



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

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COMMISSIONER

**Backyard Farms, LLC
Somerset County
Madison, Maine
A-937-71-K-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

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.
2. BYF has requested an amendment to their license in order to add an emergency generator at the new Research and Development Facility.
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:

Generators

<u>Equipment</u>	<u>Maximum Capacity</u> MMBtu/hr	<u>Firing Rate</u> (gal/hr)	<u>Fuel Type,</u> <u>% sulfur</u>	<u>Install.</u> <u>Date</u>	<u>Stack</u> <u>#</u>
Generator #3	0.98	7.15 gal/hr 390 scf/hr	Diesel, 0.0015 % Propane	2012	3

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:

<u>Pollutant</u>	<u>Current License (TPY)</u>	<u>Future License (TPY)</u>	<u>Net Change (TPY)</u>	<u>Sig. Level (TPY)</u>
PM	22.2	22.3	0.1	100
PM ₁₀	22.2	22.3	0.1	100
SO ₂	0.5	0.6	0.1	100
NO _x	86.9	88.0	1.1	100
CO	23.2	23.4	0.2	100
VOC	1.6	1.7	0.1	50
CO _{2e}	12,444	12,485	45	100,000

This modification is determined to be a minor modification and has been processed as such.

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. Project Description

BYF is planning to construct a Research and Development building on the same property as their two, existing greenhouses. The new building's greenhouse and office areas will be heated by the currently licensed boilers which heat Greenhouse #2.

The project includes the installation of four, new, propane-fired carbon dioxide (CO₂) emitters. These units are manufactured by Johnson Gas Appliance Company, are Model No. 1332, and have a maximum capacity of 0.06 MMBtu/hr. Because of their size, they are classified as categorically exempt from licensing requirements under 06-096 CMR 115, and are mentioned here for inventory completeness purposes only.

The project also includes the installation of a new, 0.98 MMBtu/hr generator. Details regarding make and model are currently unavailable; the generator will be either a diesel-fired unit or a propane-fired unit.

C. Non-Emergency Generator

1. Backyard Farms proposes to install Generator #3, a unit rated at 0.98 MMBtu/hr.

Generator #3 shall be either a diesel-fired unit or a propane-fired unit.

BACT Findings

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

Firing diesel fuel:

- PM/PM₁₀ – 0.12 lb/MMBtu, based on 06-096 CMR 103
- SO₂ – 0.0015 lb/MMBtu, based on firing 0.0015% sulfur
- NO_x – 4.41 lb/MMBtu, based on AP-42, Table 3.3-1 (10/96)
- CO – 0.95 lb/MMBtu, based on AP-42, Table 3.3-1 (10/96)
- VOC – 0.35 lb/MMBtu, based on AP-42, Table 3.3-1 (10/96)
- Opacity – Visible emissions from Generator #3, when firing diesel fuel, shall not exceed 20% opacity on a six (6) minute block average, except for no more than two (2) six (6) minute block averages in a three (3) hour period.

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

Firing propane:

- PM/PM₁₀ – 0.00991 lb/MMBtu, based on AP-42, Table 3.3-2 (07/00)
- SO₂ – 0.001 lb/MMBtu, based on AP-42, Table 3.3-2 (07/00)
- NO_x – 4.08 lb/MMBtu, based on AP-42, Table 3.3-2 (07/00)
- CO – 0.317 lb/MMBtu, based on AP-42, Table 3.3-2 (07/00)
- VOC – 0.118 lb/MMBtu, based on AP-42, Table 3.3-2 (07/00)
- Opacity – Visible emissions from Generator #3, when firing propane, 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.

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

<u>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>
Gen. #3 - diesel	0.12	0.12	0.01	4.32	0.93	0.34
Gen. #3 - propane	0.01	0.01	0.01	4.00	0.31	0.12

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

40 CFR Part 60, Subpart IIII (for Diesel fired generator)

The federal regulation 40 CFR Part 60, Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines* (CI ICE) is applicable to the generator listed above since the unit was ordered after July 11, 2005 and manufactured after April 1, 2006. By meeting the requirements of Subpart IIII, the units are not subject to the requirements found in the *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, 40 CFR Part 63, Subpart ZZZZ.

Backyard Farms has entered into an agreement with ISO-New England calling for Backyard Farms to operate their generators under certain electric power demand conditions. Based on the financial agreement with ISO-NE, the generators currently do not meet the definition of emergency stationary internal combustion engine as defined in Subpart IIII:

Emergency Definition:

Emergency stationary internal combustion engine is defined in 40 CFR Part 60, Subpart IIII as any stationary internal combustion engine whose operation is limited to emergency situations and required testing and maintenance. Examples include stationary ICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary ICE used to pump water in the case of fire or flood, etc. Stationary CI ICE used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity are not considered to be emergency engines.

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

40 CFR Part 60, Subpart IIII Requirements:

Owners and operators of 2007 model year and later non-emergency stationary CI ICE with a displacement of less than 30 liters per cylinder must comply with the emission standards for new CI engines in §60.4201 for their 2007 model year and later stationary CI ICE, as applicable. [40 CFR §60.4204(b)]

The diesel fuel fired in the generator shall not exceed 15 ppm sulfur (0.0015% sulfur). [40 CFR §60.4207(b)]

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. Backyard Farms may only change those emission-related settings that are permitted by the manufacturer. [40 CFR §60.4211(a)]

40 CFR Part 60, Subpart JJJJ (for Propane fired generator)

The federal regulation 40 CFR Part 60, Subpart JJJJ, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines* (CI 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 Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, 40 CFR Part 63, Subpart ZZZZ.

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

40 CFR Part 60, Subpart JJJJ Requirements:

Owners and operators of 2007 model year and later non-emergency stationary CI ICE must comply with the emission standards for new CI engines in §60.4230 for their 2007 model year and later stationary CI ICE, as applicable. [40 CFR §60.4233(b)]

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. Backyard Farms may only change those emission-related settings that are permitted by the manufacturer. [40 CFR §60.4243(a)]

2. Total Annual Emissions

BYF shall be restricted to the following annual emissions, based on a 12-month rolling total, and 500 hours of operation for Generator #3 firing diesel fuel with a maximum sulfur content of 0.0015% by weight, or propane.

**Total Licensed Annual Emissions for the Facility
Tons per year**

(Used to calculate the annual license fee)

	PM	PM ₁₀	SO ₂	NO _x	CO	VOC
Boilers	22.0	22.0	0.4	82.5	22.7	1.5
Generators #1 & #2	0.2	0.2	0.1	4.4	0.5	0.1
Generator #3	0.1	0.1	0.1	1.1	0.2	0.1
Total TPY	22.3	22.3	0.6	88.0	23.4	1.7

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-K-A subject to the following conditions:

The following Specific Condition shall be added to license A-937-71-J-R:

(22) **Generator #3**

- A. Generator #3 is 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. [06-096 CMR 115]
- B. Generator #3 shall be a unit firing diesel fuel with a sulfur content not to exceed 0.0015% by weight, or a unit firing propane.

- C. Emissions from Generator #3 shall not exceed the following [06-096 CMR 115, BPT]:

<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>
Gen. #3 - diesel	0.12	0.12	0.01	4.32	0.93	0.34
Gen. #3 - propane	0.01	0.01	0.01	4.00	0.31	0.12

- D. Visible emissions from Generator #3, firing diesel fuel, shall not exceed 20% opacity on a six (6) minute block average, except for no more than two (2) six (6) minute block averages in a continuous three (3) hour period. [06-096 CMR 101]

Visible emissions from Generator #3, firing propane fuel, 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 CMR 101]

- E. Generator #3, if a diesel-fired unit, shall meet the applicable requirements of 40 CFR Part 60, Subpart IIII, including the following:
1. Owners and operators of 2007 model year and later non-emergency stationary CI ICE with a displacement of less than 30 liters per cylinder must comply with the emission standards for new CI engines in §60.4201 for their 2007 model year and later stationary CI ICE, as applicable. [40 CFR 60 §60.4204(b)]
 2. The diesel fuel fired in the generator shall not exceed 15 ppm sulfur (0.0015% sulfur by weight). Compliance with the 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 CFR §60.4207(b) and 06-096 CMR 115]
 3. 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. Backyard Farms may only change those emission-related settings that are permitted by the manufacturer. [40 CFR §60.4211(a)]

- F. Generator #3, if a propane-fired unit, shall meet the applicable requirements of 40 CFR Part 60, Subpart JJJ, including the following:
1. Owners and operators of 2007 model year and later non-emergency stationary CI ICE must comply with the emission standards for new CI engines in §60.4230 for their 2007 model year and later stationary CI 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 Backyard Farms that are approved by the engine manufacturer. Backyard Farms 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 DAY OF , 2012.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____
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: 06/01/2012

Date of application acceptance: 06/15/2012

Date filed with the Board of Environmental Protection:

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