



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

DAVID P. LITTELL
COMMISSIONER

University of Maine
Penobscot County
Orono, Maine
A-204-77-2-A

Departmental
Findings of Fact and Order
New Source Review
Amendment #2

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

FACILITY	University of Maine (UMaine)
CURRENT PART 70 LICENSE NUMBER	A-204-70-A-I
LICENSE TYPE	06-096 CMR 115, Minor Modification
NAICS CODES	611310
NATURE OF BUSINESS	Educational Facility
FACILITY LOCATION	Orono, Maine
NSR AMENDMENT ISSUANCE DATE	October 29, 2008

B. Amendment Description

UMaine submitted a New Source Review (NSR) application for the addition of a generator to the air emission license. The unit is to be located at the Maine Center for the Arts and is proposed to be operated for maintenance testing, during electrical outages, and on a limited basis during times when the demand on the regional power system is predicted to be at or near its annual system peak.

C. Emission Equipment

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

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

BANGOR
106 HOGAN ROAD
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 04769-2094
(207) 764-0477 FAX: (207) 760-3143

Generator

<u>Equipment</u>	<u>Max. Design Capacity (MMBtu/hr)</u>	<u>Power Output (kW)</u>	<u>Firing Rate (gal/hr)</u>	<u>Fuel Type, % sulfur</u>
Maine Center for the Arts	4.1	350	29.1	Diesel, 0.05%

D. Application Classification

The amendment application for the addition of the new generators to be used for back-up and in a peak demand operating scenario is considered a minor modification, based on calculated emissions using a 500 hour per year operational limit. Total criteria pollutants are under 2.0 tons/year which is well below the "Significant Emission Increase Levels" as given in *Definitions Regulation*, 06-096 CMR 100 (last amended December 1, 2005). This amendment has been processed under *Major and Minor Source Air Emission License Regulations*, 06-096 CMR 115 (last amended December 1, 2005).

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 06-096 CMR 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 CMR 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

B. New Generator - Maine Center for the Arts

The Maine Center for the Arts generator is rated at 4.1 MMBtu/hr (350 kW). The generator was manufactured in 2008 and will fire diesel fuel with a sulfur content not to exceed 0.05% sulfur by weight prior to October 1, 2010 and 0.0015% by weight on or after October 1, 2010.

UMaine submitted a BACT analysis for the criteria pollutants from the generator. Based on the size of the unit and the annual operating restriction, add-on controls were not considered feasible for economic and environmental reasons.

Specifically for NO_x control, selective catalytic reduction (SCR) and fuel injection timing retard (FITR) would not provide a significant environmental benefit and could adversely affect the reliability of the generator in power outage situations. New pollutants could potentially be emitted (ammonia from SCR) or emissions of current pollutants (CO, PM, and opacity from FITR) could increase. For CO and VOC control, oxidation catalysts have been used on large prime power applications, but on generators of limited use, the addition of an oxidation catalyst could affect the reliability of the units with little, or adverse, environmental benefit.

The generator is EPA Tier 3 certified and is compliant with New Source Performance Standards 40 CFR Part 60, Subpart IIII, Standards of Performance for Stationary Compression Internal Combustion Engines.

The following is a BACT analysis summary of the emissions from the generator:

Particulate Matter (PM and PM₁₀) – based on 06-096 CMR 103 limit of 0.12 lb/MMBtu; 0.49 lb/hr.

Sulfur Dioxide (SO₂) – based on the use of diesel fuel oil with a sulfur content of no greater than 0.05%; 0.21 lb/hr.

Nitrogen Oxide (NO_x) – based on manufacturer data; 5.21 lb/hr.

Carbon Monoxide (CO) – based on manufacturer data; 1.47 lb/hr.

Volatile Organic Compound (VOC) – based on manufacturer data; 0.09 lb/hr.

Opacity – based on 06-096 CMR 101: visible emissions shall not exceed an opacity of 20% on a six (6) minute block average basis, except for no more than two (2) six (6) minute block averages in a 3-hour period.

The generator is restricted to 500 hours of operation a year based on a 12 month rolling total. Recordkeeping for the generator shall include documentation of the hours of operation both monthly and on a 12 month rolling total basis. Documentation shall be maintained on the type of fuel used and the fuel sulfur content.

C. ISO (Independent System Operator) New England Peak Demand

UMaine has requested that the generator at the Maine Center for the Arts be approved to operate during the regional electric power system's peak demand times, similar to the currently licensed generators at the Recreation Center, the Hilltop Commons, the Engineering/Science Center, and the Alford Arena. UMaine has proposed a limit of 40 hours per generator per year to be used during peak demand. The 40 hours shall be included in the 500 hours per year operational limit.

The load restriction based on estimated peak demand is related to ISO New England's Forward Capacity Market (FCM). The FCM 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 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 demand reduction during the system's peak hour which will reduce UMaine's monthly FCM payment to ISO New England. UMaine has stated that it is critical to reduce electrical costs. It 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.

UMaine's generators will not be in the ISO New England Demand Response Program, which includes a specific established OP-4 procedure for ISO New England capacity deficiencies. However, operations may coincide with conditions under which ISO New England initiates OP-4 procedures.

Emissions from the use of the Maine Center for the Arts generator and the currently licensed four generators for 40 hours per year for load reductions to the power system during predicted peak demand is calculated to be a total of 1.1 ton/year for all criteria pollutants combined. As part of the monthly and 12 month rolling total generator use records, the hours of operation during peak demand times shall be specified with documentation supplied from a third party indicating that UMaine was advised to reduce its load for this purpose during those dates and times. The requirement allowing for the 40 hour peak load reduction operation of the generator shall expire on December 31, 2010, however, UMaine may submit an application request for the Department to re-evaluate the use of the generators for load reduction purposes after a review of the operating data.

D. Annual Emissions

UMaine shall be restricted to the following annual emissions from the Maine Center for the Arts generator, based on a 500 hours/year operating restriction:

Generator Tons/year
(used in the annual license fee calculation)

	PM	PM ₁₀	SO ₂	NO _x	CO	VOC
Maine Center for the Arts	0.12	0.12	0.05	1.30	0.37	0.02

III. AMBIENT AIR QUALITY ANALYSIS

According to 06-096 CMR 115, the level of air quality analyses required for a minor modification shall be determined on a case-by case basis. Based on the information available in the file, and the similarity to existing sources, Maine Ambient Air Quality Standards (MAAQS) will not be violated by this source.

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 A-204-77-2-A pursuant to the preconstruction licensing requirements of 06-096 CMR 115 and subject to the standard and special conditions below.

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.

(1) Generator – Maine Center for the Arts

- A. UMaine shall limit the Maine Center for the Arts generator (4.1 MMBtu/hr) to 500 hr/yr of operation (based on a 12 month rolling total). An hour meter shall be maintained and operated on the generator. [06-096 CMR 115, BACT]
- B. The Maine Center for the Arts generator shall fire fuel oil with a sulfur content not to exceed 0.05% by weight. Beginning October 1, 2010, the Maine Center for the Arts generator shall fire fuel oil with a sulfur content not to exceed 0.0015% by weight. UMaine shall keep records of the type of fuel delivered and records indicating that the sulfur content of the fuel meets the limits established by this license. [06-096 CMR 115, BACT]
- C. Emissions from the generator shall not exceed the following:

Emission Unit	PM
Maine Center for the Arts Generator	0.12 lb/MMBtu

[06-096 CMR 103]

Emission Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Maine Center for the Arts Generator	0.49	0.49	0.21	5.21	1.47	0.09

[06-096 CMR 115, BACT]

- D. Visible emissions from the 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]
- E. The Maine Center for the Arts generator may be used for generator maintenance purposes, situations arising from sudden and reasonably unforeseeable events beyond the control of UMaine, and during times when the regional electrical power system is predicted to be at or near its annual peak. [06-096 CMR 115, BACT]
- F. Peak Load Operation
1. Within the 500 hour per year operating limit per generator, the generator shall be limited to no more than 40 hours peak load reduction operation for each 12 month rolling total. UMaine shall keep records for peak load reduction

operation which include the date, the name of the generator operated, the hours of operation for the generator, and documentation from a third party indicating that UMaine was advised to reduce its load for predicted peak system demand during those dates and times.

2. The requirement allowing for the 40 hour peak load reduction operation of the generator shall expire on December 31, 2010. UMaine may submit an application, which would include actual operational data from the generator over the time period from date of signature of this license until the end of 2010, with a request for the Department to re-evaluate the use of the generator for load reduction purposes.

[06-096 CMR 115, BACT]

G. NSPS

UMaine shall comply with all applicable requirements in 40 CFR Part 60, Subpart III.

DONE AND DATED IN AUGUSTA, MAINE THIS 29th DAY OF October, 2008.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: James P. Littill
DAVID P. LITTILL, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: September 19, 2008

Date of application acceptance: September 22, 2008

Date filed with the Board of Environmental Protection: _____

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



