



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION



PAUL R. LEPAGE
GOVERNOR

PATRICIA W. AHO
COMMISSIONER

**Backyard Farms, LLC
Somerset County
Madison, Maine
A-937-71-L-M (SM)**

**Departmental
Findings of Fact and Order
Air Emission License
Amendment #2**

FINDINGS OF FACT

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

1. Backyard Farms, LLC (BYF) was issued Air Emission License A-937-71-J-R on July 2, 2012, permitting the operation of emission sources associated with their greenhouse facility. The license was subsequently amended on August 16, 2012 (A-937-71-K-A).
2. BYF has requested a minor revision to their license in order to increase the design capacity of the generator for the new research and development building. Air emission license A-937-71-K-A licensed a 0.98 MMBtu/hr unit; the installed unit is a propane-fired, 1.87 MMBtu/hr unit.
3. The equipment addressed in this license is located at 131 River Road, Madison, ME.

B. Emission Equipment

The following equipment is addressed in this air emission license:

Generator

<u>Equipment</u>	<u>Maximum Capacity</u> MMBtu/hr	<u>Firing Rate</u> (gal/hr)	<u>Fuel Type</u>	<u>Install. Date</u>	<u>Stack #</u>
Generator #3	1.87	20.4	Propane	2012	3

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17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
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106 HOGAN ROAD, SUITE 6
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PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769
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C. Application Classification

This amendment, updating the size of the currently licensed generator, will increase emissions by less than 4 ton per year for each single criteria pollutant and less than 8 ton per year for all criteria pollutants combined. Emissions of greenhouse gases, expressed in terms of CO₂e, are excluded from the minor revision threshold test. Therefore, this modification is determined to be a minor revision and has been processed as such through 06-096 CMR 115.

<u>Pollutant</u>	<u>Current License (TPY)</u>	<u>Future License (TPY)</u>	<u>Net Change (TPY)</u>
PM	22.3	22.3	0.0
PM ₁₀	22.3	22.3	0.0
SO ₂	0.6	0.6	0.0
NO _x	88.0	87.0	- 1.0
CO	23.4	23.3	- 0.1
VOC	1.7	1.7	0.0
CO ₂ e	12,485	12,518	33.0

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.

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. Non-Emergency Generator

BYF has installed Generator #3, a 130 kW, Caterpillar Olympian Model G130LG unit, EPA Certification #CGNXB06.82C4-027, with a maximum heat input of 1.87 MMBtu/hr, firing 20.4 gallons of propane. This unit was licensed to be installed as either a diesel or propane generator with an input capacity of 0.98 MMBtu/hr through amendment A-937-71-K-A. The unit's actual specifications were revised and are now documented in this amendment.

BACT Findings

The BACT emission limits for Generator #3 are based on the following:

PM/PM ₁₀	- 0.00991 lb/MMBtu, based on AP-42, Table 3.2-2 (07/00)
SO ₂	- 0.001 lb/MMBtu, based on AP-42, Table 3.2-2 (07/00)
NO _x	- 0.052 lb/MMBtu, based on Manufacturer's Guaranteed Not-to-Exceed Emission Factor
CO	- 0.261 lb/MMBtu, based on Manufacturer's Guaranteed Not-to-Exceed Emission Factor
VOC	- 0.220 lb/MMBtu, based on BACT (A-937-71-K-A)
Opacity	- Visible emissions from Generator #3 shall not exceed 10% opacity on a six (6) minute block average, except for no more than two (2) six (6) minute block averages in a three (3) hour period.

BACT emission limits for Generator #3 are the following:

<u>Emission Unit</u>	<u>PM</u> (lb/hr)	<u>PM₁₀</u> (lb/hr)	<u>SO₂</u> (lb/hr)	<u>NO_x</u> (lb/hr)	<u>CO</u> (lb/hr)	<u>VOC</u> (lb/hr)
Generator #3	0.02	0.02	0.01	0.10	0.49	0.41

Generator #3 shall be limited to 500 hours of operation a year, based on a 12-month rolling total. BYF shall keep records of the hours of operation for the unit.

40 CFR Part 60, Subpart JJJJ

40 CFR Part 60, Subpart JJJJ, *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (SI ICE)* is applicable to the generator listed above since the unit was manufactured after January 1, 2009. By meeting the requirements of Subpart JJJJ, the unit is not subject to the requirements found in the National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, 40 CFR Part 63, Subpart ZZZZ.

Generator #3 is therefore subject to the Subpart JJJJ requirements applicable to non-emergency engines.

40 CFR 60, Subpart JJJJ Requirements:

Owners and operators of 2007 model year and later non-emergency stationary SI ICE must comply with the emission standards for new SI engines in §60.4230 for their 2007 model year and later stationary SI ICE, as applicable. [40 CFR §60.4233(b)] A previously submitted BACT analysis (A-937-71-K-A) specified a VOC emission limit of 0.22 lb/MMBtu, which is more stringent than the Subpart JJJJ emission limit, and therefore shall be used.

The generator shall be operated and maintained according to the manufacturer's emission-related written instructions or procedures developed by Backyard Farms that are approved by the engine manufacturer. BYF may only change those emission-related settings that are permitted by the manufacturer. [40 CFR §60.4243(A)]

C. Annual Emissions

1. Total Annual Emissions

BYF shall be restricted to the following annual emissions, based on a 12-month rolling total, emission limits on the boilers and vaporizers, and a 500 hours per year operating limit on each of Generators #1, #2 and #3.

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

<u>Emission Unit</u>	<u>PM</u>	<u>PM₁₀</u>	<u>SO₂</u>	<u>NO_x</u>	<u>CO</u>	<u>VOC</u>
Boilers #P1, #P2, #P3 and Vaporizers #1 and #2	22.0	22.0	0.4	82.5	22.7	1.5
Generator #1 & #2	0.2	0.2	0.1	4.4	0.5	0.1
Generator #3	0.1	0.1	0.1	0.1	0.1	0.1
Total TPY	22.3	22.3	0.6	87.0	23.3	1.7

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), 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).

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, BYF is below the major source threshold of 100,000 tons of CO₂e per year. Therefore, no additional licensing requirements are needed to address GHG emissions at this time.

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-937-71-L-M subject to the conditions found in Air Emission License A-937-71-J-R and amendment A-937-71-K-A, 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.

The following shall replace existing Specific Condition (22) in air emission license amendment A-937-71-K-A (Aug. 16, 2012):

(22) Generator #3

- A. Generator #3 shall be limited to 500 hours per year total operation, based on a 12-month rolling total. Compliance shall be demonstrated by a written log of all generator operating hours.
- B. Generator #3 shall fire propane fuel.
- C. Emissions from Generator #3 shall not exceed the following: [06-096 CMR 115, BPT]

<u>Emission Unit</u>	<u>PM</u> <u>(lb/hr)</u>	<u>PM₁₀</u> <u>(lb/hr)</u>	<u>SO₂</u> <u>(lb/hr)</u>	<u>NO_x</u> <u>(lb/hr)</u>	<u>CO</u> <u>(lb/hr)</u>	<u>VOC</u> <u>(lb/hr)</u>
Generator #3	0.02	0.02	0.01	0.10	0.49	0.41

- D. Visible emissions from Generator #3 shall not exceed 10% opacity on a six (6) minute block average, except for no more than two (2) six (6) minute block averages in a continuous three (3) hour period. [06-096 CME 101]
- E. Generator #3 shall meet the applicable requirements of 40 CFR Part 60, Subpart JJJJ, including the following:

Backyard Farms, LLC
Somerset County
Madison, Maine
A-937-71-L-M (SM)

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1. Owners and operators of 2007 model year and later non-emergency stationary SI ICE must comply with the emission standards for new SI engines in §60.4230 for their 2007 model year and later stationary SI ICE, as applicable. [40 CFR 60 §60.4233(b)]
2. The generator shall be operated and maintained according to the manufacturer's emission-related written instructions or procedures developed by BYF that are approved by the engine manufacturer. BYF may only change those emission-related settings that are permitted by the manufacturer. [40 CFR §60.4243(a)]

DONE AND DATED IN AUGUSTA, MAINE THIS 8 DAY OF February, 2013.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Cone for
PATRICIA W. AHO, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-937-71-J-R.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 01/14/2013

Date of application acceptance: 01/15/2013

Date filed with the Board of Environmental Protection:

This Order prepared by N. Lynn Cornfield, Bureau of Air Quality.

