ENGINEERING ANALYSIS
Chastang RNG Facility
Facility No. 503-0155

Summary

On July 10, 2024, BMP Chastang, LLC (BMP) submitted applications to construct a renewable natural gas (RNG) facility co-located at the Chastang Landfill (the Landfill) in Mobile County that will purify landfill gas for introduction into a natural gas pipeline. The Landfill, which is owned separately by the Solid Waste Disposal Authority of the City of Mobile, currently has a Major Source Operating Permit (MSOP) that was issued January 24, 2023 for a municipal sanitary landfill with a landfill gas collection system and control device. The Landfill currently utilizes a flare as its control device. BMP is a separate entity that would replace the flare as the primary control device, with the Landfill's flare being utilized only if BMP was unable to receive the landfill gas.

The proposed RNG facility will process landfill gas into pipeline quality natural gas through filtering, dewatering, and compression of the landfill gas, followed by the removal of impurities such as volatile organic compounds (VOCs), hydrogen sulfide (H2S), and other elements. Waste gas from the processes will be sent to a thermal oxidizer and/or an open utility flare for destruction.

Emissions

The emissions of carbon monoxide (CO) and nitrogen oxide (NO_X) from the proposed RNG facility have been calculated based on factors provided by the equipment manufacturers. AP-42 factors were used to determine the VOC, hazardous air pollutant (HAP), and particulate matter (PM) emissions due to manufacturer's data being unavailable for these pollutants. Potential emissions of CO would exceed the major source thresholds of 100 tons per year. Potential emissions without limitations for the proposed RNG facility are as follows:

Pollutant	Thermal Oxidizer	Utility Flare	Facility Wide
NO_x	1.27	39.81	41.08
CO	2.37	181.42	183.72
$PM_{2.5}$	0.13	10.73	10.86
PM_{10}	0.13	10.73	10.86
SO_2	0.26	0.44	0.7
VOC	0.18	0.57	0.75
HAPs	1.45	2.85	4.3

BMP is proposing to limit the emissions of CO to below major source thresholds by limiting the throughput of the utility flare, which is the largest source of emissions, to 534,480 mmBTU/yr.

The limited potential emissions are as follows:

Pollutant	Thermal Oxidizer	Utility Flare	Facility Wide
NO_x	1.27	18.18	19.46
CO	2.37	82.85	85.2

$PM_{2.5}$	0.13	4.9	5.02
PM_{10}	0.13	4.9	5.02
SO_2	0.26	0.2	0.45
VOC	0.18	0.25	0.43
HAPs	1.45	1.31	2.74

The Landfill's potential emissions are as follows:

Pollutant	Potential Emissions (tpy)
NO_x	22.61
CO	123.00
NMOC	35.90
PM_{10}	37.80
SO_2	42.93
VOC	11.07
HAPs	9.54

Because these two entities are separately owned and operated, the emissions from the Landfill and the BMP were not evaluated together. As a result of landfill gas being diverted from the Landfill's existing flare to BMP, a reduction in emissions from the Landfill can be expected.

NSPS/NESHAP

X001: Landfill Gas Treatment System, Thermal Oxidizer, and Utility Flare

BMP will purify landfill gas generated by the Landfill, which is subject to Federal Rules 40 CFR 62 Subpart OOO. The Landfill's NMOC emissions have exceeded 50 megagrams per year; therefore, the Landfill is also subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) found in 40 CFR 63 Subpart AAAA. The Landfill is currently meeting the requirements for collection and control of landfill gas in Subpart AAAA. Both Subpart OOO and Subpart AAAA allow for landfill gas to be controlled by a treatment system and address how it should be operated and monitored. Treatment systems are prohibited from venting treated landfill gas to the atmosphere and are required to control any treated landfill gas that cannot be routed to the natural gas pipeline by using one of the other two options in 63.1959(b)(2)(iii)(A) of (B). All emissions from any atmospheric vent from the landfill gas treatment system are also subject to the requirements of 63.1959(b)(2)(iii)(A) of (B). The proposed RNG facility will be required to operate the treatment system portion of its process according to those provisions. A device that can record flow to the treatment system at least every 15 minutes will be installed, and BMP is required to have a monitoring plan in place. BMP will submit semiannual reports detailing any exceedances and periods when gas is not being received.

The thermal oxidizer will only burn waste gas or natural gas and therefore will not be subject to Subpart OOO or Subpart AAAA. There are no other New Source Performance Standards (NSPS) or NESHAP that would apply to the thermal oxidizer.

The utility flare will primarily burn process gas that does not meet standards for introduction into a natural gas pipeline. During these times, the utility flare will not be subject to any NSPS or NESHAP standards. However, if necessary, the utility flare could burn landfill gas that has only completed the first stage of the treatment process and at these times it would be subject to the control standards from the Federal Rules, Subpart OOO and the NESHAP Subpart AAAA. The process flare will measure flow with a thermal mass flow meter in units of standard cubic feet per minute (SCFM) and will convert that measurement to MMBTUs with the equation below.

Eq. 1:

$$\frac{\text{SCF}}{\text{min}} \text{x } 60 \frac{\text{min}}{1 \text{ hour}} \text{x} \frac{24\text{hours}}{1 \text{ day}} \text{x Avg \% CH4 x} \frac{1010\text{BTU}}{\text{SCF}} \text{ x} \frac{1\text{MMBTU}}{1{,}000{,}000 \text{ BTU}} = \frac{\text{MMBTUs}}{\text{day}}$$

Prevention of Significant Deterioration (PSD)

BMP is not categorized as a "Major Stationary Source" for PSD as defined in ADEM Admin. Code 335-3-14-.04(2)(a). Since the potential emissions of all regulated New Source Review (NSR) pollutants from the proposed operation are below the major source threshold of 250 tons per year, the operation is considered a synthetic minor source with respect to PSD and a PSD review is not required. Even in the case that the emissions from this proposed RNG facility were considered in combination with emissions from the Landfill for PSD purposes, the 250 threshold would still not be exceeded.

Coastal Consistency/Class I

BMP will be located in Mobile County and more than 10 feet above sea level. Therefore, this proposed RNG facility would not have to undergo a Coastal Consistency Review. BMP will be located greater than 100 km from the nearest Class I Area (Breton Wildlife Refuge). Since the emissions from this proposed RNG facility will be below levels considered significant for PSD, there should not be any significant impact on any Class I area.

Title V

BMP would not be required to obtain a Title V permit because the potential emissions will be less than applicable thresholds. Limits on the amount of gas consumed by the utility flare will ensure the emissions of CO and NOx are below Title V thresholds. Flares that combust landfill gas are required to adhere to the requirements of 40 CFR 60.18. There are no testing requirements for flares that control landfill gas. The rule does contain standards for visible emissions and heat content to ensure adequate control of emissions.

Recommendations

Based on the applications received, required State and Federal Regulations, and the above information, I recommend that Synthetic Minor Operating Permit 503-0155-X001 be issued to BMP Chastang for the proposed RNG facility.

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John Robert Gill
Industrial Chemicals Section
Chemical Branch
Air Division

July 28, 2025

Date

JRG:jrg