

## DEPARTMENT OF ENERGY AND ENVIRONMENT

### NOTICE OF EMERGENCY AND PROPOSED RULEMAKING

#### **Reasonably Available Control Technology Requirements for Combustion Turbines**

The Director of the Department of Energy and Environment (DOEE or Department), pursuant to the authority set forth in Sections 5 and 6 of the District of Columbia Air Pollution Control Act of 1984 (the “Act”), effective March 15, 1985 (D.C. Law 5-165; D.C. Official Code § 8-101.05 *et seq.* (2013 Repl. & 2016 Supp.)); Section 107(4) of the District Department of the Environment Establishment Act of 2005, effective February 15, 2006 (D.C. Law 16-51; D.C. Official Code § 8-151.07(4) (2013 Repl.)); and Mayor’s Order 2006-61, dated June 14, 2006; hereby gives notice of the adoption of emergency amendments to Chapter 1 (Air Quality - General Rules), § 199 (Definitions and Abbreviations) and Chapter 8 (Air Quality - Asbestos, Sulfur, Nitrogen Oxides, and Lead), § 805 (Reasonably Available Control Technology for Major Stationary Sources of the Oxides of Nitrogen) of Title 20 (Environment) of the District of Columbia Municipal Regulations (DCMR). The Director also gives notice of intent to take final rulemaking action to adopt these amendments in not less than thirty (30) days from the date of publication in the D.C. Register.

#### **Emergency Rulemaking**

This emergency rulemaking action is necessary for the immediate preservation of the public safety and welfare of District residents because it is necessary to comply with the District’s obligations under the federal Clean Air Act (CAA) to adopt updates to its requirements for reasonably available control technology (RACT) in accordance with the 2008 National Ambient Air Quality Standards (NAAQS) for ozone (smog). The District is required to submit a complete amendment to the District’s State Implementation Plan (SIP) by September 6, 2018 or face federal sanctions, which include increased economic burdens on certain air quality permit applicants<sup>1</sup> and loss of federal highway funding.

This emergency rulemaking action was signed by the Director on July 23, 2018 and became effective immediately. This emergency rule will expire one hundred and twenty (120) days from that date, on November 20, 2018, or upon the publication of the final rulemaking action, whichever occurs first.

#### **Proposed Amendments**

The Department is proposing amendments to 20 DCMR Chapter 8, §§ 805.1(a), 805.1(a)(2) and 805.4 of the air quality regulations in order to establish updated RACT requirements for emissions of oxides of nitrogen (NOx) from combustion turbines. Additionally, the Department is proposing to add related definitions and abbreviations to 20 DCMR Chapter 1, § 199. Previously the regulation established NOx RACT standards for combustion turbines with heat

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<sup>1</sup> Sanctions would require air pollution sources seeking an air quality permit under the District’s New Source Review (NSR) program (20 DCMR § 204) to offset increased emissions from the permitted project at a higher rate than currently required by District regulations. 40 C.F.R. § 51.121 and 40 C.F.R. § 52.31.

input capacities of 100 million BTU per hour or more. Since the most recent update of § 805 (Final Rulemaking published at 51 DCR 3877, April 16, 2004), all combustion turbines located in the District with heat input capacities of 100 million BTU per hour or more have been decommissioned. However, several new combustion turbines with heat input capacities less than 100 million BTU per hour have been installed at major stationary sources of NO<sub>x</sub> since that time.

On March 27, 2008, EPA promulgated a revised 8-hour primary and secondary ozone NAAQS. Under the CAA, areas designated nonattainment for a revised ozone NAAQS and states located in the Ozone Transport Region (OTR) are required to submit, for the approval of the U.S. Environmental Protection Agency (EPA), revisions to the relevant state implementation plan (SIP) to ensure that they comply with all applicable statutory and regulatory requirements. Because the District is located in the OTR, this is a requirement that is applicable to the District.

The requirement to update RACT standards in response to the 2008 ozone NAAQS applies to the two precursor pollutants of ozone, NO<sub>x</sub> and volatile organic compounds (VOC). This rulemaking addresses only NO<sub>x</sub> RACT. The NO<sub>x</sub> RACT requirement applies only to major stationary sources of NO<sub>x</sub>. Because the District has been designated as a marginal nonattainment area for the 2008 ozone NAAQS, for purposes of this RACT evaluation, a major stationary source is one that directly emits or has the potential to emit one hundred (100) tons of NO<sub>x</sub> or more; however this rulemaking will apply to stationary sources with the potential to emit twenty-five (25) tons of NO<sub>x</sub> or more because that is the threshold under the District's current RACT rulemaking.

In performing the resulting review of its regulations, the District has determined that it is necessary to update the existing RACT standards for combustion turbines to cover units with heat input capacities of less than 100 million BTU per hour. The existing regulation, as well as the proposed revisions to the regulation, applies to major stationary sources that have the potential to emit twenty-five (25) tons of NO<sub>x</sub> or more.

EPA has defined RACT as “the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility... In evaluating economic feasibility for RACT determinations, the EPA gives significant weight to economic efficiency and relative cost effectiveness.”<sup>2</sup>

The Department evaluated NO<sub>x</sub> RACT for combustion turbines in the District with this definition and policy in mind. The NO<sub>x</sub> RACT standards being proposed by this rulemaking reflect RACT based on a review of emission levels achieved in practice. The proposed standards are similar to those established for new units according to the federal “Standards of Performance for Stationary Combustion Turbines” found at Title 40 of the Code of Federal Regulations (C.F.R.) Part 60, Subpart KKKK for units with heat input ratings exceeding fifty million

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<sup>2</sup> See October 20, 2016 memorandum from Anna Marie Wood, Director, Air Quality Policy Division, OAQPS to Regional Air Division Directors, 1-10, titled “Implementing Reasonably Available Control Technology Requirements for Sources Covered by the 2016 Control Techniques Guidelines for the Oil and Natural Gas Industry”.

(50,000,000) BTU per hour, except that an alternate standard is included for such units if they most recently commenced construction, modification, or reconstruction on or before February 18, 2005, and if the only liquid fuel they fire is ultra-low sulfur Number two (No. 2) fuel oil and they only fire on this liquid fuel during periods of natural gas curtailment, natural gas supply interruption, startups, or periodic testing on liquid fuel, where such periodic testing does not exceed a combined total of forty-eight (48) hours during any calendar year. This exception is expected to apply to only one facility in the District, and due to the limited operations of the equipment on No. 2 fuel oil, is expected to have a de minimis effect on NOx emissions from the facility.

The proposed standards are more stringent than the Subpart KKKK standards for units with heat input ratings less than or equal to fifty million (50,000,000) BTU per hour, consistent with those standards found in an Ozone Transport Commission (OTC) model rule (available at <https://otcair.org/document.asp?fview=modelrules>) for combustion turbines used for high electric demand days (HEDD). The proposed standards are based on modern technologies for combustion turbines, but without the addition of add-on controls, such as selective catalytic reduction (SCR), which the Department determined would be excessively costly for purposes of establishing RACT with respect to the 2008 ozone NAAQS. For estimation purposes, the Department has reviewed a memorandum from Alpha-Gamma Technologies, Inc. to the EPA Office of Air Quality Planning and Standards ESD Combustion Group, dated December 21, 2004, which estimated a cost per ton of NOx reductions of \$13,794 for small turbines (in the 5 megawatt range) most similar to those currently found in the District.<sup>3</sup> The DC-MD-VA nonattainment area is already monitoring attainment with the 2008 ozone NAAQS, and with this fact in mind, the Department determined that heavy investment in additional end-of-pipe controls to this level is not economically efficient or cost effective with respect to the 2008 ozone NAAQS.

This action will set RACT for the existing inventory of combustion turbines in the District of Columbia as well as set minimum standards for new units at major stationary sources that have the potential to emit twenty-five (25) tons per year of NOx, but does not preclude the Department from requiring more stringent standards on new or modified units pursuant to EPA regulations or a permit required under 20 DCMR Chapter 2.

This action addresses only the 2008 ozone NAAQS. A subsequent ozone NAAQS was promulgated by EPA in 2015. RACT will be re-evaluated for compliance with the 2015 NAAQS in a subsequent action, rather than as a part of this rulemaking.

As a result of this analysis, the Department is proposing the attached rulemaking amending 20 DCMR §§ 199.1, 199.2, 805.1(a), 805.1(a)(2), and 805.4.

The Department also proposes to submit this emergency rulemaking and subsequent final rulemaking as an amendment to the District's State Implementation Plan (SIP).

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<sup>3</sup> This document is available at <https://www.regulations.gov/> in docket EPA-HQ-OAR-2004-0490 as document number EPA-HQ-OAR-2004-0490-0114.

**Chapter 1, AIR QUALITY – GENERAL RULES, of Title 20 DCMR, ENVIRONMENT, is amended to read as follows:**

**Section 199, DEFINITIONS AND ABBREVIATIONS, is amended as follows:**

## **199 DEFINITIONS AND ABBREVIATIONS**

**Section 199.1 is amended as follows:**

**By adding a definition for “Duct burner” to read as follows:**

**Duct burner** – a device that combusts fuel and that is placed in the exhaust duct from another source, such as a stationary combustion turbine, internal combustion engine, kiln, etc., to allow the firing of additional fuel to heat the exhaust gases before the exhaust gases enter a heat recovery steam generating unit.

**By adding a definition for “Gaseous fuel” to read as follows:**

**Gaseous fuel** – any fuel or mixture of fuels that maintains a gaseous state at standard atmospheric temperature and pressure.

**By adding a definition for “Heat recovery steam generating unit” to read as follows:**

**Heat recovery steam generating unit** – a unit where the hot exhaust gases from the combustion turbine are routed in order to extract heat from the gases and generate steam, for use in a steam turbine or other device that utilizes steam. Heat recovery steam generating units can be used with or without duct burners.

**By adding a definition for “Liquid fuel” to read as follows:**

**Liquid fuel** – any fuel that maintains a liquid state at standard atmospheric temperature and pressure.

**By adding a definition for “Natural gas” to read as follows:**

**Natural gas** – a naturally occurring fluid mixture of hydrocarbons (e.g., methane, ethane, or propane) produced in geological formations beneath the Earth's surface that maintains a gaseous state at standard atmospheric temperature and pressure under ordinary conditions. Additionally, natural gas must either be composed of at least 70 percent methane by volume or have a gross calorific value between 950 and 1,100 British thermal units (Btu) per standard cubic foot. Natural gas does not include the following gaseous fuels: landfill gas, digester gas, refinery gas, sour gas, blast furnace gas, coal-derived gas, producer gas, coke oven gas, or any gaseous fuel

produced in a process which might result in highly variable sulfur content or heating value.

**By adding a definition for “Stationary combustion turbine” to read as follows:**

**Stationary combustion turbine** – all equipment, including but not limited to the turbine, the fuel, air, lubrication and exhaust gas systems, control systems (except emissions control equipment), heat recovery system, and any ancillary components and sub-components comprising any simple cycle stationary combustion turbine, any regenerative/recuperative cycle stationary combustion turbine, any combined cycle combustion turbine, and any combined heat and power combustion turbine based system. Stationary means that the combustion turbine is not self-propelled or intended to be propelled while performing its function. It may, however, be mounted on a vehicle for portability.

**Section 199.2 is amended as follows:**

**By adding an abbreviation to the table for “ppmvd” as follows:**

ppmvd	Parts Per Million by Volume Dry Basis
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**Chapter 8, AIR QUALITY – ASBESTOS, SULFUR, NITROGEN OXIDES, AND LEAD, of Title 20 DCMR, ENVIRONMENT, Section 805, REASONABLY AVAILABLE CONTROL TECHNOLOGY FOR MAJOR STATIONARY SOURCES OF THE OXIDES OF NITROGEN is amended as follows:**

**Section 805.1(a) is amended to read as follows:**

805.1(a) Any person owning, leasing, operating or controlling any major stationary source, having the potential to emit twenty-five (25) tons per year or more of oxides of nitrogen, including the following major stationary sources or parts thereof:

**Section 805.1(a)(2) is amended to read as follows:**

805.1(a)(2) Stationary combustion turbines of any size at major stationary source facilities, including any associated heat recovery steam generators and duct burners;

**Section 805.4 is amended to read as follows:**

805.4 Any person owning, leasing, operating or controlling any stationary combustion turbine subject to § 805 shall comply with the requirements of this subsection:

- (a) The following emission and operational requirements shall apply, as applicable:
- (1) For any stationary combustion turbine that most recently commenced construction, modification, or reconstruction (as these terms are defined in 40 C.F.R. 60, Subpart A, § 60.2 and § 60.15 as in effect on July 1, 2018) after February 18, 2005, and has a heat input rating greater than fifty million (50,000,000) BTU per hour, based on the higher heating value of the fuel:
    - (A) Emissions, with any supplemental duct burner firing, shall not be greater than:
      - (i) Twenty-five (25) ppmvd, corrected to fifteen percent (15%) O<sub>2</sub> when fired on any combination of gaseous fuels; and
      - (ii) Seventy-four (74) ppmvd, corrected to fifteen percent (15%) O<sub>2</sub> when fired on any combination of liquid fuels;
    - (B) Only the peak heat input rating of the stationary combustion turbine shall be included when determining whether or not § 805.4(a)(1) is applicable. Any additional heat input to associated heat recovery steam generators or duct burners shall not be included when determining the peak heat input to the stationary combustion turbine; and
    - (C) When fifty percent (50%) or more of the total heat input is from gaseous fuels the emission limitation in § 805.4(a)(1)(A)(i) applies, but when more than fifty percent (50%) of the total heat input is from liquid fuels the emission limitation in § 805.4(a)(1)(A)(ii) applies;
  - (2) For any stationary combustion turbine that most recently commenced construction, modification, or reconstruction (as these terms are defined in 40 C.F.R. 60, Subpart A, § 60.2 and § 60.15 as in effect on July 1, 2018) on or before February 18, 2005 and has a heat input rating greater than fifty million (50,000,000) BTU per hour, based on the higher heating value of the fuel:
    - (A) Emissions from a stationary combustion turbine alone, shall not be greater than:

- (i) Twenty-five (25) ppmvd, corrected to fifteen percent (15%) O<sub>2</sub> when fired on any combination of gaseous fuels; and
  - (ii) Except as provided in § 805.4(a)(2)(D) seventy-four (74) ppmvd, corrected to fifteen percent (15%) O<sub>2</sub> when fired on any combination of liquid fuels;
- (B) Emissions from a stationary combustion turbine and all duct burners combined, shall not be greater than twenty hundredths (0.20) pounds per million BTU, based on a calendar day average, when fired on any fuel or combination of fuels;
- (C) Only the peak heat input rating of the stationary combustion turbine shall be included when determining whether or not § 805.4(a)(2) is applicable. Any additional heat input to associated heat recovery steam generators or duct burners shall not be included when determining the peak heat input to the stationary combustion turbine; and
- (D) Any stationary combustion turbine fired on liquid fuel or any combination of gaseous and liquid fuels, such that more than fifty percent (50%) of the total heat input is from liquid fuels, is not required to comply with the maximum allowable NO<sub>x</sub> emission rate in § 805.4(a)(2)(A)(ii) if it meets the following requirements:
  - (i) The only liquid fuel used is Number two (No. 2) fuel oil (as determined in accordance with 20 DCMR § 502.6) not containing sulfur in excess of fifteen parts per million (15 ppm) by weight;
  - (ii) It burns liquid fuel only during periods of natural gas curtailment, natural gas supply interruption, startups, or periodic testing on liquid fuel, where such periodic testing does not exceed a combined total of forty-eight (48) hours during any calendar year;
  - (iii) The owner or operator shall maintain records of all instances of operation using liquid fuel, including the fuel used, the date and duration of the fuel use, the reason for operating using that fuel, and all notifications received from the natural gas supplier

notifying the owner or operator of the beginning or end of a natural gas interruption; and

- (iv) The owner or operator shall maintain a running calendar year sum of the duration of all liquid fuel use each year for purposes of periodic testing;
- (3) For any stationary combustion turbine with a heat input rating less than or equal to fifty million (50,000,000) BTU per hour, based on the higher heating value of the fuel:
- (A) Except as specified in § 805.4(a)(4), with any supplemental duct burner firing, emissions shall not be greater than:
    - (i) Twenty-five (25) ppmvd, corrected to fifteen percent (15%) O<sub>2</sub> when fired on any combination of gaseous fuels; and
    - (ii) Forty-two (42) ppmvd, corrected to fifteen percent (15%) O<sub>2</sub> when fired on liquid fuel;
  - (B) Only the peak heat input rating of the stationary combustion turbine shall be included when determining whether or not § 805.4(a)(3) is applicable. Any additional heat input to associated heat recovery steam generators or duct burners shall not be included when determining the peak heat input to the stationary combustion turbine; and
  - (C) When fifty percent (50 %) or more of the total heat input is from gaseous fuels the emission limitation in § 805.4(a)(3)(A)(i) applies, but when more than fifty percent (50 %) of the total heat input is from liquid fuels the emission limitation in § 805.4(a)(3)(A)(ii) applies;
- (4) For any stationary combustion turbine with a heat input rating less than or equal to ten million (10,000,000) BTU per hour and fired exclusively on natural gas:
- (A) Compliance with § 805.4(a)(7) shall be maintained; and
  - (B) Only the peak heat input rating of the stationary combustion turbine shall be included when determining whether or not § 805.4(a)(4) is applicable. Any additional heat input to associated heat recovery steam generators or duct burners shall not be included when



determining the peak heat input to the stationary combustion turbine;

- (5) No combustion turbine shall fire coal or a synthetic fuel derived from coal;
  - (6) Any stationary combustion turbine designed to fire any solid fuel other than coal or synthetic fuel derived from any other solid than coal shall be subject to § 805.4(a)(7) and § 805.7; and
  - (7) Any stationary combustion turbine subject to § 805 shall be maintained and operated in a manner consistent with good air pollution control practices for minimizing emissions at all times, including during startup, shutdown, and malfunction, and shall be maintained in accordance with one of the following:
    - (A) The manufacturer's emission-related written instructions; or
    - (B) An alternate written maintenance plan approved in writing by the Department;
- (b) Any person required to comply with § 805.4 shall maintain continuous compliance at all times. Compliance shall be demonstrated by testing or by installing a continuous emissions monitoring system:
- (1) The emissions monitoring system shall do the following:
    - (A) Continuously monitor the NO<sub>x</sub> emission rate from the major stationary source;
    - (B) Continuously record the NO<sub>x</sub> emission rate from the major stationary source;
    - (C) Be installed and operated in a manner approved by the Mayor and acceptable to the EPA; and
    - (D) Demonstrate that the NO<sub>x</sub> emission rate does not exceed the applicable maximum allowable NO<sub>x</sub> emission rate specified in § 805.4.
  - (2) Testing shall meet the following requirements:
    - (A) Be conducted using methods approved by the Department and acceptable to EPA;

- (B) Demonstrate that the NO<sub>x</sub> emission rate does not exceed the applicable maximum allowable NO<sub>x</sub> emission rate specified in § 805.4, for each fuel subject to such an allowable rate; and
- (C) Be performed according to the following frequencies:
  - (i) Once within one hundred and eighty (180) days of either initial start-up of the unit or the applicability of § 805 to the unit, whichever is later;
  - (ii) For units with heat input ratings greater than ten million (10,000,000) BTU per hour, based on the higher heating value of the fuel, subsequent tests shall be performed once each calendar year and no more than fourteen (14) months following the previous performance test; and
  - (iii) For units with heat input ratings less than or equal to ten million (10,000,000) BTU per hour, based on the higher heating value of the fuel, and subject to a maximum allowable NO<sub>x</sub> emission rate in § 805.4, subsequent tests shall be performed once every five (5) calendar years and no more than sixty-two (62) months after the previous performance test.

All persons desiring to comment on the proposed rulemaking should file comments in writing not later than thirty (30) days after publication of this notice in the *D.C. Register*. Comments should be clearly marked “Public Comments: Chapter 8 of the Air Quality Regulations” and filed with DOEE, Air Quality Division, 1200 First Street, N.E., 5<sup>th</sup> Floor, Washington, DC 20002, Attention: Stephen Ours, or e-mailed to [airqualityregulations@dc.gov](mailto:airqualityregulations@dc.gov). Copies of the above documents may be obtained from DOEE at the same address.