

# STATEMENT OF BASIS FOR PSEG FOSSIL LLC BURLINGTON GENERATING STATION

## TITLE V OPERATING PERMIT RENEWAL

Program Interest (PI):45979 / Permit Activity Number: BOP130002

### I. FACILITY INFORMATION

PSEG Fossil LLC, Burlington Generating Station, and Public Service Electric and Gas Company (PSE&G) Liquefied Natural Gas (LNG) Plant, and the PSE&G Burlington Substation (are collectively considered the "Facility"). The Burlington Generating Station is an electric generating plant owned and operated by PSEG Fossil LLC. The LNG plant is a part of the natural gas distribution system owned and operated by PSE&G. The Burlington Substation is a part of electric distribution and transmission system owned and operated by PSE&G. The Facility is located at 200 Devlin Avenue and West Broad Avenue, partially in Burlington City and partially in Burlington Township, NJ 08016.

The Facility is classified as a major facility based on its potential to emit 17,524 tons per year of Carbon Monoxide (CO), 29,664 tons per year of Nitrogen Oxides (NO<sub>x</sub>), 2,024 tons per year of Volatile Organic Compounds (VOC), 5924 tons per year of Sulfur Dioxide (SO<sub>2</sub>), 2,971 tons per year of Total Suspended Particulates (TSP), 8,260 tons per year of Particulate Matter less than 2.5 microns (PM<sub>2.5</sub>), 8,260 tons per year of Particulate Matter less than 10 microns (PM<sub>10</sub>), and 5,021,200 tons per year of Carbon Dioxide equivalent (CO<sub>2e</sub>) to the atmosphere.

It is also classified as 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 HAP or 25 tons per year of any combination of individual HAPs that may be emitted simultaneously. This permit allows the total HAPs to be emitted at a rate not to exceed 38.8 tons per year from the facility.

### 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 (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), 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 and portions of the State are designated as nonattainment for the daily SO<sub>2</sub> NAAQS. This facility is located in a nonattainment area of the State in which the ambient air concentration exceeds 8-hour ozone NAAQS.

### III. BACKGROUND AND HISTORY

The equipment that emits air contaminants from this facility include: Four (4) General Electric (GE) LM6000 simple-cycle combustion turbine modules each with a power output of forty five (45) megawatts (MW), seventeen (17) Pratt and Whitney simple-cycle FT4 (FT4) combustion turbines, two (2) hot water heaters; two (2) emergency generators; and two (2) fire pumps. The four LM6000 simple-cycle combustion modules have water injection for NO<sub>x</sub> emissions control. Sixteen of the FT4 turbines have water injection for NO<sub>x</sub> emission controls on high electric demand days (HEDDs).

All the combustion turbines at this facility are HEDD units as defined at N.J.A.C. 7:27-19.1. Beginning May 1, 2015, these turbines will be subject to the HEDD emission limits in Table 7 at N.J.A.C. 7:27-19.5(g). As currently operated, the seventeen FT4 turbines are not capable of complying with these emission limits. If additional emission controls, capable of enabling these turbines to comply with the applicable HEDD emission limits, are not installed and operated by May 1, 2015, these turbines must cease operation on this date. PSEG has indicated in the latest update to their 2015 Plan (submitted in January 2014, pursuant to N.J.A.C.7:27-19.30) that they intend to retire the nine (9) FT4 turbines by May 1, 2015. PSEG has also indicated that eight (8) of the FT4 turbines will no longer operate starting June 1, 2014.

Consistent with N.J.A.C. 7:27-22.30(d) 1, 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

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permit through seven-day notice changes, administrative amendments, minor modifications, or significant modifications during the past five-year term 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.

As part of the 5-year renewal review and the public comment process, the Department requires major facilities to submit facility-wide emission trends for major sources of air contaminants. These graphs for the last five years are included at the end of this document.

### 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
3. In situations where the underlying applicable requirement did not specify any periodic testing or monitoring, the following factors were considered in the evaluation and determination of the appropriate methodology for compliance demonstration for each emission unit:
  - Pollutant's potential impact on public health and environment.
  - Emission unit and control device (older, less reliable equipment generally require more monitoring to ensure ongoing compliance).
  - Compliance history and margin of compliance.
  - Emissions variability and process stability (emissions units with highly variable process rates or materials generally require more monitoring to ensure ongoing compliance)
  - Quantity of emissions (emissions units that will have more impact on the environment generally require more monitoring to ensure ongoing compliance).

### 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 IIII:	New Source Performance Standards for Stationary Compression Ignition Internal Combustion Engines
NSPS Subpart A:	New Source Performance Standards - General Provisions
NSPS Subpart GG:	Standards of Performance for Stationary Gas Turbines
NESHAPs Subpart ZZZZ:	National Emission Standards for Hazardous Air Pollutants (initial notification requirement only)

The Greenhouse Gas (GHG) emissions from this facility are 5,021,200 TYPY CO<sub>2</sub>e and there is no GHG emissions increase. The facility is not subject to Federal Prevention of Significant Deterioration of Air Quality (PSD) regulations codified at 40 CFR 52.21 because there have been no physical or operational

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changes at the facility since February 25, 2010 which increase emissions of GHG or other criteria pollutants above the PSD applicability threshold.

### **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. Prior to the expiration of the Operating Permit's five-year term, the facility will be required to apply for a renewal, at which time the Department will evaluate the facility and issue a public notice with its findings.

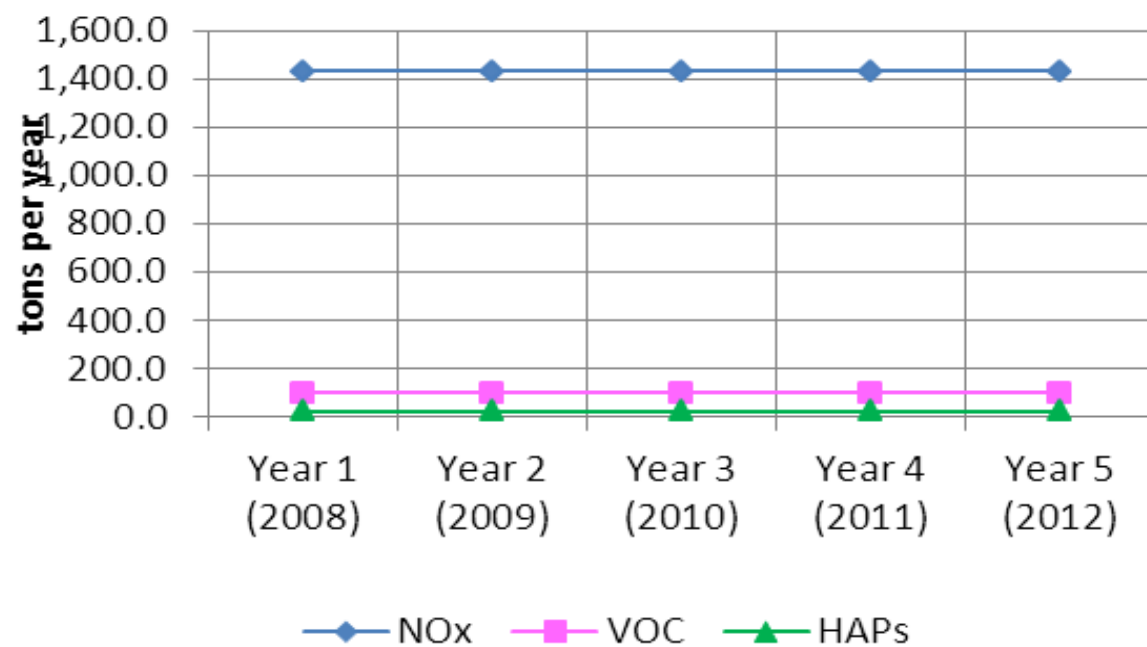
### **VII. EXEMPT ACTIVITIES**

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.

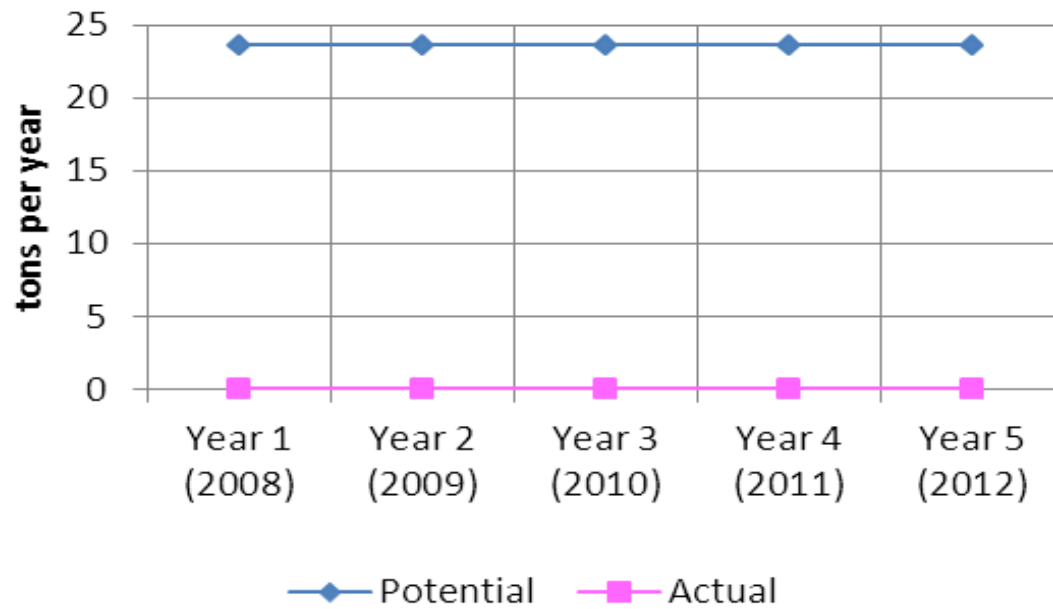
Table 1 - Operating Permit Revision History

Facility Name:	PSEG Fossil LLC, Burlington Generating Station			PI Number:	45979	Activity Number:	BOP130002
Permit Term	From:	February 25, 2010	To:	February 24, 2015			
<u>Activity Number</u>	<u>Type of Revision</u>	<u>U/BP NJID</u>	<u>Description of Revision</u>				<u>Approval Date</u>
BOP130001	Administrative Amendment		Change Responsible Official				8/22/13
BOP120001	Significant Modification	U101	Addition of a new emergency diesel generator at PSE&G Burlington Substation				1/14/13
BOP100002	Significant Modification	All emission units	Change-Relaxation of Stack Testing Requirements for all turbines on oil firing scenarios. Also remove stack testing requirements for natural gas as allowed by presumptive norms if initial stack testing has been conducted.				1/16/2013
BOP080005	Renewal + significant Modification		Renewal + CAIR Permit + Significant modification to include Appeal issues.				2/22/11
BOP090001	Significant Modification	U15	Increase in combined maximum annual gross heat input rate from burning natural gas from 2.41 E12 BTU per calendar year (as permitted in year 2000 under permit number PCP990001 and equivalent to 3.11 E12 BTU per any 365-consecutive day period, rolling 1 day basis) to 2.61 BTU per calendar year (equivalent to 3.36 E12 BTU per any 365-consecutive day period, rolling 1 day basis) for all of Unit 12's four (4) simple cycle LM6000 turbine.				5/12/09

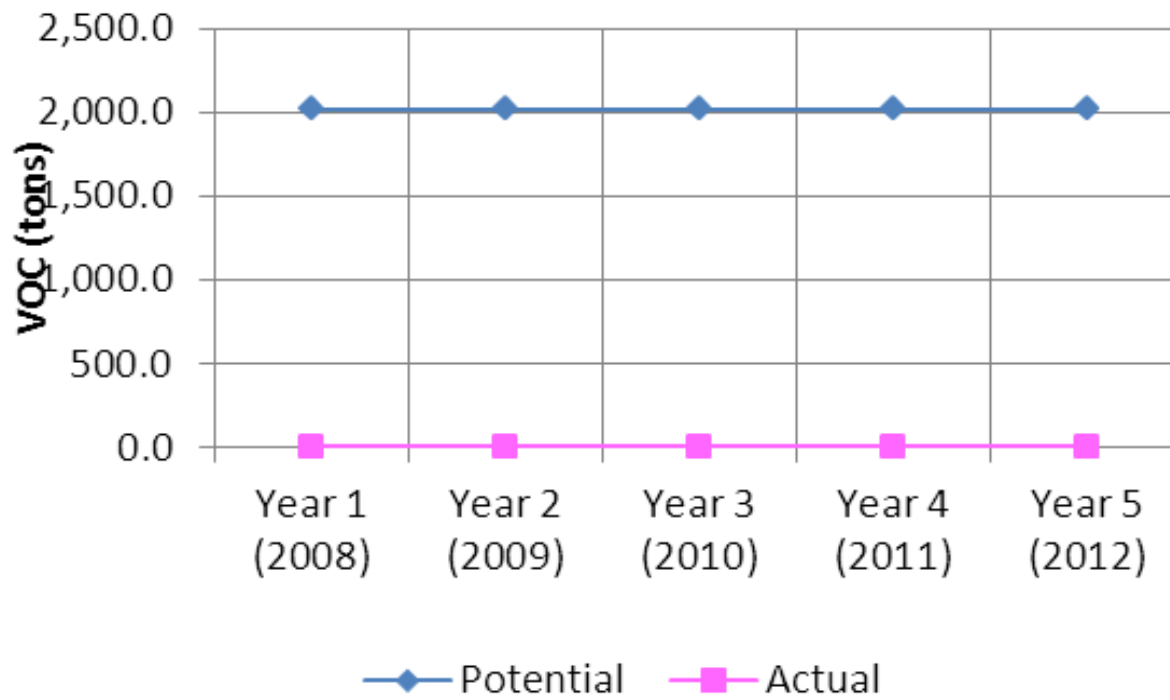
### 5-Year Trend Allowable Emissions



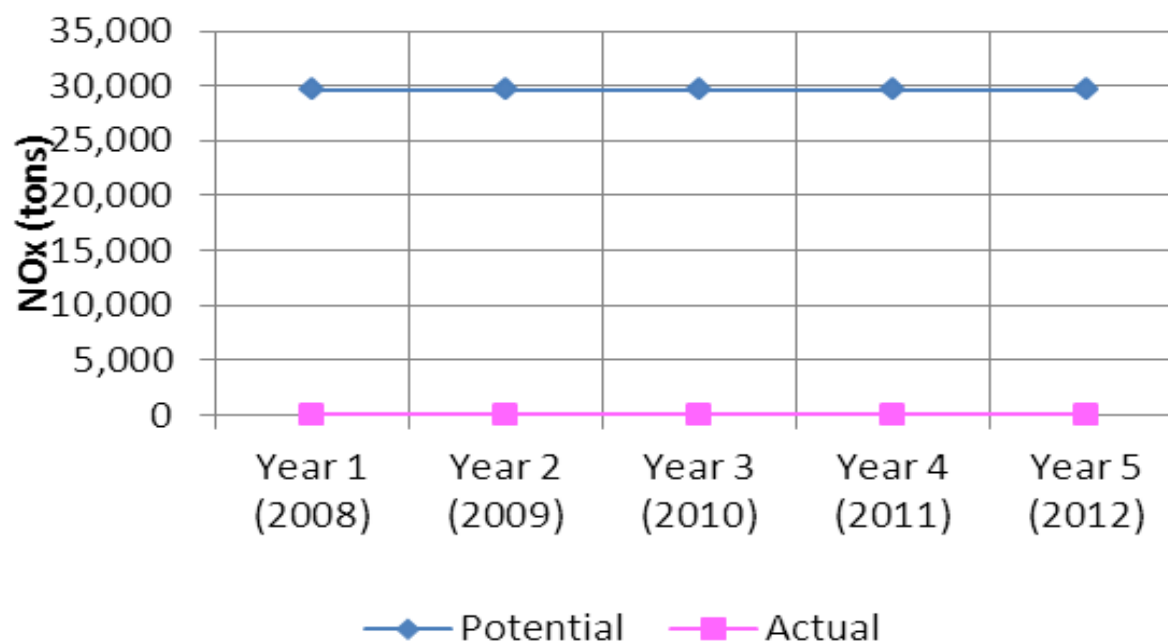
### 5-Year Trend Potential vs Actual HAPs Emission



### 5-Year Trend Potential vs Actual VOC Emission



### 5-Year Trend Potential vs Actual NOx Emission





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: U1 25 MM BTU/hour Boiler burning Fuel Oil and Natural Gas  
Operating Scenario: OS Summary OR OSXX Boiler burning Fuel Oil

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

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

Records to be kept

Submittal requirement

Item Number

Description of applicable requirement

Air contaminants

Monitoring method to ensure compliance

Actions to be taken by the facility

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
1	Conduct a comprehensive stack test at emission point PTXX at least 18 months prior to the expiration of the approved operating permit to demonstrate compliance with the <u>CO, NOx, TSP and VOC</u> emission limits.[N.J.A.C. 7:27-22.16(e)]	Other: <u>Stack emission testing</u> . Stack test shall be conducted for CO, NOx, TSP, and VOC emissions (add language as needed). Based on any 60-minute period. [N.J.A.C. 7:27-22.16(e)]	Other: <u>Stack test results</u> . [N.J.A.C. 7:27-22.16(e)]	Stack Test - <u>Submit a protocol</u> , <u>conduct stack tests</u> , <u>submit results</u> : As per the approved schedule. <u>Submit a stack test protocol to the Bureau of Technical Services (BTS)</u> at PO Box 437, Trenton, NJ 08625 at least 30 months prior to the expiration of the approved operating permit. [N.J.A.C. 7:27-22.18(e)] and [N.J.A.C. 7:27-22.18(h)]

Rule citation (subchapter, section, and paragraph) for the applicable requirement

Rule citation for the monitoring requirement

Rule citation for the recordkeeping requirement

Rule citations for the submittal/action requirement