



DEPARTMENT ORDER

**City of Augusta – Hatch Hill Landfill
 Kennebec County
 Augusta, Maine
 A-1060-71-G-A**

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

FINDINGS OF FACT

After review of the air emission license 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

The City of Augusta – Hatch Hill Landfill (Hatch Hill) was issued Air Emission License A-1060-71-E-R on April 18, 2017, for the operation of emission sources associated with their landfill facility. The license was subsequently amended on February 9, 2018 (A-1060-71-F-A) to license a landfill gas-to-energy system to include a landfill gas (LFG) treatment system, pipeline, and a LFG-fueled generator.

Hatch Hill has requested an amendment to their license to include a larger LFG-fueled generator than what was originally licensed.

The equipment addressed in this license amendment is located at 112 Hatch Hill Road, Augusta, Maine.

B. Emission Equipment

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

Stationary Engines

Equipment	Max. Input Capacity (MMBtu/hr)	Rated Output Capacity	Fuel Type	Estimated Maximum Firing Rate * (scfm)	Date of Manuf.	Date of Install.	Stack #
Generator #1	5.7	550 kWe 580 kWm	Landfill Gas	200	2018	2018	1

* based on estimated heating value of 500 Btu/ft³ for landfill gas

C. Definitions

Kilowatt-mechanical (kWm) – The mechanical power output from an engine being used to drive a generator in a generator set.

Kilowatt-electrical (kWe) – The actual electrical output of a generator (after efficiency losses within the generator set); kWm – efficiency losses = kWe

D. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the issued date of this license.

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 *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100. The emission increases are determined by subtracting the current licensed annual emissions preceding the modification from the maximum future licensed annual emissions, as follows:

Generator #1 Emissions – Current vs. Projected

Pollutant	Current License (Based on 500 kW engine) (TPY)	Future License (Based on 580 kWm engine) (TPY)	Net Change (TPY)	Significant Emission Levels
PM	2.6	3.0	0.4	100
PM ₁₀	2.6	3.0	0.4	100
SO ₂	2.6	2.6	0	100
NO _x	13.0	15.0	2.0	100
CO	32.4	37.5	5.1	100
VOC	6.5	8.7	2.2	50

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

E. Facility Classification

The facility is licensed as follows:

- As a natural minor source of air emissions, because facility emissions cannot exceed major source thresholds for criteria pollutants; and
- As an area source of hazardous air pollutants (HAP), because the licensed emissions are below the major source thresholds for HAP.

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

B. Process Description

Since 2012, Hatch Hill has owned and operated a landfill gas (LFG) flare system to control the buildup of LFG beneath the landfill cover system. In early 2018, Hatch Hill secured an air emission license amendment allowing them to install an energy system designed to better utilize the LFG by combusting it in a reciprocating internal combustion engine (RICE). The engine would be used to drive a generator and produce power for consumption at Hatch Hill or by the City of Augusta.

When Hatch Hill applied for their air license amendment in 2017, the selection of the generator set (generator and engine) had not been finalized. The amendment emissions calculations were made using best estimates provided by Hatch Hill. The equipment selection has now been finalized, so Hatch Hill has applied for an amendment to update their air emission license with actual equipment data that will be used to establish representative emission limits.

C. Non-Emergency Generators

Hatch Hill operates one non-emergency generator having an engine with a rated output of 580 kWm. The generator fires landfill gas (LFG) at an estimated maximum rate of 200 scfm, and was manufactured in 2018.

1. BACT Findings

Because the newly proposed LFG generator has the potential to emit more than 8 tons per year of combined criteria air pollutants than was previously licensed for the originally proposed LFG generator, Hatch Hill has submitted an application for an amendment to their air emission license to reflect the installation of the larger generator. The proposed LFG generator to be installed will be from the same family of generators that was previously approved, will be used for the same purpose, and will fire the same fuel. For these reasons, the BACT analysis that was submitted for the

installation of the original Generator #1 in A-1060-71-F-A has been found by the Department to represent BACT for the installation of the new, slightly larger LFG generator as well.

The BACT emission limits for the engine for Generator #1 were based on the following:

Landfill Gas

PM/PM ₁₀	- 0.12 lb/MMBtu, based on 06-096 C.M.R. ch. 115, BACT
SO ₂	- 0.60 lb/hr, based on actual annual test data assuming 200 ppmv H ₂ S content in LFG
NO _x	- 2.0 grams/HP-hr, based on 40 C.F.R. Part 60, Subpart JJJJ, Table 1 for LFG lean burn engine
CO	- 5.0 grams/HP-hr, based on 40 C.F.R. Part 60, Subpart JJJJ, Table 1 for LFG lean burn engine
VOC	- 1.0 grams/HP-hr, based on 40 C.F.R. Part 60, Subpart JJJJ, Table 1 for LFG lean burn engine
Visible Emissions	- 06-096 C.M.R. ch. 115, BACT

The BACT emission limits for Generator #1 are the following:

Unit	Pollutant	lb/MMBtu
Generator #1	PM	0.12

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)	HAP (lb/hr)
Generator #1 5.7 MMBtu/hr Landfill Gas	0.68	0.68	0.60	3.43	8.57	2.00	0.41

Visible emissions from Generator #1 shall not exceed 10% opacity on a six-minute block average basis.

2. New Source Performance Standards (NSPS)

Generator #1 will be located at Hatch Hill, which is an area source of hazardous air pollutants (HAP). Generator #1 will be driven by a new, stationary spark ignition internal combustion engine that was manufactured after January 1, 2008. It will be a lean-burn engine fired by LFG and will be capable of producing more than 25 HP. Because of its manufacture date, Generator #1 is subject to the New Source Performance Standards (NSPS) Standards of Performance for Spark Ignition Internal Combustion Engines (SI ICE), 40 C.F.R. Part 60, Subpart JJJJ. [40 C.F.R. § 60.4230(a)(4)(ii)]

Hatch Hill shall operate and maintain the engine for Generator #1 to achieve the federal emission standards as required by Subpart JJJJ over the entire life of the engine.

D. Annual Emissions

1. Total Annual Emissions

Hatch Hill shall be restricted to the following annual emissions, based on a calendar year total. The tons per year limits were calculated based on both the existing flare and the proposed Generator #1 firing LFG concurrently with no operating hour restrictions.

Total Licensed Annual Emissions for the Facility
Tons/year

(used to calculate the annual license fee)

	PM	PM₁₀	SO₂	NO_x	CO	VOC	HAP
LFG Flare	0.5	0.5	1.3	1.1	21.2	3.7	3.7
Generator #1	3.0	3.0	2.6	15.0	37.5	8.7	1.8
Total TPY	3.5	3.5	3.9	16.1	58.7	12.4	5.5

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

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 Amendment A-1060-71-G-A subject to the conditions found in Air Emission License A-1060-71-E-R, in amendment A-1060-71-F-A, and the following conditions.

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

SPECIFIC CONDITIONS

The following shall replace Specific Condition (22)(H) in Air Emission License Amendment A-1060-71-F-A (February 9, 2018) for Hatch Hill:

(22) Non-Emergency Generator

H. Emissions shall not exceed the following: [40 C.F.R. § 60.4233(e) and 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)	HAP (lb/hr)
Generator #1 5.7 MMBtu/hr Landfill Gas	0.68	0.68	0.60	3.43	8.57	2.00	0.41

DONE AND DATED IN AUGUSTA, MAINE THIS 23 DAY OF August, 2018.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Paul Allen Robert Currier for
PAUL MERCER, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-1060-71-E-R.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: May 21, 2018

Date of application acceptance: May 21, 2018

Date filed with the Board of Environmental Protection:

This Order prepared by Patric J. Sherman, Bureau of Air Quality.

