



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

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ACTING COMMISSIONER

University of Maine
Penobscot County
Orono, Maine
A-204-70-H-A

Departmental
Findings of Fact and Order
Part 70 Air Emission License
Amendment #1

After review of the Part 70 License 502(b)(10) 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

FACILITY	University of Maine (UMaine)
LICENSE AMENDMENT TYPE	Part 70 Section 502(b)(10) Change
NAICS CODES	611310
NATURE OF BUSINESS	Educational Facility
PART 70 LICENSE RENEWAL NUMBER and ISSUANCE DATE	A-204-70-F-R January 15, 2009
AMENDMENT ISSUANCE DATE	July 12, 2011
LICENSE EXPIRATION DATE	January 15, 2014

UMaine has submitted a Part 70 Section 502(b)(10) application to continue to allow the limited operation of several existing back-up generators for the purpose of reducing its Forward Capacity Market charges and for demand response in connection with an agreement with ISO-NE, the regional electric grid operator (40 hours a year maximum, each unit). This limited operation allowance was included in license A-204-70-F-R with the requirement that UMaine would have to submit an application, including actual operational data from the generators, to continue the allowance beyond December 31, 2010.

B. Emission Equipment

The following emission units are addressed in this Part 70 license amendment:

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826
RAY BLDG., HOSPITAL ST.

BANGOR
106 HOGAN ROAD, SUITE 6
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04679-2094
(207) 764-0477 FAX: (207) 760-3143

EMISSION UNIT ID	UNIT CAPACITY	UNIT TYPE
Barrows Hall Generator (also known as Engineering/Science)	3.2 MMBtu/hr (300 kW)	Generator, Diesel
Recreation Center Generator	4.6 MMBtu/hr (400 kW)	Generator, Diesel
Hilltop Commons Generator	5.8 MMBtu/hr (550 kW)	Generator, Diesel
Collins Center Gen. (formerly Maine Center for the Arts)	4.1 MMBtu/hr (350 kW)	Generator, Diesel
Hitchner Hall Generator	4.1 MMBtu/hr (400 kW)	Generator, Diesel

Notes: The Alford Arena generator was previously licensed with the limited use allowance, but UMaine is not extending the request for this unit.

The Hitchner Hall Generator was not previously included as having the licensed limited use allowance, but UMaine is requesting the limited use allowance for this unit.

A smaller generator considered an insignificant activity for licensing purposes based on size is not specifically included in this license. The unit shall meet any applicable federal requirements.

C. Application Classification

The application for UMaine does not include the licensing of increased emissions or the installation of new or modified equipment. The request to continue to allow specific limited use of the generators does not include changes that would violate applicable requirements or contravene federally enforceable permit terms and conditions that are monitoring (including test methods), recordkeeping, reporting, or compliance certification requirements. Therefore the license application is considered to be a Part 70 Section 502 (b)(10) Change issued under *Part 70 Air Emission License Regulations*, 06-096 CMR 140 (as amended).

II. PART 70 SECTION 502(b)(10) CHANGE

A. Description

UMaine has submitted a Part 70 Section 502(b)(10) Change to address limited peak load use of five generators. In air emission license A-204-70-F-R, condition (19)(G), all of the eight licensed generators are each limited to 500 hours/year operation, with an allowance for five of the generators to operate a maximum of 40 hours/year within that 500 hour/year limit during times when the regional electrical power system is predicted to be at or near its annual peak. The 40 hours/year peak load reduction allowance had an expiration date of December 31, 2010 at which time UMaine could submit an application to the Department for re-evaluation of the use of the generators for load reduction purposes.

UMaine is requesting both that the 40 hour/year peak load allowance be extended and also that the list of units licensed for the allowance be revised. The five generators previously given this allowance were the generators at the Recreation Center, the Hilltop Commons, the Engineering/Science Center (now referred to as Barrows Hall), the Alford Arena, and the Maine Center for the Arts (now referred to as the Collins Center). UMaine is requesting that the Alford Arena generator be taken off the list and the Hitchner Hall generator be added.

UMaine submitted actual operational data under peak demand conditions from the five generators over the time period from the date of signature of the renewal license to December 2010, with the following results:

Hours of Operation under Peak Demand Conditions in 2010

Date	Alford Arena Gen.	Collins Center Gen.	Barrows Hall Gen.	Hilltop Commons Gen.	Recreation Center Gen.
6/24/2010	-	3	3	3	3
7/6/2010	-	1.5	5	5.1	5.1
7/7/2010	4.8	-	-	2	2
12/21/2010	1.4	3	3	3	3
Totals (hrs)	6.2	7.5	11	13.1	13.1

The explanation of the peak demand scenario is as follows (also described in air emission license A-204-70-F-R):

The load restriction based on estimated peak demand is related to ISO (Independent System Operator) New England's Forward Capacity Market (FCM), which was established to fund the projected costs to build new power plants to meet New England's growing demand for electric power. Electricity users make payments to ISO New England based on the facility's electric load at the peak demand of the regional power system. The facility's power consumption during the system peak is referred to as their ICAP (Installed Capacity) tag, which is used to determine the electricity user's FCM payment for the following year. By operating the generators to reduce the facility's load on ISO New England's grid and by voluntary conservation measures (reducing air conditioning load), UMaine expects a reduction of approximately 1300 kW of demand during the system's peak hour, reducing UMaine's monthly FCM payment to ISO New England. The program will also result in a more stable and reliable bulk power system and will assist ISO New England in meeting its overall system load requirements and provide the hope that large scale power outages become less likely.

In order to reduce the ICAP tag, the power consumer must ensure that its load is reduced during the peak system hour. Monitoring and forecasting of the electric power system is required, with the possibility that the consumer reduce its load more than once during the year to ensure that the peak is captured. There may be two or three predicted peaks prior to the actual event. An event may include more than one actual day. The generators will be started up and operated for a brief period of time prior to the actual start of the predicted peak event and will be taken off-line once the predicted peak hour has passed.

In addition to the peak load reduction scenario described above, UMaine is also proposing to include operations that would occur pursuant to an agreement with the ISO New England Demand Response Program, which includes a specific established OP-4 procedure for ISO New England capacity deficiencies.

Other than the 40 hour/year allowance per generator, the generators are to be used for general maintenance purposes (i.e. periodic testing of the units) and for situations arising from sudden and reasonably unforeseeable events beyond the control of UMaine.

B. Federal Requirements

The generators are each applicable to one or both of the following federal requirements: 40 CFR Part 60, Subpart III, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines* and/or 40 CFR Part 63, Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engine*.

1. 40 CFR Part 60, Subpart III - Collins Center, Hilltop Commons, and Recreation Center Generators

The Collins Center, Hilltop Commons, and Recreation Center Generators are subject to 40 CFR Part 60, Subpart III, since the units were ordered after July 11, 2005 and manufactured after April 1, 2006. By meeting the requirements of Subpart III, the Collins Center and Hilltop Commons units also meet the requirements found in 40 CFR Part 63, Subpart ZZZZ.

Since the Recreation Center Generator was manufactured after April 1, 2006 but was ordered prior to June 12, 2006, it is subject to 40 CFR Part 63, Subpart ZZZZ as an 'existing' engine, in addition to being subject to 40 CFR Part 60, Subpart III.

Emergency stationary internal combustion engine is defined in 40 CFR Part 60, Subpart IIII as any stationary internal combustion engine whose operation is limited to emergency situations and required testing and maintenance. Examples include stationary ICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary ICE used to pump water in the case of fire or flood, etc. Stationary CI ICE used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity are not considered to be emergency engines.

Based on this emergency definition, the Collins Center, Hilltop Commons, and Recreation Center Generators cannot be considered 'emergency' for the purposes of 40 CFR Part 60, Subpart IIII if they are used for reducing UMaine's FCM charges or for ISO-NE demand response. Each unit will still be limited to 500 hours/year for back-up situations for state purposes, with the allowance of 40 hours/year for peak load operations.

The Collins Center, Hilltop Commons, and Recreation Center Generators already meet the requirements of non-emergency engines in 40 CFR Part 60, Subpart IIII including:

The generators shall be certified by the manufacturer as meeting the applicable emission standards for the unit. [40 CFR §60.4204]

The diesel fuel fired in the generators shall not exceed 15 ppm sulfur (0.0015% sulfur). [40 CFR §60.4207(b)]

The generators shall be operated and maintained according to the manufacturer's written instructions or procedures developed by UMaine that are approved by the engine manufacturer. UMaine may only change those settings that are permitted by the manufacturer. [40 CFR §60.4211(a)]

2. 40 CFR Part 63, Subpart ZZZZ - Hitchner Hall, Barrows Hall, and Recreation Center Generators

The federal regulation 40 CFR Part 63, Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines* is applicable to the Hitchner Hall, Barrows Hall, and Recreation Center Generators. The units are considered existing, stationary reciprocating internal combustion engines at an area HAP source ordered prior to June 12, 2006.

Emergency stationary reciprocating internal combustion engine (RICE) is defined in 40 CFR Part 63, Subpart ZZZZ as any stationary internal combustion engine whose operation is limited to emergency situations and required testing and maintenance. Examples include stationary RICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary RICE used to pump water in the case of fire or flood, etc. Stationary RICE used for peak shaving are not considered emergency stationary RICE. Stationary RICE used to supply power to an electric grid or that supply non-emergency power as part of a financial arrangement with another entity are not considered to be emergency engines, except as permitted under §63.6640(f).

§63.6640(f) limits maintenance checks and readiness testing of the units to 100 hours per year. Emergency stationary RICE may operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity; except that owners and operators may operate the emergency engine for a maximum of 15 hours per year as part of a demand response program if the regional transmission organization or equivalent balancing authority and transmission operator has determined there are emergency conditions that could lead to a potential electrical blackout, such as unusually low frequency, equipment overload, capacity or energy deficiency, or unacceptable voltage level. The engine may not be operated for more than 30 minutes prior to the time when the emergency condition is expected to occur, and the engine operation must be terminated immediately after the facility is notified that the emergency condition is no longer imminent. The 15 hours per year of demand response operation are counted as part of the 50 hours of operation per year provided for non-emergency situations. The supply of emergency power to another entity or entities pursuant to financial arrangement is not limited by this paragraph, as long as the power provided by the financial arrangement is limited to emergency power.

Based on this emergency definition, the Hitchner Hall, Barrows Hall, and Recreation Center Generators cannot be considered 'emergency' for purposes of 40 CFR Part 63, Subpart ZZZZ if used under the operational scenario UMaine requested. The units will still be limited to 500 hours/year in back-up situations for state purposes, with the allowance of 40 hours/year for peak load operations.

40 CFR Part 63, Subpart ZZZZ for non-emergency units has a May 3, 2013 date for complying with the applicable emission limitations and operating limitations. These requirements include:

The generators shall meet the following emissions limitations and operating limitations [40 CFR §63.6603 and Table 2d]:

<u>Unit</u>	<u>Applicable Requirement</u>
Hitchner Hall Gen.	Limit CO to 23 ppmvd at 15% O ₂ or reduce CO by 70% or more (unit is > 500hp)
Barrows Hall Gen.	Limit CO to 49 ppmvd at 15% O ₂ or reduce CO by 70% or more (unit is 300<HP≤500)
Recreation Center Gen.	Limit CO to 23 ppmvd at 15% O ₂ or reduce CO by 70% or more (unit is > 500hp)

The diesel fuel fired in the generators shall not exceed 15 ppm sulfur (0.0015% sulfur). [40 CFR §63.6604]

The facility shall comply with testing and initial compliance requirements, as applicable, per 40 CFR §63.6612, §63.6615, §63.6620, §63.6625, and §63.6630.

The facility shall comply with continuous compliance requirements, as applicable, per 40 CFR §63.6635 and §63.6640.

The facility shall comply with notifications, reports, and records, as applicable, per 40 CFR §63.6645, §63.6650, §63.6655, and §63.6660.

UMaine will be evaluating whether the units will need to be retrofitted to meet the CO requirements and the cost associated with any modifications. If, by the compliance date of May 3, 2013, UMaine concludes that the units will be operated strictly as emergency generators as defined in the rule instead of non-emergency engines, then the units will be exempt from the requirements of 40 CFR Part 63, Subpart ZZZZ because they will meet the definition of existing, stationary institutional emergency engines.

C. Department Findings

The Department approves the 40 hours/year peak load allowance for the five back-up generators located in the Recreation Center, the Hilltop Commons, Barrows Hall, Hitchner Hall, and the Collins Center. As given in the table in section II(A) above, the units in 2010 operated significantly less than the 40 hours/year for peak load purposes and the peak load total emissions for all of the units (for PM, SO₂, NO_x, CO, and VOC combined) was less than 0.26 tons/year.

UMaine shall keep records for peak load reduction operation which include the date, the name(s) of the generator(s) operated, the hours of operation for each generator, and documentation from a third party indicating that either (a) UMaine was advised to reduce its load for predicted peak system demand during those dates and times, or (b) UMaine was required to operate its generators pursuant to an ISO-NE demand response agreement.

The Recreation Center, the Hilltop Commons, Barrows Hall, Hitchner Hall, and the Collins Center will each be limited to 500 hours/year and may be used for maintenance purposes, situations arising from sudden and reasonably unforeseeable events beyond the control of UMaine, during times when the regional electric power system is predicted to be at or near its peak, and for purposes of ISO-NE demand response agreements (combined operations for regional grid peaks and ISO-NE demand response not to exceed 40 hours/year).

The units shall meet the applicable requirements of 40 CFR Part 60, Subpart IIII and 40 CFR Part 63, Subpart ZZZZ.

ORDER

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

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

The Department hereby grants Air Emission License A-204-70-H-A subject to the statements and conditions found in Air Emission License A-204-70-F-R and in the following conditions.

Federally enforceable conditions in this Part 70 license must be changed pursuant to the applicable requirements in 06-096 CMR 115 for making such changes and pursuant to the applicable requirements in 06-096 CMR 140.

For each standard and special condition which is state enforceable only, state-only enforceability is designated with the following statement: **Enforceable by State-only.**

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.

SPECIAL CONDITIONS

The following shall replace Condition (19) in Air Emission License A-204-70-F-R:

(19) **Generators**

- A. The Alford Arena Generator shall fire fuel which meets the criteria of ASTM D396 for #2 fuel oil. Fuel records shall be maintained including receipts from the supplier documenting fuel type. [06-096 CMR 140, BPT]
- B. The Portable, Hitchner Hall, Aubert Hall, and Barrows Hall Generators shall fire diesel fuel with a sulfur content not to exceed 0.05% by weight or more stringent fuel sulfur requirement in 40 CFR Part 63, Subpart ZZZZ, as applicable. Fuel records shall be maintained including receipts from the supplier documenting sulfur content. [06-096 CMR 140, BPT and 40 CFR Part 63, Subpart ZZZZ]
- C. Emissions from the generators shall not exceed the following:

Emission Unit	Pollutant	lb/MMBtu	Origin and Authority
Portable Generator	PM	0.12	06-096 CMR 103
Hitchner Hall Generator	PM	0.12	06-096 CMR 103
Aubert Hall Generator	PM	0.12	06-096 CMR 103
Barrows Hall Generator	PM	0.12	06-096 CMR 103
Recreation Center Generator	PM	0.12	06-096 CMR 103
Hilltop Commons Generator	PM	0.12	06-096 CMR 103
Collins Center Generator	PM	0.12	06-096 CMR 103

- D. Emissions from the generators shall not exceed the following [06-096 CMR 140, BPT]: **Enforceable by State-only**

Emission Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Portable Generator (3.6 MMBtu/hr)	0.43	0.43	0.18	8.17	1.87	0.10
Hitchner Hall Generator (4.1 MMBtu/hr)	0.49	0.49	0.21	9.08	4.16	0.10
Aubert Hall Generator (3.2 MMBtu/hr)	0.38	0.38	0.16	9.29	2.80	0.16
Barrows Hall Generator (3.2 MMBtu/hr)	0.38	0.38	0.16	9.29	2.80	0.16
Alfond Arena Generator (2.0 MMBtu/hr)	0.62	0.62	1.0	8.82	1.9	0.72
Recreation Center Generator (4.6 MMBtu/hr)	0.5	0.5	0.23	5.93	0.80	0.12
Hilltop Commons Generator (5.8 MMBtu/hr)	0.7	0.7	0.29	11.72	0.95	0.13
Collins Center Generator (4.1 MMBtu/hr)	0.49	0.49	0.21	5.21	1.49	0.09

E. Visible emissions from each generator shall not exceed 20% opacity on a six (6) minute block average, except for no more than two (2) six (6) minute block averages in a continuous 3-hour period. [06-096 CMR 101]

F. The Portable, Aubert Hall, and Alfond Arena Generators shall be used for generator maintenance purposes (i.e. periodic testing of the units) and for situations arising from sudden and reasonably unforeseeable events beyond the control of UMaine. In addition, the Portable Generator may be operated during outdoor events when no power is available. These back-up generators are not to be used for prime power when reliable offsite power is available.

1. The three generators shall each be limited to 500 hours per year of operation, based on a 12 month rolling total.
2. A non-resettable hour meter shall be operated and maintained on each generator.
3. UMaine shall keep records of generator use on a monthly and 12 month rolling total basis.

[06-096 CMR 140, BPT]

G. The Recreation Center, the Hilltop Commons, Barrows Hall, Hitchner Hall, and the Collins Center Generators may be used for generator maintenance purposes, situations arising from sudden and reasonably unforeseeable events beyond the control of UMaine, during times when the regional electrical power system is predicted to be at or near its annual peak, and for ISO-NE demand response purposes.

1. The five generators shall each be limited to 500 hours per year operation on a 12 month rolling total basis. Within the 500 hour per year operating limit per generator, each generator shall be limited to no more than 40 hours peak load reduction operation for each 12 month rolling total per generator.
2. UMaine shall keep records for peak load reduction operation which include the date, the name(s) of the generator(s) operated, the hours of operation for each generator, and documentation from a third party indicating that either (a) UMaine was advised to reduce its load for predicted peak system demand during those dates and times, or (b) UMaine was required to operate its generators pursuant to an ISO-NE demand response agreement.
3. A non-resettable hour meter shall be operated and maintained on each generator. UMaine shall keep records of generator use on a monthly and 12 month rolling total basis.

[NSR Amendments A-204-77-1-A (July 1, 2008) and A-204-77-2-A (October 29, 2008)] and 06-096 CMR 140, BPT]

H. The Hilltop Commons, Recreation Center, and Collins Center Generators shall meet the applicable requirements of 40 CFR Part 60, Subpart III, including the following:

1. The generators shall be certified by the manufacturer as meeting the applicable emission standards for the unit. [40 CFR §60.4204]
2. The diesel fuel fired in the generators shall not exceed 15 ppm sulfur (0.0015% sulfur). 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 CFR §60.4207(b) and 06-096 CMR 140 BPT]
3. The generators shall be operated and maintained according to the manufacturer's written instructions or procedures developed by UMaine that are approved by the engine manufacturer. UMaine may only change those settings that are permitted by the manufacturer. [40 CFR §60.4211(a)]

- I. The Recreation Center, Hitchner Hall, and Barrows Hall Generators shall meet the applicable requirements of 40 CFR Part 63, Subpart ZZZZ depending on the use (non-emergency or emergency). [40 CFR Part 63, Subpart ZZZZ]

DONE AND DATED IN AUGUSTA, MAINE THIS 12th DAY OF July, 2011.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: *Patricia W. Aho*
PATRICIA W. AHO, ACTING COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-204-70-F-R.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: March 11, 2011

Date of application acceptance: March 25, 2011

Date filed with the Board of Environmental Protection:

This Order prepared by Kathleen E. Tarbuck, Bureau of Air Quality.

