



STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR MANAGEMENT

NEW SOURCE REVIEW PERMIT
TO CONSTRUCT AND OPERATE
A STATIONARY SOURCE

Issued pursuant to Title 22a of the Connecticut General Statutes and Section 22a-174-3a of the Regulations of Connecticut State Agencies.

Owner/Operator: PSEG Power Connecticut LLC
New Haven Harbor Station

Address: 1 Waterfront Street, New Haven, CT 06512

Equipment Location: 1 Waterfront Street, New Haven, CT 06512

Equipment Description: Main Steam Generator (NHHS#1)

Collateral Conditions: PART VII of this permit contains conditions which apply to the operation of three GE LM6000 turbines

Permit Number: 117-0031

Town/Premises Numbers: 117-551

Prior Permit Issue Dates: 11/20/1996
01/13/2011 (modification)

Permit Issue Date: 4/18/2012

Expiration Date:

/s/ Anne Gobin for
Daniel C. Esty
Commissioner

April 18, 2012
Date

PERMIT FOR FUEL BURNING EQUIPMENT

STATE OF CONNECTICUT, DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF AIR MANAGEMENT

The conditions on all pages of this permit and attached appendices shall be verified at all times except those noted as design specifications. Design specifications need not be verified on a continuous basis; however, if requested by the commissioner, demonstration of compliance shall be shown.

PART I. OPERATIONAL CONDITIONS

A. Operating Limits

1. Fuel Type(s): No. 2 fuel oil, Residual fuel oil, Natural gas
2. Maximum Fuel Consumption over any Consecutive Twelve (12) Month Period: Residual and No.2 fuel oil shall not exceed 258,390,000 gallons and 15,768X10⁶ cubic feet of natural gas
3. Fuel Sulfur Content (% by weight, dry basis): 1.0% for Residual fuel
0.3% No. 2 fuel

B. Design Specifications

1. Maximum Fuel Firing Rate(s): 29,700 gallons/hour
2. Maximum Gross Heat Input (MM BTU/hr): 4,286
3. Minimum Stack Height (ft): 389
4. Minimum Exhaust Gas Flow Rate (acfm): 1,216,960 at Max. Capacity
5. Stack Exit Temperature (°F): 310
6. Minimum Distance from Stack to Property Line (ft): 400

PART II. CONTROL EQUIPMENT (Applicable if -X- Checked) (See Appendix E for Specifications)

A. Type

- | | |
|--|--|
| <input type="checkbox"/> None | <input type="checkbox"/> Selective Non-Catalytic Reduction |
| <input type="checkbox"/> Scrubber | <input type="checkbox"/> Selective Catalytic Reduction |
| <input checked="" type="checkbox"/> Electrostatic Precipitator | <input type="checkbox"/> Low NOx Burner |
| <input type="checkbox"/> Cyclone | <input type="checkbox"/> Fabric Filter |
| <input type="checkbox"/> Multi-Cyclone | <input type="checkbox"/> Particulate Trap |
| <input type="checkbox"/> Thermal DeNOx | <input type="checkbox"/> Other |

*The unit is allowed to burn up to 1.3% sulfur oil whenever the firing rate of natural gas exceeds 25% of the unit's total input.

** The Electrostatic precipitator must meet the manufacturer's guarantee of 95% particulate removal efficiency or an outlet level of 0.005 grains/actual cubic foot (GR./ACF), whichever is greater.

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Premise No: 551

Permit No: 0031

Stack No: 01

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**PART III. CONTINUOUS EMISSION MONITORING REQUIREMENTS AND
ASSOCIATED EMISSION LIMITS (Applicable if -X- Checked)**

The Permittee shall comply with the CEM requirements as set forth in RCSA Section 22a-174-4. CEM shall be required for the following pollutant/operational parameters and enforced on the following basis:

<u>Pollutant/Operational Parameter</u>	<u>Averaging Times</u>	<u>Emission Limit</u>	<u>Units</u>
<input type="checkbox"/> None			
<input type="checkbox"/> Opacity	six minute block		
<input checked="" type="checkbox"/> SOx	3 hour rolling		
<input type="checkbox"/> NOx	24 hour rolling		
<input type="checkbox"/> CO	1 hour block		
<input type="checkbox"/> CO ₂	1 hour block		
<input type="checkbox"/> O ₂	1 hour block		
<input type="checkbox"/> Temperature	continuous		

PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS

A. Monitoring

When more than one fuel supply tank is to service this source or when multiple sources are supplied by one fuel tank, the Permittee shall use a non-resettable totalizing fuel metering device to continuously monitor each fuel fed to this permitted source.

B. Record Keeping

1. The Permittee shall keep records of annual fuel consumption. Annual fuel consumption shall be based on any consecutive twelve (12) month time period and shall be determined by adding (for each fuel) the current month's fuel usage to that of the previous eleven (11) months. The Permittee shall make these calculations within thirty (30) days of the end of the previous month.
2. The Permittee shall keep records of the fuel certification for each delivery of fuel from a bulk petroleum provider or a copy of the current contract with the fuel supplier supplying the fuel used by the equipment that includes the applicable sulfur content of the fuel as a condition of each shipment. The shipping receipt or contract shall include the date of delivery, the name of the fuel supplier, type of fuel delivered, the percentage of sulfur in such fuel, by weight, dry basis, and the method used to determine the sulfur content of such fuel.
3. The Permittee shall calculate and record the monthly and consecutive 12 month PM-10, SO₂, NOx, CO, VOC and Pb emissions in units of tons. The consecutive 12 month emissions shall be determined by adding (for each pollutant) the current month's emissions to that of the previous 11 months. Such records shall include a sample calculation for each

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PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS, cont'd

pollutant. The Permittee shall make these calculations within 30 days of the end of the previous month. Emissions during startup and shutdown shall be counted towards the annual emission limitation in Part V of this permit. The Permittee shall make and keep records of the date, time and duration of each startup and shutdown event.

4. While this permitted unit is firing fuel or emitting air pollutants, the Permittee shall continuously monitor and continuously record primary and secondary voltages, currents and kilowatts of the ESP. The Permittee shall maintain these parameters within the ranges recommended by the manufacturer to achieve compliance with the emission limits in this permit.
5. The Permittee shall maintain records of the periods during which the unit is co-fired with Natural Gas, the firing rate of Natural Gas and the sulfur content of the fuel oil being fired.
6. The Permittee shall keep records on premises indicating continual compliance with all above conditions at all times and shall make them available upon request by the commissioner for the duration of this permit, or for the previous five (5) years, whichever is less.

PART V. ALLOWABLE EMISSION LIMITS

The Permittee shall not exceed the emission limits stated herein at any time.

For Oil¹

<u>Criteria Pollutants</u>	<u>#/hr</u>	<u>#/MM BTU</u>	<u>MASC * (ug/m³)</u>	<u>TPY</u>
PM-10	261.9	0.061		1139.27
SOx	4714.6	1.100		20508.21
NOx	1071.5	0.250		4661.03
VOC	34.29	0.008		149.16
CO	150.0	0.035		652.50
Pb	0.493	0.0001	1262.50	2.145

¹These emission limits apply when firing residual and No.2 fuel oil.

For Natural Gas

<u>Criteria Pollutants</u>	<u>#/hr</u>	<u>#/MM BTU</u>	<u>MASC * (ug/m³)</u>	<u>TPY</u>
PM-10	12.86	0.003		24.362
SOx	2.57	0.0006		4.872
NOx	857.2	0.200		1624.1
VOC	6.43	0.0015		12.181
CO	171.4	0.040		324.82

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PART V. ALLOWABLE EMISSION LIMITS, continued

*Maximum allowable stack concentration (8-Hr)

**The higher of the above emission rates (oil or natural gas) shall apply when co-firing either residual or No. 2 fuel oil with Natural Gas.

Combined Emissions

<u>Criteria Pollutants</u>	<u>TPY</u>
PM-10	1139.27
SOx	20508.51
NOx	4672.15
VOC	149.16
CO	693.15
Pb	2.145

Combined

<u>Non-Criteria Pollutants</u>	<u>MASC * (ug/m³)</u>
Sulfuric Acid	8416.68
Arsenic	21.04
Beryllium	4.21
Chromium	4209.48
Nickel	2104.17
Cadmium	168.33
Formaldehyde	5050.01
Copper	8416.68
Other	

Demonstration of compliance with the above emission limits shall be met by calculating the emission rates using emission factors from the following sources:

1. Criteria and HAP emission factors were obtained from Compilation of Air Pollution Emission Factors (AP-42), Vol 5th Edition
2. Sulfuric emission factors were obtain from a memo dated 11/27/87 (David Nash, Asst. Dir.) on emission factor calculation for H₂SO₄ formation for fuel sources.
3. Stack testing

The above statement shall not preclude the commissioner from requiring other means (e.g. stack testing) to demonstrate compliance with the above emission limits, as allowed by state or federal statute, law or regulation.

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BUREAU OF AIR MANAGEMENT****PART VI. STACK EMISSION TEST REQUIREMENTS** (Applicable if -X- Checked)

Stack emission testing shall be required for the following pollutant(s):

None at this time

TSP SOx NOx CO

VOC PM-10 Pb

Other (HAPS): _____, _____,

PART VII. SPECIAL REQUIREMENTS

A. The Permittee shall operate and maintain this equipment in accordance with the manufacturer's specifications, written recommendations and good engineering practices.

B. Noise [State Enforceable Only]

The Permittee shall operate this facility at all times in a manner so as not to violate or contribute significantly to the violation of any applicable state noise control regulations, as set forth in Sections 22a-69-1 through 22a-69-7.4 of the Regulations.

C. The Permittee shall comply with all applicable sections of the following New Source Performance Standard(s) at all times. (Applicable if -X- checked)

40 CFR Part 60, Subpart: Db Dc GG A

None

D. For each hour that NHHS #1 operates simultaneously with one or more of the turbines covered by permit #s 117-0373 thru 117-0375 issued by the Department of Environmental Protection, the Permittee shall reduce the economic maximum output of NHHS #1 by 4 MW per turbine, for each hour or portion thereof that a turbine operates.

For the purpose of this condition, economic maximum output is the maximum available output, in MW, that the Permittee offers to supply ISO-NE in the Day-Ahead Energy Market or Real-Time Energy Market, as reflected in the Supply Offer made by PSEG for NHHS #1. This represents the highest MW output the Permittee has offered for NHHS #1 for economic dispatch. The net power output from NHHS #1 during any hour shall not exceed the economic maximum output declared for that hour.

This condition shall not apply during a declared system reserve deficiency as detailed in ISO New England Operating Procedures 4 "Action during Capacity Deficiency".

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PART VII. SPECIAL REQUIREMENTS, continued

- E.** During the Ozone Season, the Permittee shall co-fire NHHS #1 with Natural Gas. The Natural Gas fuel firing rate, in standard cubic feet per hour (scf/hr) shall be an amount averaging at a minimum over each calendar day between 450 thousand cubic feet (mcf) and 550 mcf per hour of natural gas, except during startup, load shift or shut-down or when the availability of the natural gas is restricted.

For purposes of this condition, the "Ozone Season" shall be the period from April 1 through September 30 of each calendar year, or another time period designated by the federal Environmental Protection Agency in 40 CFR 58, Appendix D, as may be amended from time to time.

- F.** During the non-ozone season, for each hour that the Permittee operates NHHS #1 simultaneously with one or more of the turbines covered by permit #s 117-0373 thru 117-0375 issued by the Department of Environmental Protection, the Permittee shall co-fire NHHS #1 with Natural Gas for at least one hour for each hour, or portion thereof, that any turbine is operated.
1. If the availability of Natural Gas is restricted when the Permittee is dispatched by ISO-NE to operate NHHS #1, the Permittee shall ensure that NHHS #1 is co-fired with Natural Gas, to meet the requirements of paragraph F of this permit, during its next period of operation, and any subsequent periods of operation, that the availability of Natural Gas is not restricted.
 2. The Natural Gas fuel firing rate, in scf/hr, shall be an amount averaging at a minimum over each calendar day between 450 mcf and 550 mcf per hour of natural gas, except during startup, load shift or shut-down.
- G.** The Permittee shall ensure that in its daily bid to ISO-NE regarding NHHS #1, the minimum required run time for NHHS #1 is not more than 12 hours.
- H.** The Permittee shall make and maintain the records listed below on site for a period of not less than five years from the making of such records and shall make them available to the commissioner upon request. This retention period for maintaining records under this condition shall automatically be extended during the course of any unresolved enforcement action regarding Part VII., sections D through G, inclusive.

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1. The Permittee shall record and maintain records of the economic maximum output of NHHS #1 as declared by the Permittee on an hourly basis. Such records shall also include any re-declared economic maximum output resulting from the operation of the turbines. The Permittee shall maintain copies of these declarations as they are made.
2. The Permittee shall maintain hourly records of the net power output of NHHS #1 obtained from a watt meter that is maintained and calibrated and that continuously monitors the net power output of NHHS #1.
3. At the time each peaking turbine (permit #s 117-0373 thru 117-0375), is operating, the Permittee shall maintain records of the date and the starting and stopping time of each peaking turbine's operation. For each peaking turbine, the Permittee shall tabulate the number of hours of operation for each calendar month and shall maintain this tabulation of total hours operated.
4. At the time that NHHS #1 is operating, the Permittee shall maintain records of the date and time NHHS #1 is operated, the types of fuel fired in NHHS #1 during such operation and the hourly usage of each fuel fired in NHHS #1.

PART VIII. ADDITIONAL TERMS AND CONDITIONS

- A. This permit does not relieve the Permittee of the responsibility to conduct, maintain and operate the regulated activity in compliance with all applicable requirements of any federal, municipal or other state agency. Nothing in this permit shall relieve the Permittee of other obligations under applicable federal, state and local law.
- B. Any representative of the DEP may enter the Permittee's site in accordance with constitutional limitations at all reasonable times without prior notice, for the purposes of inspecting, monitoring and enforcing the terms and conditions of this permit and applicable state law.
- C. This permit may be revoked, suspended, modified or transferred in accordance with applicable law.
- D. This permit is subject to and in no way derogates from any present or future property rights or other rights or powers of the State of Connecticut and conveys no property rights in real estate or material, nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state or local laws or regulations pertinent to the facility or regulated activity affected

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PART VIII. ADDITIONAL TERMS AND CONDITIONS, continued

thereby. This permit shall neither create nor affect any rights of persons or municipalities who are not parties to this permit.

- E.** Any document, including any notice, which is required to be submitted to the commissioner under this permit shall be signed by a duly authorized representative of the Permittee and by the person who is responsible for actually preparing such document, each of whom shall certify in writing as follows: "I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information may be punishable as a criminal offense under section 22a-175 of the Connecticut General Statutes, under section 53a-157b of the Connecticut General Statutes, and in accordance with any applicable statute."
- F.** Nothing in this permit shall affect the commissioner's authority to institute any proceeding or take any other action to prevent or abate violations of law, prevent or abate pollution, recover costs and natural resource damages, and to impose penalties for violations of law, including but not limited to violations of this or any other permit issued to the Permittee by the commissioner.
- G.** Within fifteen days of the date the Permittee becomes aware of a change in any information submitted to the commissioner under this permit, or that any such information was inaccurate or misleading or that any relevant information was omitted, the Permittee shall submit the correct or omitted information to the commissioner.
- H.** The date of submission to the commissioner of any document required by this permit shall be the date such document is received by the commissioner. The date of any notice by the commissioner under this permit, including but not limited to notice of approval or disapproval of any document or other action, shall be the date such notice is personally delivered or the date three days after it is mailed by the commissioner, whichever is earlier. Except as otherwise specified in this permit, the word "day" means calendar day. Any document or action which is required by this permit to be submitted or performed by a date which falls on a Saturday, Sunday or legal holiday shall be submitted or performed by the next business day thereafter.
- I.** Any document required to be submitted to the commissioner under this permit shall, unless otherwise specified in writing by the commissioner, be directed to: Office of Director; Engineering & Enforcement Division; Bureau of Air Management; Department of Environmental Protection; 79 Elm Street, 5th Floor; Hartford, Connecticut 06106-5127.

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Appendices attached (Applicable if -X- checked):

- A Continuous Emission Monitoring Requirements
- B Stack Emission Test Requirements
- C New Source Performance Standards
- E Control Equipment Specifications

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