STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

PATRICIA W. AHO
COMMISSIONER

State of Maine **(Augusta Complex East Campus)** **Kennebec County** **Augusta, Maine** **A-23-71-N-A (SM)**	**Departmental** **Findings of Fact and Order** **Air Emission License** **Amendment #1**

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

State of Maine, Augusta Complex East Campus (ACEC) has requested an amendment to their air emission license to install a 22.5 MMBtu/hr multi-fuel boiler with the ability to fire pulverized wood pellets, #2 fuel oil, and natural gas when supply becomes available in the future. The boiler has an associated 250 kW backpressure turbine. The current fuel oil limit, 600,000 gal/year of #2 fuel oil, will be replaced by an equivalent annual fuel heat input limit of 84,000 MMBtu/yr to allow for the flexibility of utilizing various fuels.

ACEC was issued Air Emission License A-23-71-M-R on January 22, 2010, permitting the operation of three #2 fuel oil fired boilers and one emergency generator associated with their state office complex facility.

The equipment addressed in this license is located at 15 Blossom Lane, Augusta, Maine.

B. Emission Equipment

The following equipment is addressed in this air emission 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

web site: www.maine.gov/dep

Boiler

Equipment	Maximum Capacity (MMBtu/hr)	Maximum Firing Rate*	Fuel Type	Install. Date	Stack #
Boiler 4	22.0	2895 lb/hr	Pulverized Wood Pellets	Expected 2012	1
	22.5	160.7 gal/hr	#2 fuel oil ASTM D396 compliant		
	22.5	22,500 scf/hr	Nat'l Gas		

* The maximum firing rates were based on the following heat contents: wood at a lower heating value of 7600 Btu/lb, oil at 0.14 MMBtu/gal, and natural gas at 1000 Btu/scf.

C. Application Classification

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 regulations. The emission increases are determined by subtracting the current licensed emissions preceding the modification from the maximum future licensed allowed emissions, as follows:

Pollutant	Current License (TPY)	Future License (TPY)	Net Change (TPY)	Sig. Level
PM	5.3	5.3	0	100
PM_{10}	5.3	5.3	0	100
SO_2	21.3	21.3	0	100
NO_X	24.9	24.9	0	100
CO	2.5	13.6	+11.1	100
VOC	0.2	0.8	+0.6	50
CO_2e	N/A	<100,000	N/A	100,000

ACEC submitted information on HAP emissions from the firing of 84,000 MMBtu/yr pulverized wood pellets. The emissions were well below the 10 tons/year of single HAP and 25 tons/year of all HAP combined. The highest calculated HAP emission was 0.789 tons/year and the total was calculated to be 1.59 tons/year.

Based on the information in the application, this proposed project has been classified as a minor modification of a minor source and has been processed as such. ACEC will remain a synthetic minor source.

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 new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in *Definitions Regulation*, 06-096 CMR 100 (as amended). BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

Project Description

The main pieces of equipment for the proposed project are a multi-fuel boiler and a backpressure turbine. The multi-fuel boiler is expected to utilize wood pellets as the primary fuel source, with #2 fuel oil used as a secondary fuel source. Natural gas is planned for the future.

Pellets will be delivered to the site by truck. The unloading process will consist of connecting the delivery truck to the unloading hose and blowing the wood pellets through the unloading pipes, by fan, into a vertical pellet storage silo. The pellets will then be transferred from the storage silo via screw conveyers to two hammermills in series where they will be pulverized. The hammermills will be located inside the existing building and any wood pellet dust from the hammermills will go through a high pressure filter system before being blown into the boiler to be burned. The boiler's automatic ash removal system will include a baghouse which will deposit the ash in a small container in the building. The exhaust from the baghouse will exit through the common boiler stack.

The ancillary support units (vertical wood pellet silo, screw conveyers, two hammermills in series, ash collection container, backpressure turbine, and air pollution control equipment) are considered insignificant activities with emissions below the 1 tons/year threshold.

ACEC is not proposing any changes in the operations, emission limits, or fuel limits from the existing three boilers and emergency generator.

B. Boiler 4 – Multi-fuel

The multi-fuel Babcock and Wilcox FM 10-52 package boiler, proposed to be installed in 2012, will fire pulverized wood pellets and #2 fuel oil. The unit also has the capability of being adapted to fire natural gas and will be licensed to do so, although a natural gas supply line is not currently accessible by the facility. The heat input capacity is 22.0 MMBtu/hr when firing wood and 22.5 MMBtu/hr when firing #2 fuel oil or natural gas. The boiler has an associated 250 kW backpressure turbine.

The 16,500 lb/hr of 350 psig steam produced by Boiler 4 will be used to provide heat and hot water to various campus buildings after going through the turbine. Boiler 4 is expected to be able to operate simultaneously with the three existing licensed #2 fuel oil boilers. Boiler 4 and the pellet processing operation will be located completely within the existing structure, at a location which previously housed an additional decommissioned boiler. The vertical pellet storage silo will extend above the roof of the building. The boiler will exhaust through existing stack 1, the 190 feet above ground common stack which is also utilized by oil Boilers 1, 2, and 3.

The proposal by ACEC does not include an increase in the currently licensed #2 fuel; however, in place of the 600,000 gal/yr #2 fuel oil limit, ACEC has proposed a facility limit of 84,000 MMBtu/yr. The 84,000 MMBtu/yr is the equivalent heat content of the current oil limit. The annual limit on a heat input basis will allow the facility to use any combination of licensed fuel.

The boiler 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 but less than 100 MMBtu/hr manufactured after June 9, 1989.

The boiler is also subject to National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 CFR Part 63, Subpart JJJJJJ, *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources*.

1. BACT Findings

ACEC submitted a BACT analysis for the multi-fuel boiler. The BACT submittal included a review of EPA's RACT/BACT/LAER Clearinghouse (RBLC) for biomass boilers with maximum heat capacities in the range of 19 MMBtu/hr - 69.3 MMBtu/hr and permitted after the year 2000; as well as a review of similar facilities recently licensed in Maine.

The following table contains the results of the review:

Comparable Biomass Boiler BACT Limits

Facility	State	Capacity (MMBtu/hr)	Control Methods	Emission Limit (lb/MMBtu)			
				PM	NO_X	CO	VOC
Togus VA Medical Center	ME	38	Electrostatic precipitator	0.03	0.25	0.25	-
Jackson Laboratory	ME	49.9	Baghouse	0.04	0.3	0.3	-
ERA Comilog, Inc.	TN	69.3	Good Combustion Practices	-	0.25	-	-
Middlebury College	VT	29.5	Multiclone and Baghouse	0.091	-	-	-
Louisiana Pacific	WI	19.4	Low NO_X Burner, Flue Gas Recirculation, Staged Combustion Air	0.5	0.23	1.35	-
Louisiana Pacific	WI	23.8	Electrified Filter Bed, Good Combustion Practices	0.5	0.34	1.1	-
Deltic Timber Corp.	AR	64.32	Dry Low NO_X Burner, Good Combustion Practices	0.08	0.3	0.47	0.07
Wellborn Cabinets	AL	29.50	Boiler Design and Combustion Control	-	0.5	-	-
West Frazier (South) Inc.	LA	29.63	Good Combustion Practices	0.24	0.3	0.3	0.1
T. R. Miller Mill	AL	36.0	Good Combustion Practices	-	-	-	0.017
West Frazier (South) Inc.–Joyce	LA	58.3	None	-	-	1.81	-
Diboll Particleboard	TX	40.0	Electrostatic Precipitator	0.29	1.43	4.67	-

The following summarizes the BACT findings for Boiler 4:

PM/PM_{10} – Particulate emissions from fuel combustion is formed from incomplete combustion of fuel and non-combustible material in the fuel. Potential particulate matter controls for biomass boilers consists of add-on controls, combustion of clean fuels, good combustion practices, or a combination of options.

The evaluation of add-on controls for this boiler included electrostatic precipitators (ESPs), wet scrubbers, and fabric filters. ESPs consist of

charging particles in the exhaust stream with a high voltage, oppositely charging a collection surface where the particles accumulate, removing the collected dust by a rapping process, and collecting the dust in hoppers. Wet scrubbers consist of using particle inertia and pressure to transfer particles from the gas stream to a liquid stream using water, purging the liquid, and removing the particles in sludge form. Baghouses collect particulate matter on the surface of filter bags which are periodically cleaned or replaced to maintain an efficiency of greater than 80%. The results of the add-on control evaluation showed that an electrostatic precipitator is not economically feasible due to high capital costs for a boiler of this size. A wet scrubber was found to be infeasible due to the economics of the capital and ongoing operational costs; as well as the environmental issues of make-up water requirements and waste sludge disposal. Baghouses (fabric filters) have relatively low initial capital cost as compared to other technologies, although the operating costs for baghouses can be high. However, in order to meet the particulate matter requirements set forth in the current Boiler Maximum Achievable Control Technology (MACT) regulations (40 CFR Part 63, JJJJJJ), ACEC has proposed to install a baghouse with a leak detection system on the boiler to control particulate matter emissions to 0.07 lb/MMBtu.

Minimization of particulate matter emissions can occur through the use of clean fuels. ACEC has proposed to use a wood powder burner that provides cleaner combustion and less particulate formation than other types of biomass combustion methods. Natural gas has inherently low particulate matter emissions. To minimize particulate matter from fuel oil combustion, ACEC has proposed to use #2 fuel oil meeting ASTM D395 standards (0.5% sulfur).

Good combustion can reduce products of incomplete combustion, including particulate matter. ACEC proposes to install a new, efficient, clean burning boiler and operate it using good combustion practices.

BACT for PM/PM_{10} emissions from Boiler 4 is the use of a baghouse and leak detection system, clean fuels, good combustion practices, and the following emission limits:

Fuel Type	PM Emission Limit	Emission Limit Basis
Pulverized Wood Pellets	0.07 lb/MMBtu, 1.54 lb/hr	40 CFR Part 63, Subpart JJJJJJ
#2 Fuel Oil	0.07 lb/MMBtu, 1.58 lb/hr	40 CFR Part 63, Subpart JJJJJJ
Natural Gas	0.17 lb/hr	AP-42 factor from Table 1.4-2 (dated 7/98): 7.6 lb/MMscf

The limits are more stringent than the particulate matter limit found in *Fuel Burning Equipment Particulate Emission Standard* 06-096 CMR 103 (as amended).

SO_2 – Sulfur dioxide is formed from the combustion of sulfur present in the fuel. Control options for SO_2 include removing the sulfur from the flue gas by adding a caustic scrubbing solution or restricting the sulfur content of the fuel. A wet scrubbing system, with associated annual operating costs for caustic, energy, operation, and maintenance, was found to be economically infeasible for this size boiler. ACEC has proposed to use low sulfur fuel to minimize SO_2 emissions. Wood and natural gas have minimal sulfur content. The #2 fuel oil fired shall meet the ASTM D396 standard (maximum sulfur content of 0.5%).

BACT for SO_2 emissions from Boiler 4 shall be the use of low sulfur fuels: natural gas, wood biomass pellets, #2 fuel oil meeting the ASTM D396 standard, and the following emission limits:

Fuel Type	SO_2 Emission Limit	Emission Limit Basis
Pulverized Wood Pellets	0.55 lb/hr	AP-42 factor from Table 1.6-2 (dated 9/03): 0.025 lb/MMBtu
#2 Fuel Oil	11.33 lb/hr	fuel sulfur content of 0.5% (0.5036 lb/MMBtu)
Natural Gas	0.01 lb/hr	AP-42 factor from Table 1.4-2 (dated 7/98): 0.6 lb/MMscf

The fuel sulfur limit meets the requirements of 40 CFR Part 60, Subpart Dc.

Prior to January 1, 2016, the #2 fuel oil fired in Boiler 4 shall be ASTM D396 compliant #2 fuel oil (maximum sulfur content of 0.5% by weight). Per 38 MRSA §603-A(2)(A)(3), beginning January 1, 2016, the facility shall fire #2 fuel oil with a maximum sulfur content limit of 0.005% by

weight (50 ppm), and beginning January 1, 2018, the facility shall fire #2 fuel oil with a maximum sulfur content limit of 0.0015% by weight (15 ppm).

NO_X – Nitrogen oxide is generated from fuel NO_X, thermal NO_X, and prompt NO_X. Oxidation radicals near the combustion flame forms prompt NO_X in insignificant amounts. Reducing NO_X formation from the two other NO_X generating mechanisms includes firing a low nitrogen content fuel to minimize fuel NO_X and maintaining combustion temperatures below 3600°F to minimize thermal NO_X. Add-on NO_X control options consist of selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR). Combustion control techniques for NO_X emission reductions include staged combustion, burner modifications, low excess firing air, flue gas recirculation, and combustion of clean fuels.

Add-on SCR and SNCR controls are primarily used on large industrial and utility boilers. SCR and SNCR reduce NO_X emissions through the injection of urea or ammonia in the gas exhaust stream under specific temperature ranges. Control installation costs, annual operating costs, added energy consumption, and operation and maintenance costs are not economically feasible for this size project. Flue gas recirculation and low NO_X burners are also utilized on larger boilers, and are not typically economically feasible on smaller units. ACEC has proposed to use good combustion practices and the firing of clean fuels to minimize NO_X emissions to meet a limit of 0.25 lb/MMBtu while firing wood pellets.

BACT for NO_X emissions from Boiler 4 shall be the installation of a new, efficient boiler, good combustion practices, the use of clean fuels, and the following emission limits:

Fuel Type	NO_X Emission Limit	Emission Limit Basis
Pulverized Wood Pellets	5.5 lb/hr	Manufacture data, 0.25 lb/MMBtu
#2 Fuel Oil	4.5 lb/hr	Similar source limits: 0.2 lb/MMBtu
Natural Gas	2.25 lb/hr	AP-42 factor from Table 1.4-1 (dated 7/98): 100 lb/MMscf

CO – Carbon monoxide emissions are a result of incomplete combustion, caused by conditions such as insufficient residence time or limited oxygen availability. CO emissions from boilers are typically minimized by good combustion, although oxidation catalyst systems have been used on larger

units. ACEC has proposed good combustion efficiency and proper boiler maintenance to meet a CO emissions limit of 0.3 lb/MMBtu while firing wood pellets. Proper maintenance includes keeping the air to fuel ratio at the manufacturer's specified settings, having proper air and fuel pressures at the burner, and maintaining the correct levels of atomizing air pressure on the oil burners.

BACT for CO emissions from Boiler 4 shall be good combustion and maintenance practices and the following emission limits:

Fuel Type	CO Emission Limit	Emission Limit Basis
Pulverized Wood Pellets	6.6 lb/hr	Manufacture data, 0.3 lb/MMBtu
#2 Fuel Oil	0.8 lb/hr	AP-42 factor from Table 1.3-1 (dated 5/10): 5 lb/1000 gal
Natural Gas	1.89 lb/hr	AP-42 factor from Table 1.4-1 (dated 7/98): 84 lb/MMscf

VOC – Volatile organic compound emissions are a result of incomplete combustion. VOC emissions from boilers are typically minimized by good combustion. ACEC has proposed good combustion efficiency and proper boiler maintenance for controlling VOC emissions.

BACT for VOC emissions from Boiler 4 shall be good combustion practices and the following emission limits:

Fuel Type	VOC Emission Limit	Emission Limit Basis
Pulverized Wood Pellets	0.37 lb/hr	AP-42 factor from Table 1.6-3 (dated 9/03): 0.017 lb/MMBtu
#2 Fuel Oil	0.05 lb/hr	AP-42 factor from Table 1.3-3 (dated 5/10): 0.34 lb/1000 gal
Natural Gas	0.12 lb/hr	AP-42 factor from Table 1.4-2 (dated 7/98): 5.5 lb/MMscf

GHG – Greenhouse gas emissions are minimized from small to mid-sized units by the use of lower carbon content fuel. #2 fuel oil and natural gas contain less carbon and generate less greenhouse gases than #6 fuel oil or coal. Wood pellets are classified as biogenic and EPA has deferred addressing biogenic (wood/biomass) related GHG emissions for at least another two years until they have completed an analysis of the carbon neutrality of various types of biogenic fuel. Based on the use of lower

carbon containing fuels, the size and efficiency of the boiler, and the corresponding estimated small potential GHG emissions from the unit, no specific GHG emission limits are required for Boiler 4 at this time.

Opacity - Visible emissions from the boilers' common stack 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.

Additional BACT findings –

The requirements applicable to Boiler 4 in 40 CFR Part 60, Subpart Dc and 40 CFR Part 63, Subpart JJJJJJ, including emission standards and compliance, monitoring, recordkeeping, and reporting requirements shall be considered BACT for Boiler 4.

ACEC shall be limited to a total fuel heat input limit of 84,000 MMBtu/yr for Boilers 1-4 on a 12 month rolling total basis.

Periodic Monitoring -

Periodic monitoring for Boiler 4 shall include recordkeeping to document fuel use on a monthly basis. Documentation shall include the type and amount of fuel used and fuel sulfur content information for any #2 fuel oil fired.

Periodic monitoring for facility-wide fuel use shall include records to demonstrate compliance with the 84,000 MMBtu/hr facility fuel heat input limit on a monthly and 12 month rolling total basis, calculated from fuel use amounts and the corresponding heat contents of the fuels.

2. 40 CFR Part 60, Subpart Dc

Boiler 4 is subject to 40 CFR Part 60, Subpart Dc based on the unit's size and proposed date of installation. ACEC shall meet all of the applicable requirements of 40 CFR Part 60, Subpart Dc including, but not limited to, the following:

a. Standards: The oil sulfur content shall not exceed 0.5% sulfur by weight (40 CFR §60.42c(d)). Compliance with the fuel oil limit may be determined based on a certification from the fuel supplier (40 CFR §60.42c(h) and §60.48c(f)).
b. Notification: Initial notifications shall be submitted to EPA and the Department stating the date of construction and actual start-up. The

notification shall also include the design heat input capacity of the boiler and the type of fuel to be combusted (40 CFR §60.48c(a))

c. Initial Performance Test: An initial performance test shall be submitted to the EPA consisting of fuel supplier certification of the sulfur content of the fuel fired in Boiler 4 (40 CFR §60.44c(h))
d. Recordkeeping: Records shall be maintained on the amounts of each fuel combusted during each calendar month (40 CFR §60.48c(g)(2)).
e. Reporting: Semi-annual reports shall be submitted to EPA and the Department. These reports shall include the calendar dates covered in the reporting period and fuel records. The semi-annual reports are due within 30 days of the end of each 6-month period. (40 CFR §60.48c(j))
f. Address: The following address for EPA shall be used for any reports or notifications required to be copied to them:

Compliance Clerk
USEPA Region 1
5 Post Office Square - Suite 100
Boston, MA 02109-3912

Boiler 4 is not subject to the particulate matter or opacity requirements in 40 CFR Part 60, Subpart Dc due to the fuel oil sulfur content limit and the boiler's wood firing capacity which is below the 30 MMBtu/hr threshold.

3. 40 CFR Part 63 Subpart JJJJJJ

Boiler 4 is subject to 40 CFR Part 63 Subpart JJJJJJ. However, 40 CFR Part 63, Subpart JJJJJJ is currently under reconsideration by the EPA, and the applicability of the Subpart to this source may change, contingent upon the final specifications and requirements of the proposed amendments.

A summary of the currently promulgated applicable federal 40 CFR Part 63 Subpart JJJJJJ requirements is listed below. Although the Maine Department of Environmental Protection has not taken delegation of this area source MACT (Maximum Achievable Control Technology) rule promulgated by EPA, ACEC is subject to the requirements on a federal level and the requirements are included in this license amendment on a state level as BACT. Notification forms and additional rule information can be found on the following website: http://www.epa.gov/ttn/atw/boiler/boilerpg.html.

Boiler 4 is considered to be in the biomass subcategory since it will burn at least 15% biomass on an annual heat input basis. Although the boiler has the ability to fire oil (and natural gas), it does not have to meet the specific requirements of the oil subcategory because it is in the biomass subcategory.

ACEC shall meet all of the applicable requirements of 40 CFR Part 63, Subpart JJJJJJ including, but not limited to, the following:

a. Standards:
   i. Boiler 4 shall meet a PM limit of 0.07 lb/MMBtu. (40 CFR §63.11201(a))
   ii. ACEC shall operate Boiler 4 to minimize the boiler's startup and shutdown periods following the manufacturer's recommended procedures and ACEC shall conduct a tune-up of the boiler biennially as specified in 40 CFR §63.11223. (40 CFR §63.11201(b))
   iii. ACEC shall install and operate a bag leak detection system and operate the fabric filter such that the bag leak detection system alarm does not sound more than 5% of the operating time during a 6 month period. Corrective action must be taken within 1 hour of the alarm and records must be maintained including the date, duration, and corrective action taken. A site specific monitoring plan shall be maintained. (40 CFR §63.11201(c), 40 CFR §63.11211(b)(4), 40 CFR §63.11222(a)(4), 40 CFR §63.11224(f) and) [Note that ACEC has opted to install a baghouse (fabric filter) on Boiler 4 to meet the PM limit. If demonstrating compliance using fabric filter control, the options are either to maintain an opacity of no greater than 10% or install a bag leak detection system. ACEC has proposed to install the bag leak detection system.]

b. Notifications:
   i. An Initial Notification shall be submittal to EPA and the Department within 120 days after the source becomes subject to the standard. (40 CFR §63.11225(a)(2))
   ii. A Notice of Intent shall be submitted to EPA and the Department at least 60 days before the performance stack test is scheduled to begin. (§63.11225(a)(3))
   iii. A Notice of Compliance Status shall be submitted to EPA and the Department within 60 days of completing the performance stack test. (§63.11225(a)(4))

c. Performance Tests and Tune-up:
   i. An initial performance stack test for PM must be conducted within 180 calendar days after startup of Boiler 4. (40 CFR §63.11210 (a) and (d), and 40 CFR §63.11212)
   ii. Subsequent performance tests for PM must be conducted on a triennial basis, unless otherwise allowed in the regulation. (40 CFR §63.11220 (a-c))
   iii. An initial performance tune-up must be conducted on Boiler 4 and on a biennial basis thereafter in accordance with 40 CFR 40 CFR §63.11223. (40 CFR §63.11214(b))

d. Recordkeeping:
Records in a form suitable and readily available for expeditious review shall be maintained consistent with the requirements of 40 CFR Part 63 Subpart JJJJJJ including the following [40 CFR Part 63.11225(c)]:
   i. Copies of notifications and reports with supporting compliance documentation;
   ii. Records of conformance with the required work and management practices including: identification of the boiler, the date of tune-up, tune-up procedures, and the manufacturer's specifications to which the boiler was tuned; and documentation of fuel type(s) used monthly by the boiler;
   iii. Records of the occurrence and duration of each malfunction of the boiler or air pollution control equipment;
   iv. Records of the actions taken during periods of malfunction to minimize emissions and actions taken to restore the malfunctioning boiler to its usual manner of operations; and
   v. Specific leak detection system records including bag leak detection output, bag leak detection system adjustments (date and initial and final settings), and date and time of all bag leak detection system alarms with date, time and corrective action information.

e. Reporting:
   i. An annual compliance certification report must be prepared by March 1 of each year and submitted to EPA and the Department upon request. However, if the source experiences any deviations from the applicable requirements during the reporting period, the report must be submitted by March 15. (40 CFR §63.11225(b))
   ii. Within 60 days after the date of completion of each performance test, the performance test data must be submitted electronically to EPA's Central Data Exchange (CDX) by using the Electronic Reporting Tool (ERT) or other compatible electronic spreadsheet, if the test method is compatible with ERT. (40 CFR §63.11225(e))

C. Annual Emissions

1. ACEC shall be restricted to the following annual emissions, based on a 12 month rolling total. The tons per year limits were calculated based on 84 MMBtu/year total fuel heat input limit for the four boilers and 500 hrs/yr for the generator:

Total Licensed Annual Emissions for ACEC
Tons/year
(used to calculate the annual license fee)

	PM	PM_{10}	SO_2	NO_X	CO	VOC
Boilers 1-4*	5.1	5.1	21.2	21	12.6	0.71
Generator #2	0.2	0.2	0.1	3.9	1.0	0.1
Total TPY	**5.3**	**5.3**	**21.3**	**24.9**	**13.6**	**0.8**

* To determine the worst case tpy emissions from the boilers, calculations were performed for each fuel consuming 100% of the 84,000 MMBtu/yr. The oil emissions were based on the higher limits from the existing boilers. The results of the worst case scenario are shown in **bold** type in tons/year as follows:

Pollutant	Potential Emissions from Oil	Potential Emissions from Biomass	Potential Emissions from Natural Gas	Maximum Worst Case Potential
PM/PM_{10}	**5.1**	2.94	0.32	**5.1**
SO_2	**21.2**	1.05	0.02	**21.2**
NO_X	**21**	10.5	4.2	**21**
CO	1.5	**12.6**	3.53	**12.6**
VOC	0.1	**0.71**	0.23	**0.71**

2. Greenhouse Gases

Greenhouse gases are considered regulated pollutants as of January 2, 2011 through 'Tailoring' revisions made to EPA's *Approval and Promulgation of Implementation Plans,* 40 CFR Part 52, Subpart A, §52.21 Prevention of Significant Deterioration of Air Quality rule. "Greenhouse gases" as defined in 06-096 CMR 100 (as amended) means the aggregate group of the following gases: Carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Greenhouse gases (GHG) for purposes of licensing are calculated and reported as carbon dioxide equivalents (CO_2e).

Based on the facility's fuel use limit(s), the worst case emission factors from AP-42, IPCC (Intergovernmental Panel on Climate Change), and *Mandatory Greenhouse Gas Reporting*, 40 CFR Part 98, and the global warming potentials contained in 40 CFR Part 98, ACEC is below the major source threshold of 100,000 tons of CO_2e per year. Therefore, no additional licensing requirements are needed to address GHG emissions at this time.

III. AMBIENT AIR QUALITY ANALYSIS

As set forth in 06-096 CMR 115, the level of air quality analyses required for a source shall be determined on a case-by case basis. Modeling is not required if the total emissions of any pollutant released do not exceed the following and there are no extenuating circumstances:

Pollutant	Tons/Year
PM	25
PM_{10}	25
SO_2	50
NO_x	100
CO	250

Based on the total facility licensed emissions, ACEC is below the emissions level required for modeling.

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-23-71-N-A, subject to the conditions found in Air Emission License A-23-71-M-R and in 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.

SPECIFIC CONDITIONS

The following shall replace Condition (16)(A) in air emission license A-23-71-M-R (removing the gallons/year fuel limit):

(16) Boilers 1, 2, 3

A. Fuel Oil

Boilers 1, 2, and 3 shall fire #2 fuel oil. Compliance shall be demonstrated by fuel records from the supplier identifying the type of fuel delivered.

1. Prior to January 1, 2016, the #2 fuel oil fired in the boilers shall be ASTM D396 compliant (max. sulfur content of 0.5% by weight). [06-096 CMR 115, BPT]
2. Beginning January 1, 2016, the facility shall fire #2 fuel oil with a maximum sulfur content limit of 0.005% by weight (50 ppm). [38 MRSA §603-A(2)(A)(3)]
3. Beginning January 1, 2018, the facility shall fire #2 fuel oil with a maximum sulfur content limit of 0.0015% by weight (15 ppm). [38 MRSA §603-A(2)(A)(3)]

Condition (16)(D) in air emission license A-23-71-M-R shall be deleted (removing the Boiler 1, 2 and 3 combined stack opacity limit which is now addressed in a new condition).

The following are new conditions:

(20) **Boilers 1, 2, 3, and 4 Fuel Restriction**

Boilers 1, 2, 3, and 4 shall be limited to a total of 84,000 MMBtu/year on a 12 month rolling total heat input basis. Records of the type of fuel used and the amounts fired shall be maintained on a monthly basis. Compliance with the 84,000 MMBtu/yr shall be calculated from fuel use amounts and the corresponding heat contents of the fuels. Documentation of the calculations shall be kept on a monthly and 12 month rolling total basis. [06-096 CMR 115, BACT]

(21) **Boilers 1, 2, 3, and 4 Combined Stack Opacity Limit**

Visible emissions from the combined stack for Boilers 1, 2, 3, and 4 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 115]

(22) **Boiler 4**

A. Fuel

1. ACEC may fire pulverized wood pellets, #2 fuel oil, and natural gas in Boiler 4. [06-096 CMR 115, BACT]
2. Prior to January 1, 2016, the #2 fuel oil fired in the boiler shall be ASTM D396 compliant (max. sulfur content of 0.5% by weight). [06-096 CMR 115, BACT and 40 CFR §60.42c(d)]
3. Beginning January 1, 2016, the facility shall fire #2 fuel oil with a maximum sulfur content limit of 0.005% by weight (50 ppm). [38 MRSA §603-A(2)(A)(3)]
4. Beginning January 1, 2018, the facility shall fire #2 fuel oil with a maximum sulfur content limit of 0.0015% by weight (15 ppm). [38 MRSA §603-A(2)(A)(3)]
5. Compliance with the fuel sulfur requirement shall be demonstrated by fuel records from the supplier identifying the type of fuel delivered.
6. ACEC shall keep records of the amounts of each fuel combusted in Boiler 4 during each calendar month [40 CFR §60.48c(g)(2) and 06-096 CMR 115, BACT]

B. Emissions from Boiler 4 shall not exceed the following when firing pulverized wood pellets:

Pollutant	lb/MMBtu	lb/hr	Origin and Authority
PM	0.07	1.54	40 CFR Part 63, Subpart JJJJJJ and 06-096 CMR 115, BACT
PM_{10}	0.07	1.54	40 CFR Part 63, Subpart JJJJJJ and 06-096 CMR 115, BACT
SO_2	-	0.55	06-096 CMR 115, BACT
NO_X	-	5.5	06-096 CMR 115, BACT
CO	-	6.6	06-096 CMR 115, BACT
VOC	-	0.37	06-096 CMR 115, BACT

C. Emissions from Boiler 4 shall not exceed the following when firing #2 fuel oil:

Pollutant	lb/MMBtu	lb/hr	Origin and Authority
PM	0.07	1.58	40 CFR Part 63, Subpart JJJJJJ and 06-096 CMR 115, BACT
PM_{10}	0.07	1.58	40 CFR Part 63, Subpart JJJJJJ and 06-096 CMR 115, BACT
SO_2	-	11.33	06-096 CMR 115, BACT
NO_X	-	4.5	06-096 CMR 115, BACT
CO	-	0.80	06-096 CMR 115, BACT
VOC	-	0.05	06-096 CMR 115, BACT

D. Emissions from Boiler 4 shall not exceed the following when firing natural gas:

Pollutant	lb/hr	Origin and Authority
PM	0.17	06-096 CMR 115, BACT
PM_{10}	0.17	06-096 CMR 115, BACT
SO_2	0.01	06-096 CMR 115, BACT
NO_X	2.25	06-096 CMR 115, BACT
CO	1.89	06-096 CMR 115, BACT
VOC	0.12	06-096 CMR 115, BACT

E. Baghouse and Leak Detection System

1. ACEC shall install and operate a baghouse on the exhaust of Boiler 4.
2. Continuous compliance shall be demonstrated by installing and operating a bag leak detection system and the baghouse must be operated such that the bag leak detection system alarm does not sound more than 5% of the operating time during a 6 month period.
3. ACEC must initiate corrective action within 1 hour of a bag leak detection system alarm.
4. Records must be kept of the date, time, and duration of each alarm, the time corrective action was initiated and completed, and a brief description of the cause of the alarm and corrective action taken. Records must be kept of the percent of operating time during each 6 month period that the alarm sounds. In calculating this operating time percentage, if corrective action is required, each alarm is counted as a minimum of 1 hour. If it takes longer than 1 hour to initiate corrective action, the alarm is counted as the actual amount of time taken to initiate corrective action.
5. ACEC must also keep records of the bag leak detection system output and records of bag leak detection system adjustments, including the date and

time of the adjustment, the initial bag leak detection settings, and the final bag leak detection system settings.

6. ACEC shall develop and maintain a site-specific monitoring plan for the bag leak detection system.

[40 CFR Part 63, Subpart JJJJJJ and 06-096 CMR 115, BACT]

F. Boiler 4 Performance Tests and Tune-up Requirements

1. An initial performance stack test for PM must be conducted within 180 calendar days after startup of Boiler 4. [06-096 CMR 115, BACT, 40 CFR §63.11210 (a) and (d), and 40 CFR §63.11212]
2. Subsequent performance tests for PM must be conducted on a triennial basis, unless otherwise allowed. [06-096 CMR 115, BACT and 40 CFR §63.11220 (a-c)]
3. An initial performance tune-up must be conducted on Boiler 4 and on a biennial basis thereafter in accordance with 40 CFR 40 CFR §63.11223; including, but not limited to, burner inspection, inspection and adjustment of the flame pattern, inspection of the air-to-fuel ratio, optimization of CO, and measurement of CO before and after adjustments are made. [06-096 CMR 115, BACT and 40 CFR §63.11214(b)]

G. 40 CFR Part 60, Subpart Dc

ACEC shall comply with all of requirements of 40 CFR Part 60, Subpart Dc applicable to Boiler 4 including, but not limited to, the following: initial notification to the Department and EPA; submittal of the initial performance test consisting of fuel supplier certification of the sulfur content of the fuel fired in Boiler 4; recordkeeping, and submittal of semi-annual reports to EPA and the Department. [40 CFR Part 60, Subpart Dc]

H. 40 CFR Part 63 Subpart JJJJJJ

ACEC shall comply with all of the requirements of 40 CFR Part 63, Subpart JJJJJJ applicable to Boiler 4 including, but not limited to, the following: operational and work practice standards; submittal of an Initial Notification, a Notice of Intent, and a Notice of Compliance; performance tests and tune-ups; recordkeeping; and reporting. [40 CFR Part 63, Subpart JJJJJJ]

DONE AND DATED IN AUGUSTA, MAINE THIS 14th DAY OF June , 2012.

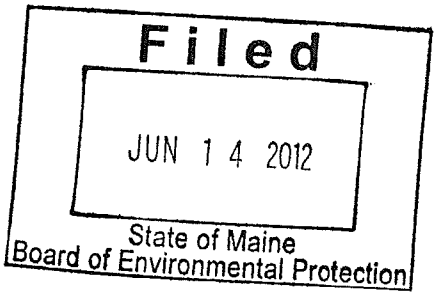
DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Melanie Loyzim for
PATRICIA W. AHO, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-23-71-M-R.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: February 2, 2012
Date of application acceptance: February 6, 2012

Date filed with the Board of Environmental Protection:

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