

GOVERNMENT OF THE DISTRICT OF COLUMBIA

District Department of the Environment



Air Quality Division

December XX, 2012

Mr. Christopher Potter
Director, Utilities and Power Plant Operations
Architect of the Capitol
25 E Street SE
Washington, DC 20003

RE: Permits to Construct Two Combustion Turbines and Associated Two Heat Recovery Steam Generating Units with Duct Burners

Dear Mr. Potter:

Pursuant to sections 200.1 and 200.2 of Title 20 of the District of Columbia Municipal Regulations (20 DCMR), a permit from the District Department of the Environment ("the Department") shall be obtained before any person can construct or operate a stationary source in the District of Columbia. The application of the Architect of the Capitol (AOC) ("Permittee" or "owner or operator") to construct and operate two combustion turbines, each with an associated heat recovery steam generating unit with duct burners for the primary purpose of generating steam for heating and electricity, located on the property of the Capitol Power Plant (CPP), 25 E Street SE, Washington, DC, has been reviewed. The project consists of the following significant components:

Equipment Location	Address	Equipment Size	Type	Permit Number
Capitol Power Plant	25 E Street, SE Washington, DC 20003	7.5 MW	Combustion Turbine with 71.9 MMBtu/hr HRSG (CT-1 and HRSG-1)	6663-C
Capitol Power Plant	25 E Street, SE Washington, DC 20003	7.5 MW	Combustion Turbine with 71.9 MMBtu/hr HRSG (CT-2 and HRSG-2)	6664-C

Based on the submitted plans and specifications as detailed in the application dated February 10, 2012 and supplemental information dated March 14, 2012 and March 28, 2012, your application to construct is hereby approved subject to the following conditions:

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I. General Regulatory Requirements:

- a. The equipment shall be constructed and, upon receipt of a subsequent operating permit, operated, in accordance with the air pollution control requirements of 20 DCMR.
- b. These permits expire on December XX, 2015 [20 DCMR 200.4]. If continued construction after this date is desired, the owner or operator shall submit an application for renewal by June XX, 2015.
- c. Construction of equipment under the authority of these permits shall be considered acceptance of their terms and conditions.
- d. The Permittee shall allow authorized officials of the District, upon presentation of identification, to:
 1. Enter upon the Permittee's premises where a source or emission unit is located, an emissions related activity is conducted, or where records required by these permits are kept;
 2. Have access to and copy, at reasonable times, any records that must be kept under the terms and conditions of these permits;
 3. Inspect, at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under these permits; and
 4. Sample or monitor, at reasonable times, any substance or parameter for the purpose of assuring compliance with these permits or any applicable requirement.
- e. These permits shall be kept on the premises and produced upon request.
- f. Failure to comply with the provisions of these permits may be grounds for suspension or revocation. [20 DCMR 202.2]
- g. The Permittee shall, upon completion of the construction, request that the Department grant approval to operate.
 1. A separate application to operate pursuant to 20 DCMR Chapter 2 does not need to be submitted to the Department for the equipment or process covered by this construction permit. Upon a satisfactory demonstration by an on-site

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inspection that the equipment or process complies with all of the terms and conditions of this permit document, and any other applicable requirements, the Department will issue a Chapter 2 Operating Permit for this equipment or process.

2. The applicant shall notify the Department sufficiently in advance of the demonstration and shall obtain the Department's prior concurrence of the operating factors, time period, and other pertinent details relating to the demonstration.
3. The provisions of 20 DCMR 200.2 shall not apply to the operation of equipment or processes for the purposes of initially demonstrating satisfactory performance to the Department following construction, installation, modification, or alteration of the equipment or processes. [20 DCMR 200.3]
- h. If modifications to the equipment design as submitted in the permit application, or any revision thereof, are required, an amendment to this construction permit shall be obtained before making these design changes, unless the Department determines that no such amendment is required.
- i. Any renovation or demolition activity that may occur as a part of this project must be performed in conformance with the requirements of 20 DCMR 800. If a permit is required under this section, a separate asbestos permit must be obtained. This construction permit does not replace any asbestos abatement permit that may be required.
- j. Within 12 months of the issuance of a permit to operate the equipment covered by this permit document, the Permittee shall apply for an amendment to an existing Chapter 3 operating permit or shall amend any pending Chapter 3 operating permit application to include the requirements of this permit document. [20 DCMR 301.1(a)(2)]

II. Emission Limitations:

- a. When burning natural gas, the combined nitrogen oxides (NO_x) emissions from each combustion turbine and associated HRSG unit shall not exceed twenty-five parts per million (25 ppm) at fifteen percent oxygen (15% O₂) or one hundred fifty (150) nanograms per Joule (150 ng/J) of useful output, equivalent to 1.2 pounds per megawatt-hour (lb/MWh). [40 CFR 60.4320(a) and Table 1 of Subpart KKKK of 40 CFR 60]

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- b. When burning diesel oil the combined NO_x emissions from each combustion turbine and associated HRSG unit shall not exceed seventy four (74) ppm at fifteen percent (15%) O₂ or four hundred sixty (460) ng/J of useful output, equivalent to 3.6 lb/MWh. [40 CFR 4320(a) and Table 1 of Subpart KKKK of 40 CFR 60]
- c. When burning diesel oil in combination with natural gas, if total heat input is greater than or equal to fifty percent (50%) natural gas, the owner or operator shall meet the natural gas emission limit for NO_x in II(a). If total heat input is greater than fifty percent (50%) diesel oil, the owner or operator shall meet the diesel oil emission limit for NO_x in II(b). [40 CFR 60.4325]
- d. Each of the combustion turbines shall comply with one of the following emission limitations for sulfur dioxide (SO₂). Compliance shall be demonstrated in accordance with Condition IV(c) or (d). [40 CFR 60.4330(a)]
 - 1. No discharge of gases to the atmosphere which contain SO₂ in excess of one hundred ten (110) ng/J gross output, equivalent to 0.90 lb/MWh; or
 - 2. No fuel may be burned which contains total potential sulfur emissions in excess of twenty-six (26) ng SO₂/J heat input, equivalent to 0.060 lb SO₂/MMBtu.
- e. Facility-wide emissions of total hazardous air pollutants (HAPs) shall be less than twenty-five tons per year (25 tpy) on a rolling twelve (12) month basis. [20 DCMR 201]
- f. Facility-wide emissions of each individual HAP, including hydrogen chloride (HCl), shall be less than ten (10) tpy on a rolling twelve (12) month basis. [20 DCMR 201]
- g. Permit limits identified in Conditions II(e) and (f) will become effective upon the earliest of the following dates:
 - 1. Initial “startup”, as defined in 40 CFR 63.2, of either combustion turbine;
 - 2. One week prior to the first substantive compliance date contained in 40 CFR 63, Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, as amended; or

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3. Written notice from the Permittee to the District and EPA invoking the limitations of Conditions II(e) and (f) administratively.

Subsequently, as long as Conditions II(e) and (f) are met by the applicable date above, the facility will be considered an area source of HAPs.

- h. Visible emissions shall not be emitted into the outdoor atmosphere from these units, except that discharges not exceeding forty percent (40%) opacity (unaveraged) shall be permitted for two (2) minutes in any sixty (60) minute period for an aggregate of twelve (12) minutes in any twenty-four hour (24 hr.) period during start-up, cleaning, adjustment of combustion controls, or malfunction of the equipment. [20 DCMR 606.1]
- i. An emission into the atmosphere of odorous or other air pollutants from any source in any quantity and of any characteristic, and duration which is, or is likely to be injurious to the public health or welfare, or which interferes with the reasonable enjoyment of life or property is prohibited. [20 DCMR 903.1] *Note: This condition is District enforceable only.*
- j. In addition to complying with the requirements of this permit document, the Permittee shall comply with all Plantwide Applicability Limits (PALs) established for the facility.

III. Operational Limitations:

- a. The permittee shall burn only the following fuels [20 DCMR 201]:
 1. Natural gas; and
 2. Ultra-low sulfur diesel with sulfur content less than 0.0015% by weight (15 ppm).
- b. Ultra-low sulfur diesel consumption shall be limited to no more than 1,500,000 gallons per year in the two combustion turbines and their associated HRSGs, combined. [20 DCMR 201]
- c. Prior to May 1st of each year after equipment startup, the Permittee shall adjust the combustion process of each HRSG unit in accordance with the procedures for doing so set forth in 20 DCMR 805.8. [20 DCMR 805.5(a)] To show compliance with this condition, the Permittee shall perform adjustments of the combustion processes of the units with the following characteristics [20 DCMR 805.8(a)]:

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1. Inspection, adjustment, cleaning or replacement of fuel burning equipment, including the burners and moving parts necessary for proper operation as specified by the manufacturer;
 2. Inspection of the flame pattern or characteristics and adjustments necessary to minimize total emissions of NO_x and, to the extent practicable, minimize emissions of CO; and
 3. Inspection of the air-to-fuel ratio control system and adjustments necessary to ensure proper calibration and operation as specified by the manufacturer.
- d. At all time, including periods of startup, shutdown, and malfunction, the owner shall, to the extent practicable, maintain and operate the units in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating procedures are being used will be based on information available to the Department which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. [40 CFR 60.4333(a) and 20 DCMR 201]

IV. Monitoring and Testing Requirements:

- a. The owner or operator shall conduct an initial performance test for each unit, as required by 40 CFR 60.8, for NO_x and SO₂ in accordance with 40 CFR 60.4400(a) and 40 CFR 60.4415(a). [40 CFR 60.4400(a), 40 CFR 60.4415(a), and 40 CFR 60.8]
- b. The owner or operator shall perform annual performance tests in accordance with 40 CFR 60.4400 to demonstrate continuous compliance with the NO_x limits in this permit. If the NO_x emission result from the performance test is less than or equal to 75 percent of the NO_x emission limit for the turbine, the Permittee may reduce the frequency of subsequent performance tests to once every two years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the NO_x emission limit for the turbine, the Permittee must resume annual performance tests. [40 CFR 60.4340 (a)]
- c. The Permittee shall perform the tests required pursuant to Conditions IV(a), (b), and (m) and shall furnish the Department with a written report of the results of such performance tests in accordance with the following requirements. [20 DCMR 502] :

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1. One (1) original and one (1) copy of the test protocol shall be submitted to the following address a minimum of thirty (30) days in advance of the proposed test date in accordance with Condition VI(d). The test shall be conducted in accordance with Federal and District requirements.

Chief, Compliance and Enforcement Branch
Air Quality Division
1200 First Street NE
5th Floor
Washington, DC 20002

2. The test protocol shall be approved by the District prior to initiating any testing. Upon approval of the test protocol, the Permittee shall finalize the test date with the assigned inspector in the Compliance and Enforcement Branch. The District must have the opportunity to observe the test for the results to be considered for acceptance.
3. The final results of the testing shall be submitted to the District within sixty (60) days of the test completion. One (1) original and one (1) copy of the test report shall be submitted to the address in Condition IV (c) (1) above.
4. The final report of the results shall include the emissions test report (including raw data from the test) as well as a summary of the test results and a statement of compliance or non-compliance with permit conditions to be considered valid. The summary of results and statement of compliance or non-compliance shall contain the following information:
 - A. A statement that the owner or operator has reviewed the report from the emissions testing firm and agrees with the findings.
 - B. Permit number(s) and condition(s) which are the basis for the compliance evaluation.
 - C. Summary of results with respect to each permit condition.
 - D. Statement of compliance or non-compliance with each permit condition.
5. The results must demonstrate to the Department's satisfaction that the emission unit is operating in compliance with the applicable regulations and conditions of this permit document; if the final report of the test results shows non-compliance the owner or operator shall propose corrective action(s).

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Failure to demonstrate compliance through the test may result in enforcement action.

- d. The owner or operator shall monitor the total sulfur content of the fuel being fired in the turbine, except as provided in IV(e). The sulfur content of the fuel must be determined using total sulfur methods described in 40 CFR 60.4415.
Alternatively, if the total fuel content of the gaseous fuel during the most recent performance test was less than half the applicable limit, ASTM D4084, D4810, D5504, or D6228, or Gas Processors Association Standard 2377 (all of which are incorporated by reference in 40 CFR 60.17), which measure the major sulfur compounds, may be used. [40 CFR 60.4360]
- e. The owner or operator may elect not to monitor the total sulfur content of the fuel combusted in the turbine, if the fuel is demonstrated not to exceed potential sulfur emissions of twenty-six (26) ng SO₂/J heat input, equivalent to 0.060 lb SO₂/MMBtu. The owner or operator shall use one of the following sources of information to make the required demonstration: [40 CFR 60.4365]
 1. The fuel quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract for the fuel, specifying that the maximum total sulfur content for natural gas use is twenty grains of sulfur per one hundred standard cubic feet (20 gr/100 scf), has potential sulfur emissions less than twenty-six (26) ng SO₂/J heat input, equivalent to 0.060 lb SO₂/MMBtu; or
 2. Representative fuel sampling data which show that the sulfur content of the fuel does not exceed twenty-six (26) ng SO₂/J heat input, equivalent to 0.060 lb SO₂/MMBtu. At a minimum, the amount of fuel sampling data specified in section 2.3.1.4 or 2.3.2.4 of appendix D to 40 CFR 75 is required.
- f. The owner or operator shall use one of the total sulfur sampling options and the associated sampling frequency described in sections 2.2.3, 2.2.4.1, 2.2.4.2, and 2.2.4.3 of 40 CFR 75 (i.e., flow proportional sampling, daily sampling, sampling from the unit's storage tank after each addition of fuel to the tank, or sampling each delivery prior to combining it with fuel already in the intended storage tank). [40 CFR 60.4370(a)]
- g. If the owner or operator elects not to demonstrate sulfur content using options in IV(e), and the fuel is supplied without intermediate bulk storage, the sulfur content value for the gaseous fuel shall be determined and recorded once per unit operating day. [40 CFR 60.4370(b)]

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- h. Alternatively to IV(f) and (g), the owner or operator may determine sulfur content on a custom schedule if done in accordance with 40 CFR 60.4370(c). [40 CFR 60.4370(c)]
- i. At least once per week, during operation of each combustion turbine, the Permittee shall conduct visual observations of the emissions from each combustion turbine.
 - 1. If no operations are occurring for a given combustion turbine during a given week, this shall be so noted.
 - 2. If emissions are visible, the Permittee shall make arrangements for prompt visible emissions testing by a person certified in accordance with EPA Reference Method 9 (40 CFR 60, Appendix A). Such a test shall consist of a minimum of 30 minutes of opacity observations for the combustion turbine in question and shall be performed while firing the same fuel as was in use when the visible emissions were observed.
- j. Regardless of whether or not emissions are observed pursuant to Condition IV (i) of this permit document, the Permittee shall conduct a minimum of one visible emissions test of each combustion turbine each year for each fuel burned that year. Such a test program shall consist of a minimum of 30 minutes of opacity observations of each combustion turbine firing each fuel and shall be performed by a person certified in accordance with EPA Reference Method 9 (40 CFR 60, Appendix A).
- k. The Permittee shall monitor the quantity, in gallons, of the ultra-low sulfur diesel burned in each combustion turbine to ensure compliance with Condition III(b) of this permit document.
- l. The Permittee shall monitor the rolling twelve (12) month facility-wide emissions of total HAPs and each individual HAP on a monthly basis using emission factors approved by the Department to ensure compliance with Condition II(e) and (f) of this permit document.
- m. In addition to the testing requirements listed in this section, the Permittee shall conduct and allow the Department access to conduct tests of air pollution emissions from any source as requested. [20 DCMR 502.1]

V. Record Keeping Requirements:

- a. The Permittee shall maintain a copy of the unit's manufacturer's maintenance and operating recommendations at the facility.
- b. The Permittee shall maintain records of all measurements, and performance testing measurements in a permanent form suitable for inspection. The file shall be retained at least five years following the date of such measurements, maintenance, reports, and records. [40 CFR 60.7(f) and 20 DCMR 302.1(c)(2)(B) and 20 DCMR 500.8]
- c. The Permittee shall maintain records of rolling twelve (12) month facility-wide emissions of each individual HAP and total HAPs on a monthly basis once the limitations in Conditions II(e) and (f) are in effect pursuant to Condition II(g).
- d. The Permittee shall maintain records of all visible emissions monitoring performed pursuant to Condition IV(i), for a period of not less than five (5) years, including notes indicating when no observations were performed as a result of no operations of a given combustion turbine and associated HRSG unit that week. These records shall be maintained in an organized fashion, shall include the identity of the person performing the monitoring, and shall be readily available for inspection by the District. [20 DCMR 500.8 and 20 DCMR 302.1(c)(2)(B)]
- e. The Permittee shall maintain records of all Method 9 visible emissions testing performed pursuant to Conditions IV (i) and (j) for a period of not less than five (5) years. These records shall also include the identity of the person performing the visible emissions testing and documentation of his/her Method 9 certification. These records shall include documentation indicating whether the results show compliance with Condition II (h).
- f. The Permittee shall maintain records of the amount of ultra-low sulfur diesel fuel used each month in the combustion turbines and associated HRSG units. These data shall be maintained in a rolling twelve (12) month sum format for a period of not less than five (5) years. [20 DCMR 500.2, 20 DCMR 500.8, and 20 DCMR 302.1(c)(2)(B)]

VI. Reporting Requirements:

- a. The Permittee shall notify the Department in writing prior to the initial equipment startup to schedule an inspection of the equipment pursuant to Condition I(g) of these permits to demonstrate proper construction of the equipment.

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- b. The owner or operator shall submit a notification of the date construction will commence. The notification shall be postmarked no later than thirty (30) days after start of construction. [40 CFR 60.7(a)(1)]
- c. The owner or operator shall submit a notification of the actual date of initial startup, postmarked within fifteen (15) days after such date. [40 CFR 60.7(a)(3)]
- d. The owner or operator shall provide the Department at least thirty (30) days prior notice of any performance test to afford the Department the opportunity to have an observer present. If after thirty (30) days' notice for an initial scheduled performance test, there is a delay in conducting the scheduled test, the owner or operator shall notify the Department as soon as possible of any delay in the original test date, either by providing at least seven (7) days prior notice of the rescheduled date of the performance test, or by arranging a rescheduled date with the Department by mutual agreement. [40 CFR 60.8(d)]
- e. For each combustion turbine and associated heat recovery steam generating unit, the owner or operator shall submit reports of excess emissions for the emission limitations in II(a), (b), and (d), in accordance with 40 CFR 60.7(c). Excess emissions must be reported for all periods of unit operation, including startup, shutdown, and malfunction. [40 CFR 60.4375(a)]
 - 1. Reports shall be postmarked by the thirtieth (30th) day following the end of each six (6) month period. [40 CFR 60.4395]
- f. The owner or operator shall, within 30 days of discovery, report any exceedance of the HAP emission limits contained in Conditions II(d) and (e). [20 DCMR 500.1]
- g. The owner or operator shall submit a written report of the results of each performance test before the close of business on the sixtieth (60th) day following the completion of the performance test [40 CFR 60.4375(b)] in accordance with Condition IV(c)(3).
- h. The Permittee shall submit a written notification to the Department prior to equipment startup stating that the Permittee will comply with the requirements of 20 DCMR 805.8. [20 DCMR 805.3(b)]
- i. All reports required pursuant to these permits shall be submitted to:

Chief, Compliance and Enforcement Branch
Air Quality Division

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1200 First Street NE
5th Floor
Washington, DC 20002

If you have any questions, please call me at (202) 535-1747 or Abraham T. Hagos at (202) 535-1354.

Sincerely,

Stephen S. Ours, P.E.
Chief, Permitting Branch

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