



DEPARTMENT ORDER

**Peaks Renewables, Inc.
Kennebec County
Clinton, Maine
A-1160-71-C-M**

**Departmental
Findings of Fact and Order
Air Emission License
Amendment #1**

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

Peaks Renewables, Inc. (Peaks) was issued Air Emission License A-1160-71-A-N on March 1, 2022, for the operation of emission sources associated with their renewable natural gas (RNG) production facility.

The equipment addressed in this license is located at 839 River Road in Clinton, Maine.

Peaks has requested a minor revision to their license in order to install a pilot-scale plant known as the P2G Project.

In addition, the Department is taking this opportunity to update visible emission standards as necessary due to recent changes to 06-096 Code of Maine Rules (C.M.R.) ch. 101, *Visible Emissions Regulation*.

B. Emission Equipment

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

Process Equipment

Equipment	Production Rate	Pollution Control Equipment
Bioreactor ^a	20 scfm ^b	Flare #1
Gas Cleanup Equipment		

^a Also known as the Biomethanation Reactor

^b Theoretical maximum

C. Application Classification

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

This amendment will not increase licensed emissions of any pollutant. Therefore, this amendment is determined to be a minor revision and has been processed as such.

D. Facility Classification

With the annual SO₂ emission limit for Flare #1, the facility is licensed as follows:

- As a synthetic minor source of air emissions for criteria pollutants, because Peaks is subject to license restrictions that keep facility emissions below major source thresholds for SO₂; and
- As an area source of hazardous air pollutants (HAP), because the licensed emissions are below the major source thresholds for HAP.

E. Revision Description

Peaks, along with Summit Utilities and with funding from the U.S. Department of Energy's Bioenergy Technologies Office, proposes to install a pilot-scale plant to assess the technical feasibility of coupling an electrolyzer system producing hydrogen (H₂) and a biomethanation process to convert carbon dioxide (CO₂) to pipeline quality RNG.

Biomethanation is a biological process where single-celled organisms (biocatalysts) convert H₂ and CO₂ to methane (CH₄), water, and heat under anaerobic conditions. The biomethane produced will then be cleaned to remove impurities and routed to Summit Utilities' gas distribution system.

Potable water is first demineralized before entering an electrolyzer system that converts it to oxygen (O₂) and H₂. Hydrogen from this process is fed to the Bioreactor with biogas from the existing facility. The biogas will be drawn from either immediately after the existing Anaerobic Digester or the exit of the existing Biologic Scrubber.

If the biogas feed comes from the Anaerobic Digester, it will pass through an iron sponge designed to remove up to 1,000 ppm of sulfides at 20 scfm. The existing Biologic Scrubber is operated to remove sulfur from the facility's tail gas. Therefore, if the biogas feed comes from the Biologic Scrubber, no additional sulfur removal is planned.

The Bioreactor will have an active volume of approximately 700 liters and will be equipped with a glycol cooling system for controlling the temperature of the exothermic biomethanation process. The Bioreactor will be equipped with a pressure safety valve (PSV) which may activate in the event of reactor over pressurization. There are otherwise no direct air emissions from the Bioreactor.

Methane produced in the Bioreactor will pass through a five-stage treatment process to achieve RNG pipeline specifications. The clean-up process includes:

1. Foam Separation – to remove residual antifoam agents;
2. Gas Prefilter – two filtration states in parallel to remove particulate impurities;
3. H₂S Adsorption Bed – removal of residual hydrogen sulfide (H₂S) via activated carbon;
4. Gas Drying – application of heat for moisture removal; and
5. H₂ Separation Membrane – to remove residual H₂ for recycle back into the Bioreactor.

Normal operation of the equipment associated with the P2G Project involves no direct emissions other than those that would be considered insignificant activities, e.g., vents from in-line instrumentation. However, there are PSVs and hand-operated relief valves at a number of points within the gas cleanup system. A previous analysis of emissions from fugitive release points at the facility determined that potential emissions of VOC from fugitive piping were less than 1.0 tpy and therefore an insignificant activity. Based on the size of the equipment associated with the P2G Project, this is not expected to change. However, the unproven nature of the project makes the frequency of upset conditions impossible to predict. Therefore, Peaks shall maintain records of the date, time, duration, estimated volume, and VOC content of any uncontrolled gas releases due to the P2G project, either manual or automatic. Uncontrolled gas releases are defined as any non-routine atmospheric venting of gas including, but not limited to, emergency shutdown events, depressurization for system maintenance, and releases triggered by safety interlocks. Peaks shall notify the Department within two working days of any gas release that exceeds 10,000 scf.

In addition, the trial nature of the project means that there could be more off-spec gas that would need to be controlled by the facility's existing flare (Flare #1). Peaks states that the existing operating limit on Flare #1 of 37,350 MMBtu/year is sufficient to manage any additional off-spec gas produced by the P2G Project. Therefore, no increase in licensed emissions is expected from Flare #1.

With their application, Peaks submitted a proposed update to the site-specific monitoring plan that was required pursuant to Air Emission License A-1160-71-A-N (issued 3/1/2022) Condition (17)(F). This plan documents the methods and equipment used for the monthly and annual H₂S sampling required by the license for each gas stream that can vent to Flare #1.

F. Visible Emissions

In 2023, the Department completed rulemaking on revisions to *Visible Emissions Regulation*, 06-096 C.M.R. ch. 101. The revised rule went into effect on January 1, 2024. The following section addresses any necessary revisions to applicable requirements due to this rulemaking.

1. Flare #1

a. 06-096 C.M.R. ch. 101

Flare #1 is subject to the following visible emissions standard pursuant to 06-096 C.M.R. ch. 101, § 4(A)(8):

Visible emissions from Flare #1 shall not exceed 30% opacity on a six-minute block average basis, except for periods of startup, shutdown, or malfunction during which time Peaks must meet the normal operating visible emissions standard or the following alternative visible emissions standard.

During periods of startup, shutdown, or malfunction, visible emissions shall not exceed 40% opacity on a six-minute block average basis. This alternative visible emissions standard shall not be utilized for more than two hours (20 consecutive six-minute block averages) per event. Peaks shall keep records of the date, time, and duration of each event.

b. 06-096 C.M.R. ch. 115, BACT

Flare #1 is subject to the following visible emissions standards pursuant to 06-096 C.M.R. ch. 115, BACT (A-1160-71-A-N, 3/1/2022):

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

c. Streamlining

The Department has determined that the BACT visible emissions standard is more stringent than the applicable visible emissions standard in 06-096 C.M.R. ch. 101. Therefore, the visible emissions limits have been streamlined to the more stringent BACT limits, and only these more stringent limits shall be included in the Order section of this air emission license.

2. Boilers #1 - #4

The visible emissions standard for Boilers #1 - #4 has not changed. However, the citation is updated to 06-096 C.M.R. ch. 101, § 4(A)(3).

3. Co-Gen #1 and Generator #1

a. 06-096 C.M.R. ch. 101

Co-Gen #1 and Generator #1 are subject to the following visible emissions standard pursuant to 06-096 C.M.R. ch. 101, § 4(A)(4):

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

b. 06-096 C.M.R. ch. 115, BACT

Co-Gen #1 and Generator #1 are subject to the following visible emissions standards pursuant to 06-096 C.M.R. ch. 115, BACT (A-1160-71-A-N, 3/1/2022):

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

c. Streamlining

The Department has determined that the BACT visible emissions standards are more stringent than the applicable visible emissions standard in 06-096 C.M.R. ch. 101. Therefore, the visible emissions limits have been streamlined to the more stringent BACT limits, and only these more stringent limits shall be included in the Order section of this air emission license.

4. Fugitive Emissions

On January 1, 2024, the applicable visible emissions standard for Fugitive Emissions contained in 06-096 C.M.R. ch. 101 changed to the following:

Peaks shall not cause emissions of any fugitive dust during any period of construction, reconstruction, or operation without taking reasonable precautions. Such reasonable precautions shall be included in the facility's continuing program of best management practices for suppression of fugitive particulate matter. See 06-096 C.M.R. ch. 101, § 4(C) for a list of potential reasonable precautions.

Peaks shall not cause or allow visible emissions within 20 feet of ground level, measured as any level of opacity and not including water vapor, beyond the legal boundary of the property on which such emissions occur. Compliance with this standard shall be determined pursuant to EPA Test Method 22.

[06-096 C.M.R. ch. 101, § 4(C)]

5. General Process Sources

The visible emissions standard for general process sources has not changed. However, the citation is updated to 06-096 C.M.R. ch. 101, § 4(A)(8).

G. Annual Emissions

This license amendment will not change the facility's licensed annual emissions.

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-1160-71-C-M subject to the conditions found in Air Emission License A-1160-71-A-N 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 Condition (19)(E) of Air Emission License A-1160-71-A-N:

(19) Boilers #1 - #4

- E. Visible emissions from Boilers #1 - #4 (each) shall not exceed 10% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 101, § 4(A)(3)]

The following shall replace Condition (23) of Air Emission License A-1160-71-A-N:

(23) **Fugitive Emissions**

- A. Peaks shall not cause emissions of any fugitive dust during any period of construction, reconstruction, or operation without taking reasonable precautions. Such reasonable precautions shall be included in the facility's continuing program of best management practices for suppression of fugitive particulate matter. See 06-096 C.M.R. ch. 101, § 4(C) for a list of potential reasonable precautions.
- B. Peaks shall not cause or allow visible emissions within 20 feet of ground level, measured as any level of opacity and not including water vapor, beyond the legal boundary of the property on which such emissions occur. Compliance with this standard shall be determined pursuant to 40 C.F.R. Part 60, Appendix A, Method 22.

[06-096 C.M.R. ch. 101, § 4(C)]

The following shall replace Condition (24) of Air Emission License A-1160-71-A-N:

(24) **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, § 4(A)(8)]

The following are new conditions:

(25) Gas Releases

Peaks shall maintain records of the date, time, duration, estimated volume, and VOC content of any uncontrolled gas releases due to the P2G project, either manual or automatic. Uncontrolled gas releases are defined as any non-routine atmospheric venting of gas including, but not limited to, emergency shutdown events, depressurization for system maintenance, and releases triggered by safety interlocks. Peaks shall notify the Department within two working days of any gas release that exceeds 10,000 scf.
[06-096 C.M.R. ch. 115, BPT]

DONE AND DATED IN AUGUSTA, MAINE THIS 9th DAY OF APRIL, 2024.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:  for
MELANIE LOYZIM, COMMISSIONER

The term of this license amendment shall be ten (10) years from the issuance of Air Emission License A-1160-71-A-N (issued 3/1/2022).

[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. § 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: 1/29/2024

Date of application acceptance: 1/30/2024

Date filed with the Board of Environmental Protection:

This Order prepared by Lynn Muzzey, Bureau of Air Quality.

