



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

DARRYL N. BROWN
COMMISSIONER

**Dorothea Dix Psychiatric Center
Penobscot County
Bangor, Maine
A-206-71-K-R (SM)**

**Departmental
Findings of Fact and Order
Air Emission License**

After review of the air emissions license 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

1. Dorothea Dix Psychiatric Center (DDPC) has applied to renew their Air Emission License permitting the operation of emission sources associated with their healthcare facility.
2. The equipment addressed in this license is located at 656 State Street, Bangor, Maine.

B. Emission Equipment

The following equipment is addressed in this air emission license:

Boilers

Equipment	Maximum Capacity (MMBtu/hr)	Maximum Firing Rate	Fuel Type, % sulfur	Stack #
Boiler 1	12.5	90 gal/hr	#2 fuel oil, 0.20%	1
		12,100 scf/hr	natural gas, negligible	
Boiler 2	25.1	180 gal/hr	#2 fuel oil, 0.20%	1
		24,400 scf/hr	natural gas, negligible	
Boiler 3	12.5	90 gal/hr	#2 fuel oil, 0.20%	1
		12,100 scf/hr	natural gas, negligible	

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

Electrical Generation Equipment

<u>Equipment</u>	<u>Maximum Design Capacity (MMBtu/hr)</u>	<u>Firing Rate (gal/hr)</u>	<u>Fuel Type, % sulfur</u>
Generator 1	7.26	53	diesel, 0.0015%
Generator 3	0.83	6.1	diesel, 0.0015%
Generator 4	0.96	7.0	diesel, 0.0015%

C. Application Classification

The application for DDPC does not include the licensing of increased emissions or the installation of new or modified equipment. Therefore, the license is considered to be a renewal of current licensed emission units only and has been processed through *Major and Minor Source Air Emission License Regulations*, 06-096 CMR 115 (as amended). With the facility wide fuel limit and the operating hours restriction on the emergency generators, the facility is licensed below the major source thresholds and is considered a synthetic minor.

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 CMR 100 (as amended). Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

BPT for existing emissions equipment means that method which controls or reduces emissions to the lowest possible level considering:

- the existing state of technology;
- the effectiveness of available alternatives for reducing emissions from the source being considered; and
- the economic feasibility for the type of establishment involved.

B. Boilers

DDPC operates three boilers, all capable of firing natural gas and #2 fuel oil, all capable of operating with O₂ trim to continuously calculate and improve boiler efficiency, and all used to provide heat and hot water to the facility. Boiler 1 has a maximum design capacity of 12.5 MMBtu/hr and was installed in 1997. Boiler 2 has a maximum design capacity of 25.1 MMBtu/hr and was installed in 1970.

Boiler 3 has a maximum design capacity of 12.5 MMBtu/hr and was installed in 1970.

Boilers 2 and 3 were installed in 1970 and are therefore not subject to the New Source Performance Standards (NSPS) 40 CFR Part 60, Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*, for units greater than 10 MMBtu/hr manufactured after June 9, 1989. Boiler 1 was installed in 1997 and is subject to the New Source Performance Standards (NSPS) 40 CFR Part 60, Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*, for units greater than 10 MMBtu/hr manufactured after June 9, 1989.

A summary of the BPT analysis for Boilers 1, 2, and 3 (12.5, 25.1, and 12.5 MMBtu/hr respectively) is the following:

1. The total fuel use for the facility shall not exceed 678,877 gal/year of #2 fuel oil with a maximum sulfur content not to exceed 0.20% by weight and 92,300,000 scf/year of natural gas based on a calendar year total.
2. The SO₂ emission limits are based on the firing of fuel which meets the criteria in ASTM D396 for #2 fuel oil, however, in this case in order to meet Maine Ambient Air Quality Standards a more stringent limit of 0.20% sulfur was appropriate and shall be used.
3. No more than 5,256 gallons of #2 fuel oil shall be fired per day. Daily #2 fuel oil use shall be recorded.
4. Each boiler shall use O₂ trim at all times the boilers are in operation.
5. The fire-tubes in each boiler shall be cleaned annually, on a calendar-year basis.
6. The PM and PM₁₀ limits are derived from 06-096 CMR 103 (as amended), however, in this case in order to meet Maine Ambient Air Quality Standards a more stringent limit of 0.06 lb/MMBtu was appropriate and shall be used.
7. When firing #2 fuel oil, NO_x emission limits are based on data from similar #2 oil fired boilers of this size and age.
8. When firing #2 fuel oil, CO and VOC emission limits are based upon AP-42 data dated 9/98.
9. When firing # 2 fuel oil, visible emissions from Stack 1 shall not exceed 20% opacity on a six (6) minute block average, except for no more than one (1) six (6) minute block average in a continuous 3-hour period.

10. When firing natural gas, NO_x, CO, and VOC emission limits are based upon AP-42 data dated 7/98 for the combustion of natural gas.
11. When firing natural gas visible emissions from Stack 1 shall not exceed 10% opacity on a six (6) minute block average, except for no more than one (1) six (6) minute block average in a continuous 3-hour period.

C. Back-up Generators

DDPC operates three back-up diesel generators and each was last modified in 1993. Generator 1 has a maximum design capacity of 7.26 MMBtu/hr. Generator 3 has a maximum design capacity of 0.83 MMBtu/hr. Generator 4 has a maximum design capacity of 0.96 MMBtu/hr.

Back-up generators are only to be operated for maintenance purposes and for situations arising from sudden and reasonably unforeseeable events beyond the control of the source. Back-up generators are not to be used for prime power when reliable offsite power is available.

Therefore, by definition, a diesel used for load shedding purposes (also known as a "Dispatchable Load Generators") is not considered an "Emergency Generator". The emergency does not occur until offsite power is unavailable and the generators supply power to bring emergency equipment on-line or to safely shut down equipment.

Due to the potential for tight electricity supplies, ISO New England has taken several precautionary steps to ensure the reliability of the region-wide bulk power system. One of those steps is the implementation of the Demand Response Program. This program offers financial incentives to customers, such as DDPC, to reduce electricity demand during peak periods. This program can significantly improve the reliability of the region-wide bulk power system and hopefully allow ISO New England to avoid drastic measures, such as brown outs.

In order for DDPC to participate in the Demand Response Program, they need to start their generators and run them prior to, or in lieu of, loss of off-site power. DDPC will only operate in this manner if there is a documented request from ISO New England under their emergency OP-4 procedures. ISO New England's OP-4 is a procedure which establishes criteria and guidelines for actions during capacity deficiencies. OP-4 is implemented when there is determined to be a serious threat to the integrity of the bulk power system.

Therefore "back-up generator", as it applies to DDPC, is defined as any stationary internal combustion engine whose operation is limited to emergency situations, required testing and maintenance, and ISO New England OP-4 emergencies. Examples include stationary engines 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 engines used to pump water in the case of fire or flood.

Additionally, DDPC shall only be permitted to operate their generators in response to an OP-4 emergency for a total of no more than 50 hours each, in a calendar year.

Generators 1, 3 and 4 were each ordered prior to July 11, 2005 and manufactured prior to April 1, 2006. Therefore, Generators 1, 3, and 4 are not subject to New Source Performance Standards 40 CFR Part 60, Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*.

Generators 1, 3 and 4 are not subject to 40 CFR Part 63, Subpart ZZZZ, *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, because of the nature of DDPC operations. Subpart ZZZZ (63.6590(b)(3)) excludes residential, institutional, and commercial uses; health care facilities are defined as an institutional use.

A summary of the BPT analysis for Generators 1, 3 and 4 (750, 85, and 100 kW respectively) is the following:

1. The back-up generators shall fire only diesel fuel with a maximum sulfur content not to exceed 0.0015% by weight.
2. The back-up generators shall each be limited to 300 hr/yr of operation based on a calendar year total. Compliance shall be demonstrated by a written log of all generator operating hours.
3. 06-096 CMR 106 regulates fuel sulfur content, however in this case the BPT analysis for SO₂ determined a more stringent limit of 0.0015% was appropriate and shall be used.
4. The PM and PM₁₀ limits for units larger than 3 MMBtu/hr are derived from 06-096 CMR 103. The PM and PM₁₀ limits for smaller units are based upon BPT from the previous license.
5. NO_x, CO, and VOC emission limits are based upon AP-42 data dated 10/96.
6. Visible emissions from the back-up generators shall each not exceed 30% 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.

D. Annual Emissions

DDPC shall be restricted to the following annual emissions, based on a calendar year total:

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
Boilers, natural gas	2.4	2.4	0.030	4.6	3.9	0.25
Boilers, oil	2.9	2.9	9.6	14.3	1.7	0.070
Generator 1	0.13	0.13	0.060	3.5	0.93	0.10
Generator 3	0.010	0.010	0.010	0.55	0.12	0.040
Generator 4	0.020	0.020	0.010	0.64	0.14	0.050
Total TPY	5.4	5.4	9.7	24	6.8	0.51

III. AMBIENT AIR QUALITY ANALYSIS

DDPC submitted an ambient air quality analysis in 2001 demonstrating that emissions from the facility, in conjunction with all other sources, do not violate ambient air quality standards. An additional ambient air quality analysis is not required for this renewal.

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 Air Emission License A-206-71-K-R subject to the following conditions.

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.

STANDARD CONDITIONS

- (1) Employees and authorized representatives of the Department shall be allowed access to the licensee's premises during business hours, or any time during which any emissions units are in operation, and at such other times as the Department

deems necessary for the purpose of performing tests, collecting samples, conducting inspections, or examining and copying records relating to emissions (38 M.R.S.A. §347-C).

- (2) The licensee shall acquire a new or amended air emission license prior to commencing construction of a modification, unless specifically provided for in Chapter 115. [06-096 CMR 115]
- (3) 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 CMR 115]
- (4) The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request. [06-096 CMR 115]
- (5) The licensee shall pay the annual air emission license fee to the Department, calculated pursuant to Title 38 M.R.S.A. §353. [06-096 CMR 115]
- (6) The license does not convey any property rights of any sort, or any exclusive privilege. [06-096 CMR 115]
- (7) The licensee shall maintain and operate all emission units and air pollution systems required by the air emission license in a manner consistent with good air pollution control practice for minimizing emissions. [06-096 CMR 115]
- (8) The licensee shall maintain sufficient records to accurately document compliance with emission standards and license conditions and shall maintain such records for a minimum of six (6) years. The records shall be submitted to the Department upon written request. [06-096 CMR 115]
- (9) The licensee shall comply with all terms and conditions of the air emission license. The filing of an appeal by the licensee, the notification of planned changes or anticipated noncompliance by the licensee, or the filing of an application by the licensee for a renewal of a license or amendment shall not stay any condition of the license. [06-096 CMR 115]
- (10) The licensee may not use as a defense in an enforcement action that the disruption, cessation, or reduction of licensed operations would have been

necessary in order to maintain compliance with the conditions of the air emission license. [06-096 CMR 115]

- (11) In accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department, the licensee shall:
- A. perform stack testing to demonstrate compliance with the applicable emission standards under circumstances representative of the facility's normal process and operating conditions:
 - 1. within sixty (60) calendar days of receipt of a notification to test from the Department or EPA, if visible emissions, equipment operating parameters, staff inspection, air monitoring or other cause indicate to the Department that equipment may be operating out of compliance with emission standards or license conditions; or
 - 2. pursuant to any other requirement of this license to perform stack testing.
 - B. install or make provisions to install test ports that meet the criteria of 40 CFR Part 60, Appendix A, and test platforms, if necessary, and other accommodations necessary to allow emission testing; and
 - C. submit a written report to the Department within thirty (30) days from date of test completion.
- [06-096 CMR 115]
- (12) If the results of a stack test performed under circumstances representative of the facility's normal process and operating conditions indicate emissions in excess of the applicable standards, then:
- A. within thirty (30) days following receipt of such test results, the licensee shall re-test the non-complying emission source under circumstances representative of the facility's normal process and operating conditions and in accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department; and
 - B. the days of violation shall be presumed to include the date of stack test and each and every day of operation thereafter until compliance is demonstrated under normal and representative process and operating conditions, except to the extent that the facility can prove to the satisfaction of the Department that there were intervening days during which no violation occurred or that the violation was not continuing in nature; and
 - C. the licensee may, upon the approval of the Department following the successful demonstration of compliance at alternative load conditions, operate under such alternative load conditions on an interim basis prior to a demonstration of compliance under normal and representative process and operating conditions.
- [06-096 CMR 115]
- (13) Notwithstanding any other provisions in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for

the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or Part 70 license requirement. [06-096 CMR 115]

- (14) The licensee shall maintain records of malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emissions unit itself that would affect emission and that is not consistent with the terms and conditions of the air emission license. The licensee shall notify the Department within two (2) days or the next state working day, whichever is later, of such occasions where such changes result in an increase of emissions. The licensee shall report all excess emissions in the units of the applicable emission limitation. [06-096 CMR 115]
- (15) Upon written request from the Department, the licensee shall establish and maintain such records, make such reports, install, use and maintain such monitoring equipment, sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such a manner as the Department shall prescribe), and provide other information as the Department may reasonably require to determine the licensee's compliance status. [06-096 CMR 115]

SPECIFIC CONDITIONS

(16) **Boilers**

- A. Total fuel use for Boilers 1, 2 and 3 shall not exceed 678,877 gal/yr of #2 fuel oil with a maximum sulfur content not to exceed 0.20% by weight and 92,300,000 scf/yr of natural gas. Compliance shall be demonstrated by fuel records from the supplier showing the quantity, type of fuel delivered, and the percent sulfur of the #2 fuel oil. Records of annual fuel use shall be kept on a calendar year basis. [06-096 CMR 115, BPT]
- B. Emissions shall not exceed the following:

Emission Unit	Pollutant	lb/MMBtu	Origin and Authority
Boiler 1, oil	PM	0.06	06-096 CMR 103(2)(B)(1)(a)
Boiler 1, natural gas	PM	0.05	BPT Analysis
Boiler 2, oil	PM	0.06	06-096 CMR 103(2)(B)(1)(a)
Boiler 2, natural gas	PM	0.05	BPT Analysis
Boiler 3, oil	PM	0.06	06-096 CMR 103(2)(B)(1)(a)
Boiler 3, natural gas	PM	0.05	BPT Analysis

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

Emission Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler 1, oil	0.75	0.75	2.5	3.8	0.45	0.02
Boiler 1, natural gas	0.63	0.63	0.01	1.2	1.0	0.07
Boiler 2, oil	1.5	1.5	5.1	7.5	0.9	0.04
Boiler 2, natural gas	1.3	1.3	0.01	2.4	2.1	0.13
Boiler 3, oil	0.75	0.75	2.5	3.8	0.45	0.02
Boiler 3, natural gas	0.63	0.63	0.01	1.2	1.0	0.07

- D. When firing #2 fuel oil, visible emissions from Stack 1 shall not exceed 20% opacity on a six (6) minute block average, except for no more than one (1) six (6) minute block average in a continuous 3-hour period. [06-096 CMR 101]
- E. When firing natural gas, visible emissions from Stack 1 shall not exceed 10% opacity on a six (6) minute block average, except for no more than one (1) six (6) minute block average in a continuous 3-hour period. [06-096 CMR 101]
- F. No more than 5,256 gallons of #2 fuel oil will be fired per day, with a sulfur content not to exceed 0.20%. Daily #2 fuel oil use shall be recorded.
- G. Boilers 1, 2, and 3 shall each use O₂ trim at all times the boilers are in operation. DDPC shall record boiler downtime and O₂ trim downtime for each boiler in a log. The log shall indicate the date, time, and duration of all boiler downtime or O₂ trim system downtime.
- H. The fire-tubes in each of Boilers 1, 2, and 3 shall be cleaned annually, on a calendar year basis. DDPC shall keep records indicating dates of each annual cleaning.

(17) **Back-up Generators**

- A. DDPC shall limit Generators 1, 2 and 3 to 300 hr/yr of operation each (based on a calendar year total). An hour meter shall be maintained and operated on each of the generators. [06-096 CMR 115, BPT]
- B. The back-up generators shall only be operated for maintenance purposes and for situations arising from sudden and reasonably unforeseeable events beyond the control of the source (including ISO New England OP-4 emergencies). The back-up generators shall not be used for prime power when reliable offsite power is available. A log shall be maintained documenting the date, time, and reason for operation. [06-096 CMR 115, BPT]

- C. DDPC shall keep records for OP-4 emergencies which include the date, which generators were operated, start time and stop time for each generator, and documentation that DDPC was contacted by ISO New England and asked to reduce consumption as part of an OP-4 event. [06-096 CMR 115, BPT]
- D. DDPC shall not operate each emergency generator for more than 50 hours each per calendar year in response to an OP-4 emergency. [06-096 CMR 115, BPT]
- E. The back-up generators shall fire diesel fuel with a sulfur limit not to exceed 0.0015% by weight. Compliance shall be based on fuel records from the supplier showing the quantity of fuel delivered and the sulfur content of the fuel. [06-096 CMR 115, BPT]
- F. Emissions shall not exceed the following:

Emission Unit	Pollutant	lb/MMBtu	Origin and Authority
Generator 1	PM	0.12	06-096 CMR 103(2)(B)(1)(a)

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

Emission Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Generator 1	0.87	0.87	0.37	23	6.2	0.65
Generator 3	0.10	0.10	0.04	3.7	0.79	0.02
Generator 4	0.12	0.12	0.05	4.2	0.91	0.34

- H. Visible emissions from each Back-up Generator shall not exceed 30% 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]

(18) New Source Performance Standards for Dc Boilers

Boiler 1 is subject to Federal New Source Performance Standards, Subpart Dc. DDPC shall comply with all requirements of 40 CFR Part 60, Subpart Dc including, but not limited to, the following:

- A. DDPC shall submit to EPA and the Department semi-annual reports. These reports shall include the calendar dates covered in the reporting period and

records of fuel supplier certifications. The semi-annual reports are due within 30 days of the end of each 6-month period.

- B. The following address for EPA shall be used for any reports or notifications required to be copied to them:

Compliance Clerk
USEPA Region 1
1 Congress Street
Suite 1100
Boston, MA 02114-2023

- (19) DDPC shall notify the Department within 48 hours and submit a report to the Department on a quarterly basis if a malfunction or breakdown in any component causes a violation of any emission standard (38 M.R.S.A. §605).

DONE AND DATED IN AUGUSTA, MAINE THIS 11th DAY OF March, 2011.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: James P. Brooks for
DARRYL N. BROWN, COMMISSIONER

The term of this license shall be five (5) years from the signature date above.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 8/19/2009

Date of application acceptance: 9/1/2009

Date filed with the Board of Environmental Protection:

This Order prepared by Amanda L. Gray, Bureau of Air Quality.

