

STATEMENT OF BASIS for VICINITY ENERGY TRENTON LP

TITLE V OPERATING PERMIT RENEWAL AND PERMIT MODIFICATION

Program Interest (PI): 61015 / Permit Activity Number: BOP200002

I. FACILITY INFORMATION

Vicinity Energy Trenton LP is located at 320 South Warren St, Trenton, Mercer County, NJ 08608 and consists of 6 MW Cogeneration Plant. The facility is owned and operated by Vicinity Energy Trenton, L.P.

The facility is classified as a major facility based on its potential to emit 271 tpy nitrogen oxides (NOx) and 33.2 tpy volatile organic compounds (VOC).

This permit allows individual hazardous air pollutants (HAPs) to be emitted at a rate not to exceed: 0.693 tpy Acetaldehyde, 0.426 tpy Acrolein, 0.000874 tpy Arsenic compounds, 0.0451 tpy Benzene, 0.000595 tpy Beryllium Emissions, 0.0176 tpy Biphenyl, 0.0221 tpy Butadiene (1,3-), 0.00107 tpy Cadmium compounds, 0.00236 tpy Chloroform, 0.0000367 tpy Cobalt compounds, 0.00000699 tpy Dimethylbenz(a)anthracene (7,12-), 0.00367 tpy Ethylene dibromide, 4.44 tpy Formaldehyde, 0.00135 tpy Manganese compounds, 0.00919 tpy Naphthalene, 0.00151 tpy Nickel compounds, 0.00180 tpy Pb, 0.00806 tpy Polycyclic organic matter, 0.00331 tpy Tetrachloroethane (1,1,2,2-), 0.00264 tpy Trichloroethane (1,1,2).

VOC emissions are being corrected to include formaldehyde emissions previously not accounted for. This emission increase is meant to capture emissions already present and no new actual emissions are being generated. As a result, the Department is not revisiting the applicability of State of The Art (N.J.A.C. 7:27-22.35) and Federal New Source Review (40 CFR 52.21-Prevention of Significant Deterioration (PSD) and N.J.A.C. 7:27-18).

II. AREA ATTAINMENT CLASSIFICATION

The Federal Clean Air Act (CAA) sets National Ambient Air Quality Standards (NAAQS) for six common air pollutants. These commonly found air pollutants (also known as "criteria pollutants") are particulate matter, ground-level ozone, carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and lead. The US Environmental Protection Agency (USEPA) also classifies areas as "attainment" or "nonattainment" for each criteria pollutant, based on the magnitude of an area's problem. Nonattainment classifications are used to specify what air pollution reduction measures an area must adopt, and when the area must reach attainment. Currently, the entire State of New Jersey is designated as nonattainment for the 8-hour ozone NAAQS. New Jersey is designated attainment for all other pollutants. For nonattainment classification refer to <https://www.epa.gov/green-book/green-book-national-area-and-county-level-multi-pollutant-information>.

III. BACKGROUND AND HISTORY

The equipment that emits air contaminants from this facility include: a cogeneration plant with a 6 MW dual fuel engine equipped with a catalytic oxidizer, a backup 2.16 MMBTU/hr diesel engine, two 92.4 MMBTU/hr boilers which burn natural gas and distillate oil.

Table 1 - Operating Permit Revision History (located at the end of this document) provides a summary of all the changes that have been incorporated into the operating permit through seven-day notice changes, administrative amendments, minor modifications, or significant modifications since the approval of the initial operating permit or the most recent renewal thereof. Please refer to the attached explanation sheet for the structure and configuration of conditions of approval, included in the Facility Specific Requirements section of this permit.

A Facility-Wide Risk Assessment was conducted as part of the review of this permit application and health risk was determined to be negligible consistent with NJDEP Technical Manual 1003.

This is a Permit Renewal with Significant Modification and includes the following changes:

Requirements from GR1-4 were moved to the cogeneration system in U11. The combined emission limits limit for Engine #2 and Boiler #2 were retained in GR1.

PM-2.5 emission limits were added to cogeneration system in U11 and backup diesel engine U15 consistent with N.J.A.C. 7:27-22.

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U11:OS14, cogeneration system dual fuel operation, was separated into normal operation (OS13) and startup on dual fuel (OS14). Operating scenarios for boiler 1 & 2 startup and shutdown were added (OS22-25). A fuel limit for the dual fuel operation of 381 thousand gal/yr was added to cogeneration system dual fuel operation in U11:OS13.

Stack testing requirements for the cogeneration system in U11 were updated to include stack testing of SO₂ for Engine #2 (E12) and formaldehyde for all engines and boilers.

A Periodic Monitoring Procedure (PMP) for NO_x and CO was added to the backup diesel engine in U15.

VOC emission limits for the cogeneration system, U11, were adjusted to include formaldehyde.

N.J.A.C. 7:27-16.10(b) and N.J.A.C. 7:27-19.8(e) Reasonably Available Control Technology (RACT) requirements were added to the backup diesel engine in U15.

COMS requirement for cogeneration system U11 was replaced with a visible determination requirement.

Maximum Achievable Control Technology (MACT) Subpart A, ZZZZ and JJJJJJ Requirements for the cogeneration system in U11 were updated. NSPS Subpart A and IIII Requirements for U15 were updated.

HAPs emissions were updated based on the new reporting thresholds in N.J.A.C. 7:27-17. Formaldehyde emissions were corrected. Total HAPs was decreased from 7.25 to 7.08 tons/year.

Direct monitoring and recordkeeping by calculations for HAPs was removed and replaced with surrogate monitoring of fuel usage in cogeneration system U11.

Fuel usage record keeping frequency for cogeneration system U11 was changed from permittee selection to a monthly basis.

The 2.16 million British thermal units per hour (MMBTU/hr) backup diesel engine in U15, E15 was replaced with a 1.81 MMBTU/hr diesel engine; annual emissions were adjusted as follows: VOC was decreased from 0.0780 to 0.0240 tons/year, NO_x was decreased from 0.573 to 0.0500 tons/year, CO was decreased from 0.505 to 0.430 tons/year, SO₂ was decreased from 0.00100 to below reporting threshold, TSP, PM₁₀ and PM_{2.5} were decreased from 0.0280 to below reporting threshold.

Facility wide CO₂e was decreased from 112,287 to 112,273 tons/year.

This renewal will also change the allowable emission limits as listed in the following table:

Allowable Emission Limits	Facility's Potential Emissions (tons per year)*									
	VOC (total)	NO _x	CO	SO ₂	TSP (total)	PM ₁₀ (total)	PM _{2.5} (total)	Pb	HAPs (total)	CO ₂ e (total)
Current Permit	27.5	271	37.1	13.3	55.9	55.6	55.6	NA	7.25	112,287
Proposed Permit	33.2	271	37.1	3.31	55.9	55.6	55.6	.00200	7.08	112,273
Change (+ / -)	+5.68	NA	NA	-10.0	NA	NA	NA	+0.00200	-0.170	-14.0

VOC Volatile Organic Compounds

NO_x Nitrogen Oxides

CO Carbon Monoxide

SO₂ Sulfur Dioxide

TSP Total Suspended Particulates

* Other Any other air contaminant regulated under the Federal Clean Air Act.

PM₁₀

PM_{2.5}

Pb

HAPs

CO₂ e

Particulates under 10 microns

Particulates under 2.5 microns

Lead

Hazardous Air Pollutants

Carbon Dioxide equivalent

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There is no change to methane emissions.

IV. CASE-BY-CASE DETERMINATIONS

No case-by-case determinations were required for this permit action.

V. EMISSION OFFSET REQUIREMENTS

This permit action is not subject to Emission Offset requirements.

VI. BASIS FOR MONITORING AND RECORDKEEPING REQUIREMENTS

The facility's operating permit includes monitoring, recordkeeping and reporting requirements that are sufficient to demonstrate the facility's continued compliance with the applicable requirements consistent with the following:

1. Provisions to implement the testing and monitoring requirements of N.J.A.C. 7:27-22.18, the recordkeeping and reporting requirements of N.J.A.C. 7:27-22.19, and all emissions monitoring and analysis procedures or compliance assurance methods required under the applicable requirements, including any procedures and methods promulgated pursuant to 40 CFR 64; and
2. Where the applicable requirement does not require direct periodic monitoring of emissions, the Department requires periodic monitoring of surrogate parameters sufficient to yield reliable data from the relevant time period that are representative of the facility's compliance with the permit.

For stationary reciprocating engine U11, the facility monitors the heat input as a surrogate for the short-term (lb/hr) emission limits for VOC, THC and Methane. For the boilers in U11, the facility monitors the heat input as a surrogate for the short-term (lb/hr) emission limits of VOC, TSP, PM-10 and PM-2.5

For the backup diesel compressor engine U15, the facility monitors the hours of operation as the surrogate for the long-term (tpy) emission limits for VOC, NOx and CO. The facility monitors the heat input as a surrogate for the short-term (lb/hr) emission limits of VOC, NOx and CO.

3. In some cases, direct periodic monitoring of emissions and/or surrogate parameters is not required due to one or more of the following:
 - Equipment size and capacity limitations,
 - Subject equipment being permitted at the maximum rated capacity,
 - There is no specific state or Federal standard that applies to this piece of equipment,
 - Not a pollutant of concern for this piece of equipment,
 - Agreements with EPA on the frequency of testing and monitoring for combustion sources.

VII. APPLICABLE STATE AND FEDERAL RULES

The facility is subject to New Jersey Air Pollution Control Regulations, codified in N.J.A.C. 7:27-1 through 34, as applicable. A complete text of these regulations is available at:

<http://www.nj.gov/dep/aqm/rules27.html>

The facility is subject to Federal regulations listed below.

NSPS Subpart A: General Provisions

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NSPS Subpart IIII: Stationary Compression Ignition Internal Combustion Engines
MACT Subpart A: General Provisions
MACT Subpart JJJJJJ: Industrial, Commercial, and Institutional Boilers Area Sources
MACT Subpart ZZZZ: Stationary Reciprocating Internal Combustion Engines
40 CFR 52.21 Prevention of Significant Deterioration

The Greenhouse Gas (GHG) emissions from this facility are 112,273 tpy CO₂e and the GHG emissions decreased 14 tpy CO₂e.

VIII. FACILITY'S COMPLIANCE STATUS

The Responsible Official at the facility has certified that the facility currently meets all applicable requirements of the Federal Clean Air Act and the New Jersey Air Pollution Control Act. Based on this certification, the Department's evaluation of the information included in the facility's application, and a review of the facility's compliance status, the Department has concluded that this air pollution control operating permit should be approved.

The facility has submitted a timely and complete application to renew their operating permit and an application shield is in effect.

This operating permit includes a permit shield, pursuant to the provisions of N.J.A.C. 7:27-22.17. A permit shield provides that compliance with the relevant conditions of the operating permit shall be deemed compliance with the specific applicable requirements that are in effect on the date of issuance of the draft operating permit, and which form the basis for the conditions in the operating permit.

Also, prior to the expiration of the five-year period, the facility will be required to apply for a renewal of this operating permit, at which time the Department will evaluate the facility and issue a public notice with its findings.

IX. EXEMPT ACTIVITIES

The facility's operating permit does not include exempt activities such as office and interior maintenance activities, maintenance shop activities, food preparation facilities, cafeterias and dining rooms, etc. A complete list of exempt activities, as allowed by the Operating Permit rule, can be found at N.J.A.C. 7:27-22.1.

Table 1 - Operating Permit Revision History

Permit Activity Number	Type of Revision	Description of Revision	Final Action Date
BOP220001	Administrative Amendment	The facility contact information was updated.	12/21/2022
BOP200001	Administrative Amendment	The facility name was changed Veolia Energy Trenton, L.P. to Vicinity Energy Trenton, L.P.	5/6/2020
BOP180002	Administrative Amendment	The facility contact information was updated.	1/30/2019
BOP150001	Significant Modification	Unit U11 was updated to require that, except for Engine #2 stack emission test events and startup on dual fuel, Boiler #2 will operate on natural gas during normal, dual-fuel operation of Engine #2 under Operating Scenario 14 (OS14). In this manner, Boiler #2 will supplement the existing oxidation catalyst for the control of total hydrocarbons (THC) from Engine #2 in dual-fuel mode. The existing oxidation catalyst, which is located between Engine #2 and Boiler #2, will continue to control CO and THC emissions from Engine #2. In addition, a lower minimum exit temperature was applied to the catalyst during dual-fuel firing to match that allowed on fuel oil (645 deg F) due to the reduced THC removal by the catalyst and corresponding lower temperature rise across the catalyst.	9/9/2016
BOP140001	Significant Modification	AEL startup definition was supplement with "startup on dual fuel" definition in OS14 for when engine is operating on dual fuel and still in startup mode, but subject to NOx RACT limits at N.J.A.C. 7:27-19.8. This request to revise start-up and shut-down requirements did not change any parameters in the Alternative Emission Limit (AEL) permit. The Responsible Official was updated Joseph Martorano; update air permit information contact to Scott Matthews; update consultant to Roger Hessel AECOM.	9/9/2015
BOP120001	Minor Modification	This minor modification was being submitted to: 1. Clarify the opacity requirement for U11 (OS Summary Ref. #6), 2. Update the start-up and shutdown descriptions for OS14 and OS15, 3. Address CO emissions during boiler refractory bake out for OS17 and OS19, 4. Make minor edits within the permit.	9/19/2013

FACILITY NAME (FACILITY ID NUMBER)
BOP050001

Activity Number assigned
by the Department

New Jersey Department of Environmental Protection Facility Specific Requirements

Emission Unit Number
assigned by the Facility

Brief description of
emission unit

Emission Unit: U40 Sewage Sludge Incinerators
Operating Scenario: OS Summary

OR

OS2 Fluidized Bed Incinerator

OS Summary lists all rules and requirements
that apply to an emission unit. An emission unit
may contain one or more pieces of equipment
and corresponding operating scenarios.

OSX denotes the operating scenario number and lists the rules
and requirements that apply to a scenario. An operating
scenario represents various ways (or scenarios) a piece of
equipment is permitted to operate.

Item
Number

Description of applicable
requirement

Monitoring method to
ensure compliance

Recordkeeping to show
facility's compliance

Actions and submittals
required for the facility

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
3	The permittee shall conduct an annual performance test for each pollutant in Table 2 of 40CFR62 Subpart LLL between 11 and 13 calendar months after the previous performance test or within 60 days of a process change. [40 CFR 62.16000(a)]	Other: Conduct the performance test using the test methods, averaging methods and minimum sampling volumes or durations as specified in 40CFR62 Subpart LLL and according to the testing, monitoring and calibration requirements specified in 40 CFR 62.16015(a). [40 CFR 62.16000(a)].	Other: (1) Maintain records of the results of initial, annual and any subsequent performance tests conducted to determine compliance with the emission limits and standards and/or to establish operating limits, as applicable. [40 CFR 62.16025(e)].	Submit a report: Annually to the Administrator and to the Department. The permittee shall submit an annual compliance report as specified in 40 CFR 62. [40 CFR 62.16000(d)]

Rule citation for
applicable requirement

Rule citation for
monitoring requirement

Rule citation for
recordkeeping requirement

Rule citation for submittal/
action requirement

Explanation Sheet for Facility Specific Requirements