

STATEMENT OF BASIS for BAYONNE ENERGY CENTER

TITLE V OPERATING PERMIT RENEWAL AND PERMIT MODIFICATION

Program Interest (PI): 12863 / Permit Activity Number: BOP180001

I. FACILITY INFORMATION

Bayonne Energy Center (BEC) located at 401 Hook Road in Bayonne, Hudson County, NJ 07002 is an electric generating plant. Bayonne Energy Center is owned and operated by Bayonne Energy Center LLC.

The facility is classified as a major facility based on its potential to emit (PTE) 153 tons per year of carbon monoxide (CO), 131 tons per year of nitrogen oxides (NO_x), and 43.7 tons per year of volatile organic compounds, 119 tons per year of Total Suspended Particulates (TSP), 119 tons per year of Particulate Matter less than 10 microns (PM₁₀), 119 tons per year of Particulate Matter less than 2.5 microns (PM_{2.5}); and 1,634,281 tons per year of Greenhouse gases as Carbon Dioxide Equivalent (CO_{2e}) to the atmosphere.

This permit allows any individual hazardous air pollutant (HAP) to be emitted at a rate to not exceed: 0.087 tons per year of acrolein, 0.0262 tons per year of lead, 9.65 tons per year of formaldehyde, 0.092 tons per year of Polycyclic aromatic hydrocarbon (PAH), and 1.46 tons per year of manganese.

It is not a major hazardous air pollutant (HAP) facility. A major HAP emitting facility is designated as major when the allowed emissions exceed 10 tons per year of any individual hazardous air pollutant or 25 tons per year of any combination of individual hazardous air pollutants that may be emitted simultaneously.

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:

1. Eight existing dual fuel fired identical 64 megawatt (MW) Rolls Royce Trent simple cycle combustion turbines equipped with selective catalytic reduction system (SCR) for control of nitrogen oxide emissions to 90 percent or greater when burning natural gas and 88 percent or greater when burning Ultra Low Sulfur Distillate with a sulfur content of less than or equal to 15 ppm by weight (ULSD), and catalytic oxidation units for control of carbon monoxide to 90 percent or greater when burning natural gas and 85 percent or greater when burning ULSD. Each turbine is rated at 603 MMBtu/hr when burning natural gas and 538 MMBtu/hr when burning ULSD. Hours of operation for each combustion turbine will be limited to 4,748 hours per year on natural gas, or 2,585 hours per year on natural gas and 720 hours per year operation on ULSD when operating on both fuels. There will be a restriction on the use of ULSD for a maximum of 13.5 hours per day per turbine.
2. Two additional 66 MW Siemens/Rolls Royce, Trent 60WLE, simple-cycle combustion turbines which are also dual-fueled fired with natural gas as the primary fuel and ULSD as back-up fuel. These turbines also have SCR for control of nitrogen oxide emissions to 90 percent or greater when burning natural gas and 88 percent or greater when burning ULSD, and catalytic oxidation units for control of carbon monoxide to 90 percent or greater when burning natural gas and 85 percent or greater when burning ULSD. Each turbine is rated at 614 MMBtu/hr when burning natural gas and 534 MMBtu/hr when burning ULSD. Hours of operation for each combustion turbine will be limited to 3,493 hours per year on natural gas, and 700 hours per year operation on ULSD when operating on both fuels.
3. Other equipment at the facility includes one emergency generator (1 MW) firing ULSD for 100 hrs/yr, one black start emergency generator (1 MW) equipped with SCR firing ULSD for 50 hrs/yr, one diesel

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fire pump (210 HP) firing ULSD for 100 hrs/yr, one storage tank that is an insignificant source, and an on-site water treatment system also an insignificant source.

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 on November 9, 2017 and health risk was determined to be negligible consistent with NJDEP Technical Manual 1003. A revised Health Risk Assessment was not conducted with this permit renewal, since no changes were made to Air Toxics (including HAPs) emissions or risk parameters since the last risk assessment.

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

1) Deleted "once initially" stack testing requirement from Black start generator, U6 OS Summary and U6, OS1, Refs #1- #7.

2) Transferred requirements for oxidation catalysts and water injection from OS Summary for U1 combustion turbines, and U4 combustion turbines to their individual control devices, CD103, CD203, CD303, CD403, CD503, CD603, CD703, CD803, CD903, and CD1003.

3) Transferred requirements for Selective Catalytic Reduction Systems (SCRs) for U1 combustion turbines, U4 combustion turbines, and U6 black start generator from OS Summary to their individual control devices, CD102, CD202, CD302, CD402, CD502, CD602, CD702, CD802, CD902, CD1002, and CD1301.

4) Since the facility's Continuous emissions monitoring systems (CEMs) are already certified, the requirement to get the CEMs certified is being taken out.

5) This Renewal also contains a Minor Modification Application, BOP190001, submitted by the facility to include Regional Greenhouse Gas Initiative requirements for their combustion turbines to the permit pursuant to N.J.A.C. 7:27C.

There are no proposed changes to air contaminants.

IV. 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.

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Combustion Turbines

For combustion turbines at U1 and U4 the facility monitors hours of operation, heat input, and fuel use as surrogates for the short term and long-term (TPY) emission limits for HAPs and sulfuric acid.

The facility monitors fuel use and hours of operation, as surrogates for long-term (TPY) emission limits for VOC, SO₂, TSP, PM₁₀, PM_{2.5}, Ammonia and Greenhouse gases as CO_{2e}.

Emergency Generators

For emergency generator at U2, fire pump at U3, and black start generator at U6 the facility monitors hours of operation as the surrogate for the long-term (TPY) emission limits for VOC, NO_x, CO, SO₂, TSP, PM₁₀ and PM_{2.5}. Surrogate monitoring for the short-term (lb/hr) emission limits for SO₂ is fuel oil sulfur content for SO₂.

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.

V. 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 also subject to Federal regulations listed below.

- NSPS Subpart A: New Source Performance Standards - General Provisions
- NSPS Subpart KKKK: New Source Performance Standards for Stationary Gas Turbines
- 40 CFR 72 Acid Rain Program
- 40CFR 97 Cross-State Air Pollution Rule (CSAPR)
- NSPS Subpart IIII: New Source Performance Standards for Stationary Compression Ignition Internal Combustion Engines

The Greenhouse Gas (GHG) emissions from this facility are 1,634,281 TPY CO_{2e} and there is no GHG emission increase. This renewal and modification are not subject to PSD rules at 40 CFR 52.21.

VI. 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.

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.

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VII. 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

BAYONNE ENERGY CTR PI 12863

Permit Activity Number	Type of Revision	Description of Revision	Final Action Date
BOP170001	Significant Modification	<p>This Permit Modification includes the following changes:</p> <ol style="list-style-type: none"> 1. Use of any 6 of the 10 existing Rolls Royce Trent 60 simple cycle turbines at emission unit U1 for black start testing and black-start operation. During the testing, the turbines would be operated at low load and low temperatures for up to 6 hours during which the Selective Catalytic Reduction Systems on the turbines will not be effective. 2. The facility is taking a cap on the allowable annual NOx emissions for each of the 10 turbines, such that there will be no increase in potential emissions from the low load operation of each of these turbines. 3. Addition of Polynuclear Aromatic Hydrocarbon/ Polycyclic Organic Matter (PAH/POM) emissions, to the permit for emission unit U1. 4. Addition of Acrolein, Formaldehyde, and PAH/POM emissions, to the permit for emission unit U4. 5. The total HAPs from the permit decrease from 12.95 to 11.3 tons per year, since the total HAPs of 12.95 tons per year in the current permit included all the HAPs that were above and below the N.J.A.C. 7:27-22 Appendix B reporting thresholds. The revised total includes only the HAPs that are above the reporting thresholds only. 	3/5/18
BOP160001	Significant Modification	<p>This Significant Modification Application was for the installation of a 1,750 kilowatt black- start emergency generator diesel engine.</p> <p>The new black start emergency generator engine was operated in combination with the existing emergency generator engine to allow for the simultaneous startup of four combustion turbine generators (CTGs) to comply with newly detailed testing and emergency preparedness requirements from Bayonne Energy Center's North American Electric Reliability Corporation (NERC) Transmission Operator, Con Edison.</p> <p>The proposed black-start generator engine only operates to support the proposed additional operating scenario for the CTGs. The project does not result in a significant net increase in nitrogen oxide (NOx) or VOC emissions; thereby Non-Attainment New Source Review permitting requirements in accordance with N.J.A.C. 7:27-18 was not be triggered. The increase in potential emissions for all other pollutants were below their respective significance thresholds as provided in Table 3 of N.J.A.C. 7:27-18.7.</p>	5/23/17
BOP150001	Significant Modification	<p>This Significant Modification Application was for the installation of two additional Siemens Rolls Royce Trent 60 simple cycle combustion turbines. The units fire natural gas as the primary fuel and ultra-low sulfur diesel (ULSD) as backup fuel. The facility has taken a cap on facility PTE hence the project does not result in a significant net increase in nitrogen oxide (NOx) or VOC emissions, and the requirements under N.J.A.C. 7:27-18 are not triggered. The increase in potential emissions for all other pollutants are below their respective significance thresholds as provided in Table 3 of N.J.A.C. 7:27-18.7.</p>	8/26/16
BOP140003	Administrative Amendment	<p>Administrative Amendment to the Bayonne Energy Center Title V Operating Permit to change the Facility Owner and Responsible official at the facility to Ellen Allman.</p>	10/6/14

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