



DEPARTMENT ORDER

**Exeter Agri-Energy, LLC
Penobscot County
Exeter, Maine
A-1047-71-F-R/M**

**Departmental
Findings of Fact and Order
Air Emission License
Renewal and Minor Revision**

FINDINGS OF FACT

After review of the air emission license renewal and amendment application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes (M.R.S.), § 344 and § 590, the Maine Department of Environmental Protection (Department) finds the following facts:

I. REGISTRATION

A. Introduction

Exeter Agri-Energy, LLC (EAE) has applied to renew their Air Emission License for the operation of emission sources associated with their anaerobic digester and electric co-generation facility. The application is intended to renew the terms of the existing license and amendments and to amend specific information relating to the additional engines being installed under the terms of Amendments #3 (A-1047-71-D-A, issued October 23, 2013) and #4 (A-1047-71-E-M, issued April 15, 2015).

The equipment addressed in this license is located at Stonyvale Farm at 226 Fogler Road, Exeter, Maine.

B. Application Description

EAE was issued Air Emission License A-1047-71-A-N on March 11, 2011, permitting the operation of their anaerobic digester and electric cogeneration facility. The license was subsequently amended on October 5, 2011 (A-1047-71-B-M) to update the back-up boiler information. A second amendment was issued July 9, 2013, to increase the licensed sulfur dioxide (SO₂) emission limit based on the actual hydrogen sulfide (H₂S) levels monitored in the anaerobic digester (AD) outlet gas and to adjust the H₂S monitoring requirements. Amendment #3, A-1047-71-D-A, addressed a proposed phased facility expansion, including two new electricity-producing cogeneration units and two new anaerobic digesters with associated flares. Amendment #4, A-1047-71-E-M, extended the deadline to commence construction of the expansion beyond the original 18-month limit, to October 23, 2016.

An application was submitted on February 26, 2016, to renew the existing license and to include a minor revision to amend the specific information relating to the additional engines being installed under the terms of Amendments #3 and #4. The amendment application was revised in January 2017 and again in June 2017. Below is a listing of these revisions:

- EAE installed a new engine, model SFGLD 560, in Cogeneration Unit #2. This engine is a different model than what was originally proposed.
- In 2016, the engine in Cogeneration Unit #1 was upgraded from a Guascor Model SFGM 560 to a Model SFGLD 560 by installing an upgrade kit. The Model SFGLD is the same model as what is in Cogeneration Unit #2. The rated power of Cogeneration Unit #1 will remain at 1,475 brake horsepower (bhp). This upgrade was not considered a modification or reconstruction because the emissions of regulated pollutants were not increased, and the capital cost of the upgrade was minimal. EAE has changed the proposed engine model for Cogeneration Unit #3 from a Guascor HGM 560 to a Guascor SFGLD 560.
- The Calf Barn engine, a 0.65 MMBtu/hr emergency generator, was added to the license.
- The Booster Generator, a 0.65 MMBtu/hr emergency generator, was added to the license.

The engine for Cogeneration Unit #2 was installed during the 2016 construction season, and is a Guascor Model SFGLD 560 engine rated at 1,431 bhp, with a generator rated at 1,000 electrical kilowatts (kWe).

Cogeneration Unit #3, a Guascor Model SFGLD 560, rated at 1431 bhp, was installed during the 2017 construction season. The decrease in capacity and emissions from Cogeneration Units results in the facility being a “natural minor source,” and none of the engines will need to operate at a de-rated capacity to maintain natural minor status.

Also, the back-up boiler has been removed and is no longer included in this license.

C. Emission Equipment

The following equipment is addressed in this air emission license renewal and amendment:

Cogeneration Engines

<u>Equipment</u>	<u>Max. Capacity (MMBtu/hr)</u>	<u>Maximum Firing Rate</u>	<u>Fuel Type, % sulfur</u>	<u>Date of Manuf.</u>	<u>Date of Install.</u>	<u>Stack #</u>
Cogeneration Unit #1	9.93	16,550 scfh	Biogas, <1400 ppm S	2010	2011	#1
Cogeneration Unit #2	9.63	16,056 scfh	Biogas, <1400 ppm S	2015	2016	#2
Cogeneration Unit #3	9.63	16,056 scfh	Biogas, <1400 ppm S	2017	2017	#3

Flares

<u>Equipment</u>	<u>Max. Capacity (MMBtu/hr)</u>	<u>Maximum Firing Rate</u>	<u>Fuel Type, % sulfur</u>	<u>Date of Manuf.</u>	<u>Date of Install.</u>	<u>Stack #</u>
Flares #1	Approx. 5	~9000 scfh	Biogas, <1400 ppm S	2010	2011	N/A
Flares #2	Approx. 5	~9000 scfh	Biogas, <1400 ppm S	2010	2011	N/A
Flare #3	Approx. 5	~9,000 scfh	Biogas, <1400 ppm S	TBD	TBD	N/A
Flare #4	Approx. 5	~9,000 scfh	Biogas, <1400 ppm S	TBD	TBD	N/A

Generators

<u>Equipment</u>	<u>Max. Input Capacity (MMBtu/hr)</u>	<u>Serial Number</u>	<u>Rated Output Capacity</u>	<u>Fuel Type, % sulfur</u>	<u>Firing Rate</u>	<u>Date of Manuf.</u>	<u>Date of Install.</u>
Generator #1	1.3	PE6068T11972	125 kWe	Distillate, 0.0015%	9.3 gph	2000	2001
Calf Barn Generator	0.65	333541	39 kWe	Propane	260 scfh	1992	2015
Sawmill Diesel Drive Unit	1.5	T06068t776967	166 bhp	Distillate, 0.0015%	10.7 gph	2002	2003
Booster Generator	0.65	TBD	52kWe	Distillate, 0.0015%	4.6 gph	2017	2017

D. Definitions

Distillate Fuel. For the purposes of this license, *distillate fuel* means the following:

1. Fuel oil that complies with the specifications for fuel oil numbers 1 or 2, as defined by the American Society for Testing and Materials (ASTM) in ASTM D396;
2. Diesel fuel oil numbers 1 or 2, as defined in ASTM D975;
3. Kerosene, as defined in ASTM D3699;
4. Biodiesel, as defined in ASTM D6751; or
5. Biodiesel blends, as defined in ASTM D7467.

Type 1 Waste. Rubbish, mixture of combustible waste such as paper, cardboard cartons, wood scrap, foliage and combustible floor sweepings, from domestic, commercial and industrial activities. The mixture contains up to twenty (20)% by weight of restaurant or cafeteria waste, but contains little or no treated papers, plastic or rubber wastes. This type of waste contains about 25% moisture and 10% incombustible solids and has a heating value of approximately 6500 BTU per pound as fired.

Type 3 Waste Garbage, consisting of animal and vegetable wastes from restaurants, cafeterias, hotels, hospitals, markets and like installations. This type of waste contains up to seventy (70) % moisture, and up to five (5)% incombustible solids and has a heating value of approximately 2500 BTU per pound as fired;

E. Application Classification

The application for EAE 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 currently licensed emission units and has been processed through *Major and Minor Source Air Emission License Regulations*, 06-096 Code of Maine Rules (C.M.R.) Chapter 115.

With the cogeneration units each operating 8,760 hours/year, Generator #1 and the Calf Barn Generator limited to 100 hours of non-emergency operation per year and the Sawmill Diesel Drive Unit is limited to 200 hours of operation per year, EAE is licensed below the major source thresholds for criteria pollutants and is considered a natural minor. The facility is also licensed below the major source thresholds for hazardous air pollutants (HAP) and is considered an area source of HAP.

This amendment updates the information on all three cogeneration units. The cogeneration units are smaller than originally licensed, resulting in emissions less than originally estimated. Therefore, the amendment affecting Cogeneration Unit #2 and #3 will increase emissions by less than 4 ton/year for each single pollutant not including greenhouse gases (GHG) and less than 8 ton/year for all pollutants combined not including GHG. Therefore, this modification is determined to be a minor revision and has been processed as such.

The facility will remain a “natural minor source,” with none of the engines operating at a de-rated capacity to maintain “minor” status.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. Separate control requirement categories exist for new and existing equipment.

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. Process Description

EAE is a wholly-owned subsidiary of Stonyvale Farms, Inc. (Stonyvale). Stonyvale is a dairy farm with approximately 1,200 milking head equivalent. EAE operates two Anaerobic Digester (AD) vessels producing biogas fuel to power combined heat and electric Cogeneration units. EAE operates the ADs to digest cow manure, food wastes, and other Type 1 wastes, as well as Type 3 residuals such as glycerin from biodiesel production. EAE maintains a Solid Waste Facility License from the DEP Bureau of Remediation and Waste Management to accept off-site wastes. The system generates biogas, composed of approximately 60% methane (CH₄) and 40% carbon dioxide (CO₂), to produce electrical and thermal energy. Effluent material is run through a solid-separator whereby the solid fraction is used as livestock bedding and the liquid fraction is land-applied as a nutrient-rich organic fertilizer. EAE is expanding the current system to increase their capacity and to improve system reliability.

EAE is proposing to continue the phased facility expansion as detailed in Amendments #3 and #4. This construction process began with the addition of a food waste depackaging unit which commenced operations in August 2015. The next phase in the process was the addition of a Guascor Power Model SFGLD 560 engine designated as “Cogeneration Unit #2” or “Engine #2.” EAE installed this engine during the fall of 2016 and commenced operations upon completion of installation. Cogeneration Unit #3 or Engine #3 was installed in the summer through fall of 2017 along with the installation of an additional digester and flare capacity. The third anaerobic digester is larger than previously licensed in amendment A-1047-71-D-A (10/23/2013). Presently, it is not anticipated that a fourth digester will be needed.

One of the original digesters will be converted to operate as a “hydrolyzer.” A hydrolyzer is an aerobic conditioning and holding tank which will emit primarily CO₂. EAE obtained an amendment to their Solid Waste License to operate the hydrolyzer without add-on pollution controls due to the negligible amount of odor or regulated pollutants expected from the aerobic hydrolyzation tank. Therefore, the final configuration will be to have two waste receiving tanks, one hydrolyzer, and two anaerobic digester tanks.

Each digester is equipped with a flare unit to control digester emissions during periods when the generators are unavailable. The existing flares are designated as Flare #1 and Flare #2. These units were upgraded by installing an improved blower system to enhance combustion characteristics.

The new units, if needed in the future, will be designated as Flare #3 and Flare #4.

In addition to the cogeneration units at EAE, Stonyvale Farms owns and operates two small stationary diesel engines and a propane-fired generator on the adjacent property. One unit is a 125 kWe emergency generator, another is a 166 bhp direct drive unit used to power a small sawmill located on-site, and the third is a propane-fired generator at the Calf Barn rated at 39 kWe.

C. Cogeneration Units

EAE has two Cogeneration units installed with the third engine commencing operations in November of 2017. Below is the information on the Cogeneration units.

<u>Equipment</u>	<u>Model type</u>	<u>Max. Capacity (MMBtu/hr)</u>	<u>Maximum Firing Rate</u>	<u>HP</u>	<u>Date of Manuf.</u>	<u>Date of Install.</u>	<u>Stack #</u>
Cogeneration Unit #1	SFGLD 560	9.93	16,550 scfh	1475	2010	2011	#1
Cogeneration Unit #2	SFGLD 560	9.63	16,056 scfh	1431	2015	2016	#2
Cogeneration Unit #3	SFGLD 560	9.63	16,056 scfh	1431	2017	2017	#3

New Source Performance Standards

The three Cogeneration Units are subject to the Title 40 of the Code of Federal Regulations Part 60 (40 C.F.R. 60) Subpart JJJJ, *Stationary Performance for Stationary Spark Ignition Internal Combustion Engines*. Table 1 of Subpart JJJJ establishes emission limits based on engine type and fuel. For engines greater than 500 hp burning landfill or digester gas, emissions of oxides of nitrogen (NO_x), carbon monoxide (CO), and volatile organic compounds (VOCs) are limited as follows:

Pollutant	Subpart JJJJ Limit
NO _x :	2.0 g/hp-hr
CO:	5.0 g/hp-hr
VOC:	1.0 g/hp-hr

Spark Ignition engines such as the Cogeneration Units shall be certified by the manufacturer as meeting the emission standards for new nonroad spark ignition engines found in 40 C.F.R. Part 60, Subpart JJJJ, Table 1 or by initial and periodic performance tests if a manufacturer certification is unavailable per § 60.4243(b).

NESHAP Requirements

The cogeneration units are also subject to 40 C.F.R. Part 63, Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines*. The cogeneration units are considered new stationary reciprocating internal combustion engines at an area HAP source (construction commenced on or after June 12, 2006); however, since the unit is subject to 40 C.F.R. Part 60, Subpart JJJJ there are no further requirements under 40 C.F.R. Part 63, Subpart ZZZZ (§ 63.6590(c)(1)).

1. BACT Findings

BACT for Cogeneration Unit #1

PM/PM ₁₀	–	0.12 lb/MMBtu based on 06-096 C.M.R. ch. 115, BACT
SO ₂	–	3.81 lb/hr based on 1400 ppm S in biogas
NO _x	–	1.0 g/bHP-hr, manufacturer specification
CO	–	1.8 g/bHP-hr, manufacturer specification for Cogeneration Unit #1
VOC	–	0.7 g/bHP-hr, manufacturer specification
Visible Emissions	–	06-096 C.M.R. ch. 115

BACT for Cogeneration Unit #2 and #3

- PM/PM₁₀ – 0.12 lb/MMBtu based on 06-096 C.M.R. ch. 115, BACT
- SO₂ – 3.7 lb/hr based on 1400 ppm S in biogas for Engines #2 and #3
- NO_x – 1.0 g/bHP-hr, manufacturer specification for Engines #2 and #3
- CO – 1.8 g/bHP-hr, manufacturer specification for Cogeneration Unit #2 and #3
- VOC – 0.7 g/bHP-hr, manufacturer specification
- Visible Emissions – 06-096 C.M.R. ch. 115

The BACT emission limits for Cogeneration Units are the following:

<u>Unit</u>	<u>Pollutant</u>	<u>lb/MMBtu</u>
Cogeneration Unit #1	PM	0.12
Cogeneration Unit #2	PM	0.12
Cogeneration Unit #3	PM	0.12

<u>Unit</u>	<u>PM (lb/hr)</u>	<u>PM₁₀ (lb/hr)</u>	<u>SO₂ (lb/hr)</u>	<u>NO_x (lb/hr)</u>	<u>CO (lb/hr)</u>	<u>VOC (lb/hr)</u>
Cogeneration Unit #1	1.19	1.19	3.81	3.25	5.85	2.28
Cogeneration Unit #2	1.16	1.16	3.7	3.15	5.68	2.21
Cogeneration Unit #3	1.16	1.16	3.7	3.15	5.68	2.21

Visible emissions from Cogeneration Units #1, #2 and #3 shall each not exceed 20% opacity on a six-minute block average basis.

2. Periodic Monitoring

EAE shall keep records of the hours of operation of each cogeneration unit on a monthly basis and document compliance with 40 C.F.R. Part 60, Subpart JJJJ requirement to test every 8,760 hours of operation or every three years, whichever occurs first.

[A-1047-71-D-A (10/23/13)]

Hydrogen Sulfide (H₂S) Sampling

- a. EAE shall log H₂S sampling of the biogas from each anaerobic digester at least once per calendar month using the handheld monitor or equivalent. The handheld monitor or equivalent shall be operated, calibrated and maintained per manufacturer specifications.
- b. EAE shall take immediate action to reduce the H₂S level from the anaerobic digester for any monitoring test result above 1400 ppmv H₂S. A log shall be maintained describing the action taken. A follow-up sample shall be taken and

recorded as soon as practicable after action is completed and the system has stabilized. The log shall be made available upon request.

- c. EAE shall conduct testing on each anaerobic digester at least once per calendar year using ASTM Test Method D5504, or other methods as approved by the Department, to analyze for H₂S and total sulfur. The facility shall log the results of the tests.
- d. Concurrent with the annual test, measurements of H₂S shall be taken with the handheld monitor, or equivalent. If the results of the handheld (or equivalent) sampling does not correspond within reasonable accuracy to the annual test results, EAE shall re-assess/replace/recalibrate the handheld monitor, or equivalent, as appropriate to obtain valid sampling results.

[A-1047-71-D-A (10/23/13)]

Cogeneration Unit #1 shall utilize lean-burn combustion and optimized ignition timing to minimize emissions and shall keep records on site documenting the ideal settings for the unit.

[A-1047- 71-A-N (3/10/11), BACT]

Compliance with the emission requirements in 40 C.F.R. Part 60, Subpart JJJJ shall be demonstrated by conducting an initial performance test within 1 year of startup. Subsequent performance testing to demonstrate compliance shall be conducted every 8,760 hours of operation or every 3 years, whichever comes first.

[40 C.F.R. § 60.4243(b)(2)(ii) and A-1047-71-A-N (3/8/11)]

D. Digester Flares 1-4

The anaerobic digesters utilize a Flares #1 and #2 to control the digester gases when the cogeneration unit is not available. The blower and gas collection systems for Flare #1 and #2 were upgraded to increase the system capacity to equal the total capacity of the three engines combined (29.2 MMBtu/hr). However, the facility is keeping Flares #3 and #4 on the license in case it is determined that additional flare capacity is needed for system reliability or redundancy. The total flare capacity for all the flare units combined will not exceed the total Btu capacity of the engines. The flares are designed to combust all biogas from the digesters and associated structures during emergency or maintenance periods. By flaring the biogas, the resulting emissions are safer and more environmentally protective than if venting the biogas uncontrolled. Additional benefits include a reduction in odor, the destruction of VOCs, and the conversion of H₂S to SO₂ which would not occur in the event of direct venting.

The emission factors for industrial flares as listed in AP-42 Table 13.5-1 are lower than the emission factors for the cogeneration units in terms of pounds per million Btu; therefore, the flare will not result in an increase in emissions for any pollutant compared to operation of the cogeneration unit.

The flare will not produce an increase in emissions for any pollutant compared to the operation of the cogeneration unit. BACT is proposed to be the use of flares for control of

digester gases during downtime of the cogeneration unit. A flare will not be used to control emissions from the hydrolyzer unit because the hydrolyzer produces primarily CO₂ which would not sustain combustion.

The BACT emission limits for the flares were based on the following:

- PM/PM₁₀ – 0.12 lb/MMBtu based on 06-096 C.M.R. ch. 115, BACT
- SO₂ – conversion of 1400 ppm of H₂S and all of the sulfur from the three engines going to the flares ((3.81 lb/hr +3.7 lb/hr +3.7 lb/hr)/[number of flares]) = 11.21 lb/hr total / [number of flares] = lb/hr each
- NO_x – 0.07 lb/MMBtu: AP-42, Table 13.5-1 dated 9/91
- CO – 0.37 lb/MMBtu: AP-42, Table 13.5-1 dated 9/91
- VOC – 0.14 lb/MMBtu: AP-42, Table 13.5-1 dated 9/91
- Opacity – Visible emissions from each flare shall not exceed an opacity of 10% on a six-minute block average basis

Emissions from each flare shall not exceed the following:

Pollutant	lb/MMBtu	Origin and Authority
PM	0.12	06-096 C.M.R. ch. 115, BACT

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

PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
3.50	3.50	11.21	1.99	10.80	4.09

Visible emissions from each flare shall not exceed an opacity of 10% on a six-minute block average basis. [06-096 C.M.R. ch. 115, BACT]

Periodic Monitoring

EAE shall maintain a written or electronic log of when the flare or flares are in operation. Acceptable records may include, but are not limited to, relevant parameters such as flare temperature or flare gas fuel flow readings recorded by the computer control system.

[A-1047-71-D-A (10/23/2013), BACT]

E. Emergency Generators

Booster Generator

EAE is adding a third emergency generator, known as the Booster Generator to supply power to start the cogeneration unit engines if they need to be restarted during a period when line power is unavailable. The Booster Generator is a distillate fuel fired engine rated at 0.65 MMBtu/hr manufactured in 2017.

1. BACT Findings for the Booster Generator

a. Particulate Matter (PM & PM₁₀)

Particulate matter emissions from distillate fuel-fired engines are generally controlled through proper operation and maintenance. Additionally, this engine will be subject to 40 C.F.R. Part 60, Subpart IIII, which means it will be required to meet EPA emission standards for emergency stationary engines as discussed below. Given the small size of the unit (0.65 MMBtu/hr) and the operating hour restriction included in 40 C.F.R. Part 60, Subpart IIII, additional control for particulate matter is not economically feasible. BACT for PM/PM₁₀ emissions from Booster Generator shall be proper operation and maintenance of the unit, installation of an EPA certified emergency stationary engine as required in 40 C.F.R. § 60.4205(b), and an emission limit of 0.03 lb/hr.

b. Sulfur Dioxide (SO₂)

For an emergency engine that fires distillate fuel and operates for only short periods of time, the use of wet scrubbers or other additional SO₂ add-on control methods would not be economically feasible considering the minimal emissions due to the limited use of the engine. The most practical method for limiting SO₂ emissions of such an engine is the use of low sulfur fuel, such as distillate fuel with a sulfur content no greater than 0.0015% by weight. BACT for SO₂ emissions from Booster Generator shall be the use of distillate fuel with a sulfur content no greater than 0.0015% by weight, installation of an EPA certified emergency stationary engine as required in 40 C.F.R. § 60.4205(b), and an emission limit of 0.01 lb/hr.

c. Nitrogen Oxides (NO_x)

Potentially available control options for reducing emissions of NO_x from distillate fuel-fired generators include combustion controls, selective catalytic reduction (SCR), and non-selective catalytic reduction (NSCR). Combustion controls are typically implemented through design features such as electronic engine controls,

injection systems, combustion chamber geometry, and turbocharging systems. Most new engines are designed with these features as standard equipment.

SCR and NSCR are both post-combustion NO_x reduction technologies. SCR uses ammonia to react with NO_x in the gas stream in the presence of a catalyst to form nitrogen and water. NSCR uses a catalyst to convert CO, NO_x, and hydrocarbons into carbon dioxide, nitrogen, and water without the use of an additional reagent, and requires strict air-to-fuel control to maintain high reduction effectiveness without increasing hydrocarbon emissions. For a unit of this size (0.65 MMBtu/hr) and usage (emergency back-up engine), neither SCR nor NSCR would be economically feasible considering the small size of the unit and the minimal emissions due to the limited use of the engine.

BACT for NO_x emissions from Booster Generator shall be the use of good combustion controls, proper operation and maintenance of the unit, installation of an EPA certified emergency stationary engine as required in 40 C.F.R. § 60.4205(b), and an emission limit of 0.43 lb/hr.

d. Carbon Monoxide (CO) and Volatile Organic Compounds (VOC)

CO and VOC emissions are a result of incomplete combustion, caused by conditions such as insufficient residence time or limited oxygen availability. CO and VOC emissions from distillate fuel-fired generators are generally controlled through proper operation and maintenance. Oxidation catalysts have been used on large generators to reduce CO and VOC emission levels in the exhaust, but, like SCR and NSCR, use of an oxidation catalyst on such a small emergency engine with limited yearly use would not provide a significant environmental benefit and would not be economically feasible. BACT for CO and VOC emissions from Booster Generator shall be proper operation and maintenance of the unit, installation of an EPA certified emergency stationary engine as required in 40 C.F.R. § 60.4205(b), and emission limits of 0.0.1 lb/hr for CO and 0.01 lb/hr for VOC.

e. Greenhouse Gases (GHG)

Emissions of greenhouse gases from small emergency engines are minimized through proper operation and maintenance of the unit and maintaining the unit's efficiency. There are no specific GHG emission requirements for Booster Generator at this time.

f. Visible Emissions

BACT for visible emissions from Booster Generator shall be the following:

Visible emissions from Booster Generator shall not exceed 20% opacity on a six-minute block average basis, except for no more than one six-minute block average in a one-hour period to accommodate periods of startup and load changes. During such periods, the facility shall comply with the following work practice standards:

- (1) The unit operator shall maintain a log (written or electronic) of the date, time, and duration of all unit startups;
- (2) The unit shall be operated in accordance with the manufacturer's emission-related operating instructions;
- (3) The unit operator shall minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply; and
- (4) The unit, including any associated air pollution control equipment, shall be operated at all times in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Department that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the unit.

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

- PM/PM₁₀ - 0.30 g/kWh based on manufacturer specification
- SO₂ - combustion of distillate fuel with a maximum sulfur content not to exceed 15 ppm (0.0015% sulfur by weight)
- NO_x - 3.79 g/kWh based on manufacturer specification
- CO - 0.90 g/kWh based on manufacturer specification
- VOC - 0.11 g/kWh based on manufacturer specification.
- Visible Emissions - 06-096 C.M.R. ch. 115, BPT

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

Unit	PM (lb/hr)	PM₁₀ (lb/hr)	SO₂ (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Booster Generator (0.65 MMBtu/hr) Distillate fuel	0.03	0.03	0.01	0.43	0.10	0.01

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

2. New Source Performance Standards (NSPS)

Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 40 C.F.R. Part 60, Subpart IIII is applicable to the emergency engine listed above since the unit was ordered after July 11, 2005, and manufactured after April 1, 2006. [40 C.F.R. § 60.4200] By meeting the requirements of 40 C.F.R. Part 60, Subpart IIII, the unit also meets the requirements found in the National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, 40 C.F.R. Part 63, Subpart ZZZZ. [40 C.F.R. § 63.6590(c)]

A summary of the currently applicable federal 40 C.F.R. Part 60, Subpart IIII requirements is listed below.

a. Emergency Engine Designation and Operating Criteria

Under 40 C.F.R. Part 60, Subpart IIII, a stationary reciprocating internal combustion engine (ICE) is considered an emergency stationary ICE (emergency engine) as long as the engine is operated in accordance with the following criteria. Operation of an engine outside of the criteria specified below may cause the engine to no longer be considered an emergency engine under 40 C.F.R. Part 60, Subpart IIII, resulting in the engine being subject to requirements applicable to non-emergency engines.

(1) Emergency Situation Operation (On-Site)

There is no operating time limit on the use of an emergency engine to provide electrical power or mechanical work during an emergency situation. Examples of use of an emergency engine during emergency situations include the following:

- Use of an engine to produce power for critical networks or equipment (including power supplied to portions of a facility) because of failure or interruption of electric power from the local utility (or the normal power source, if the facility runs on its own power production);
- Use of an engine to mitigate an on-site disaster or equipment failure;
- Use of an engine to pump water in the case of fire, flood, natural disaster, or severe weather conditions; and
- Similar instances.

(2) Non-Emergency Situation Operation

An emergency engine may be operated up to a maximum of 100 hours per calendar year for maintenance checks, readiness testing, and other non-emergency situations as described below.

- (i) An emergency engine may be operated for a maximum of 100 hours per calendar year for maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government; the manufacturer; the vendor; the regional transmission organization or equivalent balancing authority and transmission operator; or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE more than 100 hours per calendar year.
- (ii) An emergency engine may be operated for up to 50 hours per calendar year for other non-emergency situations. However, these operating hours are counted as part of the 100 hours per calendar year operating limit described in paragraph (2) and (2) (i) above.

The 50 hours per calendar year operating limit for other non-emergency situations cannot be used for peak shaving, demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

[40 C.F.R. §§ 60.4211(f) and 60.4219]

b. 40 C.F.R. Part 60, Subpart III Requirements

(1) Manufacturer Certification Requirement

The engine shall be certified by the manufacturer as meeting the emission standards for new nonroad compression ignition engines found in 40 C.F.R. § 60.4202. [40 C.F.R. § 60.4205(b)]

(2) Ultra-Low Sulfur Fuel Requirement

The fuel fired in the engine shall not exceed 15 ppm sulfur (0.0015% sulfur), except that any existing fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted.

[40 C.F.R. § 60.4207(b)]

(3) Non-Resettable Hour Meter Requirement

A non-resettable hour meter shall be installed and operated on the engine.

[40 C.F.R. § 60.4209(a)]

- (4) **Operation and Maintenance Requirements**
The engine shall be operated and maintained according to the manufacturer's emission-related written instructions or procedures developed by EAE that are approved by the engine manufacturer. EAE may only change those emission-related settings that are permitted by the manufacturer. [40 C.F.R. § 60.4211(a)]

- (5) **Annual Time Limit for Maintenance and Testing**
As an emergency engine, the unit shall each be limited to 100 hours/year for maintenance checks and readiness testing. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity). [40 C.F.R. § 60.4211(f)]

- (6) **Initial Notification Requirement**
No initial notification is required under 40 C.F.R. Part 60, Subpart IIII for emergency engines. [40 C.F.R. § 60.4214(b)]

- (7) **Recordkeeping**
EAE shall keep records that include maintenance conducted on the engine and the hours of operation of the/each engine recorded through the non-resettable hour meter. Documentation shall include the number of hours the/each unit operated for emergency purposes, the number of hours the/each unit operated for non-emergency purposes, and the reason the/each engine was in operation during each time. [40 C.F.R. § 60.4214(b)]

The Booster Generator is classified as a new emergency generator at an area source for HAPs. However, because the unit is subject to NSPS Subpart IIII, no further requirements are applicable under NESHAP Subpart ZZZZ for this engine.

Generator #1 and the Calf Barn Generator

EAE operates two existing emergency generators, Generator #1 and the Calf Barn Generator. The emergency generators are generator sets with each gen set consisting of an engine and an electrical generator. Generator #1 has a distillate fuel fired engine rated at 1.3 MMBtu/hr and manufactured in 2001. The Calf Barn Generator has a propane fired engine rated at 0.65 MMBtu/hr manufactured in 1992.

1. BPT Findings

The BPT emission limits for Generator #1 are based on the following:

- PM/PM₁₀ - 0.12 lb/MMBtu from 06-096 C.M.R. ch. 115, BPT
- SO₂ - combustion of distillate fuel with a maximum sulfur content not to exceed 15 ppm (0.0015% sulfur by weight)
- NO_x - 6.9 g/bhp-hr; EPA Tier 1 for this engine size
- CO - 0.95 lb/MMBtu from AP-42, Table 3.3-1 dated 10/96
- VOC - 0.36 lb/MMBtu from AP-42, Table 3.3-1 dated 10/96
- Visible Emissions - 06-096 C.M.R. ch. 115, BPT

The BPT emission limits for the Calf Barn Generator are based on the following:

- PM/PM₁₀ - 0.05 lb/MMBtu from 06-096 C.M.R. ch. 115, BPT
- SO₂ - 0.0006 lb/MMBtu*
- NO_x - 4.41 lb/MMBtu from AP-42, Table 3.3-1 dated 10/96**
- CO - 0.95 lb/MMBtu from AP-42, Table 3.2-3 dated 10/96**
- VOC - 0.36 lb/MMBtu from AP-42, Table 3.2-3 dated 10/96**
- Visible Emissions - 06-096 C.M.R. ch. 115, BPT

* based on natural gas sulfur content

** small diesel engine emission factors (Table for 3.3-1) were used because there are no propane engine factors available

The BPT emission limits for the generators are the following:

Unit	Pollutant	lb/MMBtu
Generator #1	PM	0.12
Calf Barn Generator	PM	0.05

The BPT emission limits for the generators are the following:

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Generator #1 (1.3 MMBtu/hr) Distillate fuel	0.15	0.15	0.002	2.56	1.21	0.46
Calf Barn Generator (0.65 MMBtu/hr) propane	0.03	0.03	0.001	2.87	0.62	0.23

Visible emissions from Generator #1 shall not exceed 20% opacity on a six-minute block average basis.

Visible emissions from the Calf Barn Generator shall not exceed 10% opacity on a six-minute block average basis.

2. New Source Performance Standards (NSPS)

Due to the date of manufacture of Generator #1 listed above, the engine is not subject to the New Source Performance Standards (NSPS) 40 C.F.R. Part 60, Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE)*, since the unit was manufactured prior to April 1, 2006. [40 C.F.R. § 60.4200]

Due to the date of manufacture of the Calf Barn Engine listed above, the engine is not subject to the New Source Performance Standards (NSPS) 40 C.F.R. Part 60, Subpart JJJJ, *Standards of Performance for Spark Ignition Internal Combustion Engines (SI ICE)*, since the unit was manufactured prior January 1, 2009. [40 C.F.R. § 60.4230]

3. National Emission Standards for Hazardous Air Pollutants (NESHAP):
40 C.F.R. Part 63, Subpart ZZZZ

The federal regulation 40 C.F.R. Part 63, Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines*, is applicable to the emergency engines listed above. The units are considered existing, emergency stationary reciprocating internal combustion engines at an area HAP source and are not subject to New Source Performance Standards regulations. EPA's August 9, 2010 memo (*Guidance Regarding Definition of Residential, Commercial, and Institutional Emergency Stationary RICE in the NESHAP for Stationary RICE*) specifically does not exempt these units from the federal requirements. [40 C.F.R. § 63.6585]

a. Emergency Engine Designation and Operating Criteria

Under Subpart ZZZZ, a stationary reciprocating internal combustion engine (RICE) is considered an **emergency** stationary RICE (emergency engine) as long as the engine is operated in accordance with the following criteria. Operation of an engine outside of the criteria specified below may cause the engine to no longer be considered an emergency engine under Subpart ZZZZ, resulting in the engine being subject to requirements applicable to **non-emergency** engines.

(1) Emergency Situation Operation (On-Site)

There is no operating time limit on the use of an emergency engine to provide electrical power or mechanical work during an emergency situation. Examples of use of an emergency engine during emergency situations include the following:

- Use of an engine to produce power for critical networks or equipment (including power supplied to portions of a facility) because of failure or interruption of electric power from the local utility (or the normal power source, if the facility runs on its own power production);
- Use of an engine to mitigate an on-site disaster or equipment failure;

- Use of an engine to pump water in the case of fire, flood, natural disaster, or severe weather conditions; and
- Similar instances.

(2) Non-Emergency Situation Operation

An emergency engine may be operated up to a maximum of 100 hours per calendar year for Maintenance Checks, Readiness Testing, and other non-emergency situations as described below.

- (i) An emergency engine may be operated for a maximum of 100 hours per calendar year for maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government; the manufacturer; the vendor; the regional transmission organization or equivalent balancing authority and transmission operator; or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency RICE more than 100 hours per calendar year.
- (ii) An emergency engine may be operated for up to 50 hours per calendar year for other non-emergency situations. **However, these operating hours are counted as part of the 100 hours per calendar year operating limit described in paragraph (2) and (2) (i) above.**

The 50 hours per calendar year operating limit for other non-emergency situations cannot be used for peak shaving, non-emergency demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

Generator #1 and the Calf Barn Generator shall be limited to the usage outlined in 40 C.F.R. § 63.6640(f) and therefore may be classified as existing emergency stationary RICE as defined in 40 C.F.R. Part 63, Subpart ZZZZ. Failure to comply with all of the requirements listed in 40 C.F.R. § 63.6640(f) may cause these engines to not be considered emergency engines and therefore subject to all applicable requirements for non-emergency engines.

b. 40 C.F.R. Part 63, Subpart ZZZZ Requirements

(1) Operation and Maintenance Requirements
 (40 C.F.R. § 63.6603(a) and Table 2(d))

	<u>Operating Limitations</u>
Requirements for Emergency stationary CI RICE; <i>Generator #1</i>	<ul style="list-style-type: none"> - Change oil and filter every 500 hours of operation or annually, whichever comes first; - Inspect the air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; and - Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.
Requirements for Emergency stationary SI RICE: <i>Calf Barn Generator</i>	<ul style="list-style-type: none"> - Change oil and filter every 500 hours of operation or annually, whichever comes first; - Inspect the spark plugs every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; and - Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

The engines shall be operated and maintained according to the manufacturer's emission-related written instructions, or EAE shall develop a maintenance plan which provides to the extent practicable for the maintenance and operation of the engines in a manner consistent with good air pollution control practice for minimizing emissions. [40 C.F.R. § 63.6625(e)]

(2) Optional Oil Analysis Program

EAE has the option of utilizing an oil analysis program which complies with the requirements of § 63.6625(i) in order to extend the specified oil change requirement. If this option is used, EAE must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for each engine. The analysis program must be part of the maintenance plan for the engine. [40 C.F.R. § 63.6625(i)]

(3) Non-Resettable Hour Meter Requirement

A non-resettable hour meter shall be installed and operated on each engine. [40 C.F.R. § 63.6625(f)]

(4) Startup Idle and Startup Time Minimization Requirements

During periods of startup the facility must minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for appropriate

and safe loading of the engine, not to exceed 30 minutes, [40 C.F.R. § 63.6625(h) and 40 C.F.R. Part 63, Subpart ZZZZ Table 2d]

(5) Annual Time Limit for Maintenance and Testing

As emergency engines, the units shall each be limited to 100 hours/year for maintenance checks and readiness testing. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, non-emergency demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. [40 C.F.R. § 63.6640(f)]

(6) Recordkeeping

EAE shall keep records that include maintenance conducted on the engines and the hours of operation of each engine recorded through the non-resettable hour meter. Documentation shall include the number of hours the unit operated for emergency purposes, including what classified the operation as emergency, and the number of hours the unit operated for non-emergency purposes. [40 C.F.R. § 63.6655(f)]

F. Sawmill Diesel Drive Unit

EAE operates a small (<300 hp) non-emergency internal combustion engine. The Sawmill Diesel Drive Unit is a distillate fuel-fired engine with a direct drive linkage to power the cutting blade of a small sawmill. The engine is rated at 1.5 MMBtu/hr and fires distillate fuel. The Sawmill Diesel Drive Unit was manufactured in 2002.

1. BACT Findings

The BACT emission limits for the Sawmill Diesel Drive Unit are based on the following:

BACT includes a limit of 200 hours/year of operation and use of ultra-low sulfur fuel (15 ppm, 0.0015%).

PM/PM ₁₀	- 0.12 lb/MMBtu from 06-096 C.M.R. ch. 115, BACT
SO ₂	- combustion of distillate fuel with a maximum sulfur content not to exceed 15 ppm (0.0015% sulfur by weight)
NO _x	- 6.9 g/bhp-hr (Tier 1)
CO	- 0.95 lb/MMBtu from AP-42 dated 10/96
VOC	- 0.36 lb/MMBtu from AP-42 dated 10/96
Opacity	- 06-096 C.M.R. ch. 115, BACT

The BACT emission limits for the Sawmill Diesel Drive Unit are the following:

<u>Unit</u>	<u>Pollutant</u>	<u>lb/MMBtu</u>
Sawmill Diesel Drive Unit	PM	0.12

The BACT emission limits for the Sawmill Diesel Drive Unit are the following:

<u>Unit</u>	<u>PM (lb/hr)</u>	<u>PM₁₀ (lb/hr)</u>	<u>SO₂ (lb/hr)</u>	<u>NO_x (lb/hr)</u>	<u>CO (lb/hr)</u>	<u>VOC (lb/hr)</u>
Sawmill Diesel Drive Unit, (1.5 MMBtu/hr) distillate fuel	0.18	0.18	0.01	2.53	1.39	0.53

Visible emissions from the Sawmill Diesel Drive Unit shall not exceed 20% opacity on a six-minute block average basis.

2. National Emission Standards for Hazardous Air Pollutants (NESHAP):
 40 C.F.R. Part 63, Subpart ZZZZ

The federal regulation 40 C.F.R. Part 63, Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines*, is applicable to the engine listed above. The unit is considered an existing, non-emergency stationary reciprocating internal combustion engine at an area HAP source.

- a. 40 C.F.R. Part 63, Subpart ZZZZ Requirements

(1) Operation and Maintenance Requirements

	<u>Operating Limitations</u>
Compression ignition (distillate fuel) units: <i>Sawmill Diesel Drive Unit</i>	<ul style="list-style-type: none"> - Change oil and filter every 1,000 hours of operation or annually, whichever comes first; - Inspect the air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; and - Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

The engine shall be operated and maintained according to the manufacturer's emission-related written instructions, or EAE shall develop a maintenance plan which provides to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. [40 C.F.R. § 63.6625(e)]

(2) Optional Oil Analysis Program

EAE has the option of utilizing an oil analysis program which complies with the requirements of § 63.6625(i) in order to extend the specified oil change requirement. If this option is used, EAE must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine. [40 C.F.R. § 63.6625(i)]

(3) Startup Idle and Startup Time Minimization Requirements

During periods of startup the facility must minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes. [40 C.F.R. § 63.6625(h) and 40 C.F.R. Part 63, Subpart ZZZZ Table]

(4) Recordkeeping

EAE shall keep records of the maintenance conducted on the engine to demonstrate that EAE operated and maintained the engine according to the manufacturer's emission-related written instructions, or the maintenance plan. [40 C.F.R. § 63.6655(e)]

G. Fugitive Emissions

Visible emissions from a fugitive emission source (including stockpiles and roadways) shall not exceed 20% opacity. Compliance shall be determined by an aggregate of the individual 15-second opacity observations which exceed 20% opacity in any one hour.

H. General Process Emissions

Visible emissions from any general process source shall not exceed 20% opacity on a six-minute block average basis.

I. Annual Emissions

1. Total Annual Emissions

The tons per year limits were calculated based on 8,760 hours/year of operation for each of the Cogeneration Units #1, #2 and #3; the emergency generators each operating 100 hours/year; and the Sawmill Diesel Drive Unit operating at 200 hours/year.

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

	PM	PM₁₀	SO₂	NO_x	CO	VOC
Cogeneration Unit #1	5.2	5.2	16.7	14.2	25.6	10.0
Cogeneration Unit #2	5.1	5.1	16.2	13.8	24.9	9.7
Cogeneration Unit #3	5.1	5.1	16.2	13.8	24.9	9.7
Generator #1	0.01	0.01	0.01	0.13	0.06	0.02
Sawmill Diesel Drive Unit	0.02	0.02	0.01	0.25	0.14	0.05
Calf Barn Generator	0.01	0.01	0.01	0.14	0.03	0.01
Booster Generator	0.01	0.01	0.01	0.03	0.01	0.01
Total TPY	15.5	15.5	49.2	42.4	75.7	29.5

2. HAP Annual Emissions

HAP annual emissions from the cogeneration units were calculated based on AP-42 Table 3.2-2 Emission Factors for Natural Gas Combustion from 4-stroke Lean –burn Engines dated 7/2000 (natural gas was used in lieu of information on biogas). HAP annual emissions from the internal combustion engine units were calculated based on AP-42, Table 3.3-2 dated 10/1996 Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines. The highest single HAP emission was formaldehyde at 6.9 tons /year, and total HAP emissions were 9.4 tons/year. These emissions are below the major HAP thresholds of 10 ton/year for a single HAP and 25 tons/year total HAP.

3. 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 C.F.R. Part 52, Subpart A, §52.21, *Prevention of Significant Deterioration of Air Quality* rule. Greenhouse gases, as defined in 06-096 C.M.R. ch. 100, are the aggregate group of the following gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. For licensing purposes, greenhouse gases (GHG) are calculated and reported as carbon dioxide equivalents (CO₂e).

The quantity of CO₂e emissions from this facility is less than 100,000 tons per year, based on the following:

- the generator operating limits;
- worst case emission factors from the following sources: U.S. EPA's AP-42, the Intergovernmental Panel on Climate Change (IPCC), and 40 C.F.R. Part 98, *Mandatory Greenhouse Gas Reporting*; and
- global warming potentials contained in 40 C.F.R. Part 98.

No additional licensing actions to address GHG emissions are required at this time.

III. AMBIENT AIR QUALITY ANALYSIS

The level of ambient air quality impact modeling required for a minor source is determined by the Department on a case-by case basis. In accordance with 06-096 C.M.R. ch. 115, an ambient air quality impact analysis is not required for a minor source if the total licensed annual emissions of any pollutant released do not exceed the following levels and there are no extenuating circumstances:

Pollutant	Tons/Year
PM ₁₀	25
SO ₂	50
NO _x	50
CO	250

The total licensed annual emissions for the facility are below the emission levels contained in the table above and there are no extenuating circumstances; therefore, an ambient air quality impact analysis is not required as part of this license.

ORDER

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

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

The Department hereby grants Air Emission License A-1047-71-F-R/M subject to the following conditions.

Severability. The invalidity or unenforceability of any provision of this License or part thereof shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

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 C.M.R. ch. 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 C.M.R. ch. 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 C.M.R. ch. 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-A. [06-096 C.M.R. ch. 115]
- (6) The license does not convey any property rights of any sort, or any exclusive privilege. [06-096 C.M.R. ch. 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 C.M.R. ch. 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 C.M.R. ch. 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 C.M.R. ch. 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 C.M.R. ch. 115]
- (11) In accordance with the Department's air emission compliance test protocol and 40 C.F.R. 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 C.F.R. 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 C.M.R. ch. 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 C.F.R. 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 C.M.R. ch. 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 C.M.R. ch. 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 emissions 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 C.M.R. ch. 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 C.M.R. ch. 115]

SPECIFIC CONDITIONS

(16) Cogeneration Units #1, #2, and #3

A. The cogeneration units shall fire biogas. [06-096 C.M.R. ch. 115, BACT]

1. Emissions from each Cogeneration Unit #1, #2, and #3 shall not exceed the following:

Pollutant	lb/MMBtu	Origin and Authority
PM	0.12	06-096 C.M.R. ch. 115, BACT

2. Emissions from each cogeneration unit shall not exceed the following [06-096 C.M.R. ch. 115, BACT]:

Unit	PM (lb/hr)	PM₁₀ (lb/hr)	SO₂ (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Cogeneration Unit #1	1.19	1.19	3.81	3.25	5.85	2.28
Cogeneration Unit #2	1.16	1.16	3.7	3.15	5.68	2.21
Cogeneration Unit #3	1.16	1.16	3.7	3.15	5.68	2.21

3. Visible emissions from each Cogeneration Unit #1, #2, and #3 shall not exceed 20% opacity on a six (6) minute block average basis. [06-096 C.M.R. ch. 115, BACT]
 4. The stack for each Cogeneration Unit #1, #2, and #3 shall be a minimum of 20 feet in height. [06-096 C.M.R. ch. 115, BPT]
- B. Cogeneration Unit #1 shall utilize lean-burn combustion and optimized ignition timing to minimize emissions and shall keep records on site documenting the ideal settings for the unit.
[A-1047-71-A-N (3/10/11), BACT]
- C. EAE shall keep records of the hours of operation of each of the Cogeneration Units #1, #2, and #3 on a monthly basis and document compliance with the 40 C.F.R. Part 60, Subpart JJJJ requirement to test every 8,760 hours of operation or every three years, whichever occurs first.
[06-096 C.M.R. ch. 115, BPT]

D. Sampling, H₂S Action Threshold, and Testing

1. EAE shall log H₂S sampling of the biogas from each anaerobic digester at least once per calendar month using the handheld monitor or equivalent. The handheld monitor or equivalent shall be operated, calibrated and maintained per manufacturer specifications.
2. EAE shall take immediate action to reduce the H₂S level from the anaerobic digester for any monitoring test result above 1400 ppmv H₂S. A log shall be maintained describing the action taken. A follow-up sample result shall be taken and recorded as soon as practicable after action is completed and the system has stabilized. The log shall be made available upon request by the Department.
3. EAE shall conduct testing on each anaerobic digester at least once per calendar year using ASTM Test Method D5504, or other methods as approved by the Department, to analyze for H₂S and total sulfur. The facility shall log the results of the tests.
4. Concurrent with the annual test, measurements of H₂S shall be taken with the handheld monitor, or equivalent. If the results of the handheld (or equivalent) sampling does not correspond within reasonable accuracy to the annual test results, EAE shall re-assess/replace/recalibrate the handheld monitor, or equivalent, as appropriate to obtain valid sampling results.
[A-1047-71-D-A (10/23/13)]

E. NSPS, 40 C.F.R. Part 60, Subpart JJJJ

EAE shall meet all applicable requirements of 40 C.F.R. Part 60, Subpart JJJJ for each of the Cogeneration Units #1, #2, and #3, including, but not limited to, notifications, recordkeeping, and compliance documentation, including the following:

1. The cogeneration units shall each be equipped with a non-resettable hour meter.
[40 C.F.R. § 60.4237 and 06-096 C.M.R. ch. 115, BACT]
2. Emission Requirements
 - a. The cogeneration units are subject to emission requirements set forth in 40 C.F.R. 60, Subpart JJJJ for NO_x, CO, and VOC.

Subpart JJJJ, Table 1 Standards for Digester Gas

Units of Standard (may choose to comply with either standard)	NO_x	CO	VOC
g/HP-hr	2.0	5.0	1.0
ppmvd at 15% O ₂	150	610	80

Compliance with the emission requirements in 40 C.F.R. Part 60, Subpart JJJJ shall be demonstrated by conducting an initial performance test within 1 year of startup and to demonstrate compliance, subsequent performance testing shall

be conducted every 8,760 hours of operation or every 3 years, whichever comes first. [40 C.F.R. 60.4243(b)(2)(ii)]

- b. The emission testing or emission certification results shall also document compliance with the lb/hr license limits for NO_x, CO, and VOC (the limits are based on lower g/hp-hr limits than the 40 C.F.R. Part 60 Subpart JJJJ emission limits). [06-096 C.M.R. ch. 115, BACT]
3. EAE must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practices for minimizing emissions. [40 C.F.R. § 60.4243]

(17) **Flares 1-4**

- A. The flares (total 29.2 MMBtu/hr heat input) shall fire biogas and shall be operated when the associated cogeneration unit is off-line. [A-1047-71-D-A (10/23/13), BPT]
- B. Emissions from each flare shall not exceed the following:

Pollutant	lb/MMBtu	Origin and Authority
PM	0.12	06-096 C.M.R. ch. 115, BACT

- C. Emissions from all flares combined shall not exceed the following:
[A-1047-71-D-A (10/23/13), BPT]

PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
3.50	3.50	11.21	2.04	10.8	4.09

- D. Visible emissions from each flare shall not exceed an opacity of 10% on a six-minute block average basis. [06-096 C.M.R. ch. 115, BACT]
- E. Records shall be maintained indicating the date, time, and duration of each flare's operations. Such records may be in the form of a written or electronic log. Acceptable records include, but are not limited to, relevant parameters such as flare temperature or flare gas fuel flow readings recorded by the computer control system.
[A-1047-71-D-A (10/23/13), BPT]

(18) **Generator #1, Calf Barn Generator, and Booster Generator**

- A. Generator #1, the Calf Barn Generator, and the Booster Generator shall each be limited to 100 hours of operation per calendar year, excluding operating hours during emergency situations. [06-096 C.M.R. ch. 115, BPT]
- B. The fuel sulfur content for Generator #1 and the Booster Generator shall be limited to 0.0015% sulfur by weight. Compliance shall be demonstrated by fuel records from the supplier documenting the type of fuel delivered and the sulfur content of the fuel. [06-096 C.M.R. ch. 115, BPT]
- C. Emissions shall not exceed the following:

Unit	Pollutant	lb/MMBtu	Origin and Authority
Generator #1	PM	0.12	06-096 C.M.R.115, BPT
Booster Generator	PM	0.12	06-096 C.M.R. 115, BPT

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

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Generator #1 (1.3 MMBtu/hr) Distillate fuel	0.15	0.15	0.002	2.56	1.21	0.46
Calf Barn Generator (0.65 MMBtu/hr) Propane	0.03	0.03	0.001	2.87	0.62	0.23
Booster Generator (0.65 MMBtu/hr) Distillate fuel	0.03	0.03	0.001	0.43	0.10	0.01

E. Visible Emissions

- Visible emissions from Generator #1 shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BPT]
- Visible emissions from the Calf Barn Generator shall not exceed 10% opacity on a six-minute block average basis.
- Visible emissions from the Booster Generator shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BPT]

F. Generator #1 and the Calf Barn Generator shall meet the applicable requirements of 40 C.F.R. Part 63, Subpart ZZZZ, including the following:

1. EAE shall meet the following operational limitations for the Generator #1:
 - a. Change oil and filter every 500 hours of operation or annually, whichever comes first;
 - b. Inspect the air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; and
 - c. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

2. EAE shall meet the following operational limitations for the Calf Barn Generator:
 - a. Change oil and filter every 500 hours of operation or annually, whichever comes first;
 - b. Inspect the spark plugs every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; and
 - c. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

Records shall be maintained documenting compliance with the operational limitations.

[40 C.F.R. § 63.6603(a) and Table 2(d) and 06-096 C.M.R. ch. 115, BPT]

3. **Oil Analysis Program Option**
EAE has the option of utilizing an oil analysis program which complies with the requirements of § 63.6625(i) in order to extend the specified oil change requirement. If this option is used, EAE must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for each engine. The analysis program must be part of the maintenance plan for each engine. [40 C.F.R. § 63.6625(i)]

4. **Non-Resettable Hour Meter**
A non-resettable hour meter shall be installed and operated on each engine.
[40 C.F.R. § 63.6625(f)]

5. **Maintenance, Testing, and Non-Emergency Operating Situations**
 - a. As emergency engines, the units shall each be limited to 100 hours/year for maintenance checks and readiness testing. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, non-emergency demand response, or to generate income for a facility by providing power to an electric grid or otherwise to supply power as part of a financial arrangement with another entity. These limits are based on a calendar year. Compliance shall be demonstrated by records (electronic or written logs) of all engine operating hours.
[40 C.F.R. § 63.6640(f) and 06-096 C.M.R. ch. 115]

- b. EAE shall keep records that include maintenance conducted on the engines and the hours of operation of each engine recorded through the non-resettable hour meter. Documentation shall include the number of hours each unit operated for emergency purposes, including what classified the operation as emergency, and the number of hours each unit operated for non-emergency purposes. [40 C.F.R. § 63.6655 (f)]
6. Operation and Maintenance
The engines shall be operated and maintained according to the manufacturer's emission-related written instructions, or EAE shall develop a maintenance plan which provides to the extent practicable for the maintenance and operation of each engine in a manner consistent with good air pollution control practice for minimizing emissions. [40 C.F.R. § 63.6625(e)]
7. Startup Idle and Startup Time Minimization
During periods of startup, the facility must minimize each engine's time spent at idle and minimize each engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply.
[40 C.F.R. § 63.6625(h) & 40 C.F.R. Part 63, Subpart ZZZZ Table 2d]
- G. The Booster Generator shall meet the applicable requirements of 40 C.F.R. Part 60, Subpart IIII, including the following:
[incorporated under 06-096 C.M.R. ch. 115, BPT/BACT]
 1. Manufacturer Certification
The engine shall be certified by the manufacturer as meeting the emission standards for new nonroad compression ignition engines found in §60.4202. [40 C.F.R. § 60.4205(b)]
 2. Ultra-Low Sulfur Fuel
The fuel fired in the engine shall not exceed 15 ppm sulfur (0.0015% sulfur), except that any existing fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted. 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 C.F.R. § 60.4207(b) and 06-096 C.M.R. ch. 115]
 3. Non-Resettable Hour Meter
A non-resettable hour meter shall be installed and operated on the engine.
[40 C.F.R. § 60.4209(a)]

4. Annual Time Limit for Maintenance and Testing
 - a. As an emergency engine, the unit shall be limited to 100 hours/year for maintenance checks and readiness testing. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity). These limits are based on a calendar year. Compliance shall be demonstrated by records (electronic or written log) of all engine operating hours.
[40 C.F.R. § 60.4211(f) and 06 096 C.M.R. ch. 115]
 - b. EAE shall keep records that include maintenance conducted on the/each engine and the hours of operation of the engine recorded through the non-resettable hour meter. Documentation shall include the number of hours the unit operated for emergency purposes, the number of hours the unit operated for non-emergency purposes, and the reason the/each engine was in operation during each time. [40 C.F.R. § 60.4214(b)]
5. Operation and Maintenance
The engine shall be operated and maintained according to the manufacturer's emission-related written instructions or procedures developed by EAE that are approved by the engine manufacturer. EAE may only change those emission related settings that are permitted by the manufacturer. [40 C.F.R. § 60.4211(a)]

(19) **Sawmill Diesel Drive Unit (1.5 MMBtu/hr)**

- A. The Sawmill Diesel Drive Unit, a non-emergency engine, shall be limited to 200 hours of operation per calendar year. [06-096 C.M.R. ch. 115, BPT]
- B. EAE shall keep records that include maintenance conducted on the engine and the hours of operation of the engine recorded through the non-resettable hour meter.
[06-096 C.M.R. ch. 115, BPT]
- C. The fuel sulfur content for Sawmill Diesel Drive Unit shall be limited to 0.0015% sulfur by weight. Compliance shall be demonstrated by fuel records from the supplier documenting the type of fuel delivered and the sulfur content of the fuel.
[06-096 C.M.R. ch. 115, BPT]
- D. Emissions shall not exceed the following:

Unit	Pollutant	lb/MMBtu	Origin and Authority
Sawmill Diesel Drive Unit	PM	0.12	06-096 C.M.R. ch. 115, BPT

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

Unit	PM (lb/hr)	PM₁₀ (lb/hr)	SO₂ (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Sawmill Diesel Drive Unit, (1.5 MMBtu/hr), distillate fuel	0.18	0.18	0.01	2.53	1.39	0.53

F. Visible Emissions

Visible emissions from the Sawmill Diesel Drive Unit shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BPT]

G. 40 C.F.R. Part 63, Subpart ZZZZ

Sawmill Diesel Drive Unit shall meet the applicable requirements of 40 C.F.R. Part 63, Subpart ZZZZ, including the following:

1. EAE shall meet the following operational limitations for the compression ignition emergency engine:
 - a. Change oil and filter every 1,000 hours of operation or annually, whichever comes first;
 - b. Inspect spark plugs every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; and
 - c. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.
2. Records shall be maintained documenting compliance with the operational limitations.
[40 C.F.R. § 63.6603(a) and Table 2(d) and 06-096 C.M.R. ch. 115, BPT]
3. Oil Analysis Program Option
EAE has the option of utilizing an oil analysis program which complies with the requirements of § 63.6625(i) in order to extend the specified oil change requirement. If this option is used, EAE must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for each engine. The analysis program must be part of the maintenance plan for each engine.
[40 C.F.R. § 63.6625(i)]
4. Non-Resettable Hour Meter
A non-resettable hour meter shall be installed and operated on the engine.
[06-096 C.M.R. ch. 115, BPT]

5. Operation and Maintenance

The engine shall be operated and maintained according to the manufacturer's emission-related written instructions, or EAE shall develop a maintenance plan which provides to the extent practicable for the maintenance and operation of each engine in a manner consistent with good air pollution control practice for minimizing emissions. [40 C.F.R. § 63.6625(e)]

6. Startup Idle and Startup Time Minimization

During periods of startup, the facility must minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes.

[40 C.F.R. § 63.6625(h) & 40 C.F.R. Part 63, Subpart ZZZZ Table 2d]

(20) **Fugitive Emissions**

Visible emissions from a fugitive emission source (including stockpiles and roadways) shall not exceed 20% opacity. Compliance shall be determined by an aggregate of the individual 15-second opacity observations which exceed 20% in any one hour.

[06-096 C.M.R. ch. 101]

(21) **General Process Sources**

Visible emissions from any general process source shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 101]

(22) **Annual Emission Statement**

In accordance with *Emission Statements*, 06-096 C.M.R. ch. 137, the licensee shall annually report to the Department, in a format prescribed by the Department, the information necessary to accurately update the State's emission inventory. The emission statement shall be submitted as specified by the date in 06-096 C.M.R. ch. 137.

- (23) EAE 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./ § 605).

DONE AND DATED IN AUGUSTA, MAINE THIS 20 DAY OF February, 2018.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: *Paul Mercer*
PAUL MERCER, COMMISSIONER

The term of this license shall be ten (10) years from the signature date above.

[Note: If a renewal application, determined as complete by the Department, is submitted prior to expiration of this license, then pursuant to Title 5 M.R.S.A. §10002, all terms and conditions of the license shall remain in effect until the Department takes final action on the license renewal application.]

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: February 26, 2016
Date of application acceptance: March 1, 2016

Date filed with the Board of Environmental Protection:

This Order prepared by Lisa P. Higgins, Bureau of Air Quality.

