40 C.F.R. Part 60, Subpart IIII, including the following:
[incorporated under 06-096 C.M.R. chs. 115, BACT and 169]

A. Manufacturer Certification

The engine 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)]

B. Ultra-Low Sulfur Fuel

The fuel fired in the engine shall not exceed 15 ppm sulfur (0.0015% sulfur). Compliance with the fuel sulfur content limit shall be demonstrated by fuel delivery receipts from the supplier, fuel supplier certification, certificate of analysis, or testing of the fuel in the tank on-site. [40 C.F.R. § 60.4207(b) and 06-096 C.M.R. ch. 115, BPT]

C. Non-Resettable Hour Meter

A non-resettable hour meter shall be installed and operated on the engine.
[40 C.F.R. § 60.4209(a)]

D. Annual Time Limit for Maintenance and Testing

1. As an emergency engine, the unit shall 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, BPT]
2. UMaine shall keep records that include the hours of operation of the engine recorded through the non-resettable hour meter. Documentation shall include the number of hours the unit operated for emergency purposes, the number of hours the

unit operated for non-emergency purposes, and the reason the engine was in operation during each time. [40 C.F.R. § 60.4214(b)]

E. Operation and Maintenance

The engine shall be operated and maintained according to the manufacturer's emission-related written instructions. UMaine may only change those emission-related settings that are permitted by the manufacturer. [40 C.F.R. § 60.4211(a)]

UMaine shall have available for review by the Department a copy of the manufacturer's emission-related written instructions for engine operation and maintenance.
[06-096 C.M.R. ch. 115, BPT]

- (3) If the Department determines that any parameter value pertaining to construction and operation of the emissions units, including but not limited to stack size, configuration, flow rate, emission rates, nearby structures, etc., deviates from what was submitted in the application or ambient air quality impact analysis for this air emission license, UMaine may be required to submit additional information. Upon written request from the Department, UMaine shall provide information necessary to demonstrate AAQS will not be exceeded, potentially including submission of an ambient air quality impact analysis or an application to amend this air emission license to resolve any deficiencies and ensure compliance with AAQS. Submission of this information is due within 60 days of the Department's written request unless otherwise stated in the Department's letter.
[06-096 C.M.R. ch. 115, § 2(O)]

- (4) Approval to construct shall become invalid if the source has not commenced construction within eighteen (18) months after receipt of such approval or if construction is discontinued for a period of eighteen (18) months or more. The Department may extend this time period upon a satisfactory showing that an extension is justified, but may condition such extension upon a review of either the control technology analysis or the ambient air quality standards analysis, or both. [06-096 C.M.R. ch. 115]

DONE AND DATED IN AUGUSTA, MAINE THIS 1st DAY OF JULY, 2025.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:  for
MELANIE LOYZIM, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: April 8, 2025

Date of application acceptance: April 17, 2025

This Order prepared by Benjamin Goundie, Bureau of Air Quality.