

Red Leaf RNG Nuisance Minimization Plan

Form AI-006

June 2024 ROP Application

Nuisance Minimization Plan

Red Leaf RNG, LLC (P1268)

113 North Lee Road
Saranac, MI 48881

This Nuisance Minimization Plan (NMP) has been developed as required under Special Conditions III.2, EUGCU and III.2, EUFLARE of Permit to Install No. 89-22 (PTI), and in accordance with the plan contents specified in Appendix A of the PTI.

1 Introduction

On July 5, 2022, the Michigan Department of Environment, Great Lakes and Energy, Air Quality Division (AQD) issued the PTI to Red Leaf RNG, LLC (Red Leaf RNG) covering the installation and operation of a new biomethane recovery and pipeline quality renewable natural gas facility in Saranac, Michigan. The facility, which is currently under construction, is located on land leased from the Maple Row Dairy.

Once operation commences, cow manure will be transferred from the dairy farm to an anaerobic digester, where it will be broken down in an oxygen-free environment. The generated biogas will be a mixture of methane, carbon dioxide (CO₂), and small amounts of other gases including hydrogen sulfide (H₂S). A gas upgrading plant will process the raw biogas generated in the anaerobic digesters to create pipeline quality renewable natural gas (RNG). The RNG is then compressed and injected into a natural gas pipeline.

Tail gases from the gas upgrading plant will be controlled with a thermal oxidizer as the primary control device. A backup flare will combust off-specification gas during start-up, shutdown, and malfunction events. The backup flare will also serve to combust raw biogas when the gas upgrading plant is not in operation.

The RNG facility is located in a rural portion of Ionia County. There are only a few residences (and no commercial establishments) within one mile and no residences within 1,000 feet of the RNG facility.

2 Potential Sources of Odorous Emissions and Related Equipment

There are a limited number of points along the process where potential odor-containing emissions may be released to the ambient air. These potential sources of odor can be broken into the following categories:

1. **Anaerobic Digester** – The anaerobic digester is designed to not emit to the ambient air during normal operating conditions. The digester is equipped with pressure relief valves (PRVs) designed to protect the integrity of the digester and to minimize emissions during an overpressure condition. Hydrogen sulfide levels in the digester may range from 2,000 to 7,000 ppm. If the gas upgrading plant is off-line, as well as during start-up, shutdown, and malfunction events, the backup flare is designed to achieve at least 98 percent control of the methane in the

biogas stream and will convert nearly 100 percent of the H₂S in the biogas stream to sulfur dioxide (SO₂).

2. **Gas Upgrading Plant** – Tail gases generated in the gas upgrading plant will be vented to the thermal oxidizer that is designed to achieve at least 99 percent control of the methane in the tail gas stream and will convert nearly 100 percent of the H₂S in the tail gas stream to SO₂. Odor potential from the gas upgrading plant is limited to fugitive emissions due to leaking components.
3. **Pipeline Injection** – Odor potential from the transfer of RNG from the gas upgrading plant to the on-site pipeline injection point is limited to fugitive emissions due to leaking components.

3 Maintenance Schedule

Preventative maintenance of potential odor-generating equipment will be conducted in accordance with a Preventative Maintenance/Malfunction Abatement Plan (PM/MAP) that will be submitted to the AQD within 90 days of the completion of installation of the RNG facility. The PM/MAP will include key personnel, a schedule for inspections and maintenances, corrective actions should a malfunction occur.

4 Best Management Practices/Housekeeping Measures

Red Leaf RNG will implement best management practices and housekeeping measures designed to minimize odor potential or duration at the RNG facility. Because the RNG upgrading operation has already been designed to minimize odor potential, and redundant H₂S control (flare to back up the thermal oxidizer), these best management practices focus on preventative maintenance and operator training to minimize the potential for odors. Operators will perform regular inspections and perform preventative maintenance on the systems. Operator training for the digester, flare, and thermal oxidizer will follow procedures recommended by the equipment manufacturers.

Odor potential during the startup or shutdown of the gas upgrading plant is minimized because the biogas will always be vented to a control device. Startup of the digester is expected to occur no more than once every five years. Any biogas generated during startup of the digester will be controlled by the flare until a sufficient quantity of biogas is generated to operate the gas upgrading plant.

5 Odor Incident Notification/Investigation/Response

If an odor complaint is received at the RNG facility, the facility manager will immediately report it to the Red Leaf RNG environmental manager:

Mr. Christopher Anglin
Director of Safety and Environmental Permitting
canglin@novillarng.com
(734) 915-2384

Mr. Anglin (or his designated agent) will be responsible for investigating the complaint and for implementing any necessary corrective actions. The following information will be recorded and maintained for two years from the date of the complaint:

- Date/time of the complaint.

Appendix A, Permit to Install No. 89-22

- Location that the odor was detected.
- Duration of the odor.
- Weather conditions (e.g., wind direction/speed, precipitation) during the complaint period.
- Plant operations during the complaint period, including whether any equipment malfunctions occurred.
- Corrective actions implemented (if the complaint is due to on-site operations).