State of New Jersey
Department of Environmental Protection
Air Quality, Energy and Sustainability
Division of Air Quality
Bureau of Stationary Sources
401 E. State Street, 2nd Floor, P.O. Box 420, Mail Code 401-02
Trenton, NJ 08625-0420

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

SHAWN M. LATOURETTE
COMMISSIONER

RESPONSE TO COMMENTS DOCUMENT

for

An Air Pollution Control Operating Permit Renewal Application (Title V)

for

CUMBERLAND COUNTY GAS TO ENERGY PLANT
169 Jesse Bridge Road
Deerfield Twp, NJ 08332-3823

Program Interest (PI) Number: 75697 Permit Activity Number: BOP210003

Shafi Uddin Ahmed	8/18/22	Joel Leon	8/18/22
Shafi Ahmed Environmental Engineer 3 Operating Permits	Date	Joel Leon Section Chief Operating Permits	Date

Written comments on the draft approval were received from the Kirk Frost. No other comments were received. Responses to the comments received are addressed in this document.

COMMENT: 1

Has NJDEP performed any emission audits of this facility during its operations since 2012? This is an outdated natural gas fired power plant, which are stated to have more toxic air pollutant and greenhouse gas emissions as the equipment ages. NJDEP emissions permit should be validated both in terms of exhaust emissions (toxic air pollutants and greenhouse gas (methane and carbon dioxide).

RESPONSE: 1

The facility was inspected on June 12, 2015 (Standard Compliance Inspection -SCI 15-0001), November 29, 2017 (SCI – 17-0001), and December 23, 2020 (SCI-20-0001). Each inspection concluded that the facility was in compliance with the provisions of its Operating Permit. Inspection reports can be accessed at www.nj.gov/dep/inspections.

The following table outlines stack emissions testing conducted since 2012 that have been evaluated by the Department:

Stack Test Designation	Stack Test Date
TST 13-0001	June 4, 2013
TST 13-0002	June 6, 2013
TST 15-0001	May 3, 2016
TST 15-0002	May 5, 2016
TST 17-0001	May 24, 2017
TST 18-0001	June 19, 2018
TST 18-0002	August 23, 2018
TST 19-0001	October 8, 2019
TST 20-0002	May 11, 2021
TST 20-0003	May 17, 2021 and July 22, 2021
TST 20-0004	May 19, 2021

The stack test reports can be accessed through NJDEP Data Miner or OPRA. NJDEP New Jersey Department of Environmental Protection (DataMiner) NJDEP | Open Public Records Act

COMMENT: 2

There are no details of the unburned methane emissions in the exhaust smokestack. Has NJDEP investigated how much methane emissions is being emitted in the exhaust smokestack? Is NJDEP aware that these natural gas fired turbines emit unburned methane in the exhaust smokestack? FERC Docket CP21-94 details how methane emissions occurs in the smokestack. Many other FERC dockets do as well, but since NJDEP is reviewing CS-505 modifications for FERC docket CP21-94, it might be easier for NJDEP to review and validate methane emissions

occur in the smokestack.

RESPONSE 2:

The methane emissions emitted by the equipment/emission unit have been added to the Compliance Plan and are as follows:

Emission Unit U1 Three Landfill Gas CAT G3520C Engines (16.45 million British Thermal Units per hour (MMBTU/hr) each, 2,233 Brakehorse Power, 1600 kilowatts) and 30,000 gallons per day Leachate Evaporator: 1.53 tons/yr
Emission Unit U2 Candlestick Flare, 15.2 MMBTU/hr, and Enclosed Flare, 64 MMBTU/hr: 9 tons/yr
Emission Unit U3 Emergency Generators: 0.01 tons/yr.

The methane emissions were calculated based on (1) the heat input value and emission factors for engines, and (2) flow rate, LFG heat content and emission factors for flares.

The Cumberland County Gas to Energy Plant (Plant) is not authorized to combust commercial natural gas. The Plant can only burn landfill gases generated on-site and emitted from the Cumberland County Landfill.

COMMENT: 3

Can NJDEP review all toxic air pollutant emissions from three Caterpillar G3520C turbines? NJDEP only lists a minor subset of the many toxic (and most carcinogenic) air pollutants emitted from these turbines.

RESPONSE: 3

The operating permit only lists Hazardous Air Pollutant (HAP) / toxic substance over the N.J.A.C. 7:27-17 reporting thresholds. HAP emitted above the applicable reporting thresholds are acrolein, acrylonitrile, cadmium, cobalt, nickel, formaldehyde, hydrogen chloride, tetrachloroetahne (1,1,2,2-) and vinyl chloride.

COMMENT: 4

Can NJDEP please list methane emissions as methane emissions in the permit, instead of being lumped into a number where it multiplies methane by 25 as if that makes the methane equivalent to carbon dioxide warming potential? The 25 multiplier is from the International Panel on Climate Change Version AR4 and models the warming potential of methane after 100 years since emission. 1. That isn't equivalent; 2. That misrepresents the actual warming potential in the first 1 year, 2 years, 3 years, etc; and 3. IPCC AR6 provided new data points for methane warming potential data points for methane which can be found at this link: https://github.com/chrisroadmap/ar6/tree/main/data_input/metrics. There isn't a carbon dioxide equivalence for methane. It is most potent at the point of emissions and the potency decreases over time. If NJDEP wants to assess warming potentials of greenhouse gases, do it separately and use experts in that field. Please don't falsely present CO2e as an emissions measurement. Please present methane emissions from all sources (exhaust, fugitive and venting/flaring) as emissions

measurements for methane.

I urge NJDEP to start aggressively auditing natural gas facilities using optical gas imaging (FLIR) cameras during peak load times for each facility. Facilities in New Jersey have been underreporting their methane and toxic air pollutant emissions as a ongoing practice until and unless NJDEP starts to perform unannounced emissions audits. CS-505 mentioned above is an excellent example where the methane emissions reported to FERC are more than 10 times the emissions that Transco reports to NJDEP every year. Some of those emissions are virtually impossible according to the specifications of that turbine. Additionally, how many turbines operate within their specifications after many years of full use? None. Please audit the Cumberland County Gas Energy Plant.

RESPONSE 4:

The methane emissions emitted by the equipment/emission unit have been added to the Compliance Plan and are as follows:

Emission Unit U1: 1.53 tons/yr
Emission Unit U2: 9 tons/yr
Emission Unit U3: 0.01 tons/yr.

Total greenhouse gas emissions or CO_2e for the facility: 30,496 tons/yr
Emission Unit U1: 25,076 tons/yr
Emission Unit U2: 5,091 tons/yr
Emission Unit U3: 329 tons/yr.

The Department uses the following equation (A-1) at 40 CFR Part 98.2(b)(4) to determine CO_2e:

$$CO_2e = \sum_{i=1}^{n} GHG_i \times GWP_i \qquad \text{(Eq. A-1)}$$

Where:

CO_2e = Carbon dioxide equivalent, metric tons/year.

GHG_i = Mass emissions of each greenhouse gas, metric tons/year.

GWP_i = Global warming potential for each greenhouse gas from Table A-1,40 CFR Part 98.

n = The number of greenhouse gases emitted.

The Cumberland County Gas to Energy Plant (Plant) is not authorized to combust commercial natural gas. The Plant can only burn landfill gases generated on-site and emitted from the Cumberland County Landfill.

A FLIR optical gas imaging unit is primarily used for leak detection and cannot quantify the

amount of gases being emitted. The Plant's compliance plan has enforceable maximum allowable air contaminant emission rates which must be verified using USEPA reference methods. Stack emission testing must be conducted every 5 years for the following contaminants: carbon monoxide, oxides of nitrogen, volatile organic compounds, sulfur dioxide, total suspended particles, PM_{10} (particle with an aerodynamic diameter of less than 10 microns), $PM_{2.5}$ (particle with an aerodynamic diameter of less than 2.5 microns), oxygen, formaldehyde, and opacity.

Regardless of age of the equipment, the facility must operate all equipment in compliance of their operating permit.