

# APPENDIX D

**APPENDIX D**  
**REGULATIONS (excerpts) ON 24-HOUR EMISSION**  
**LIMITS:**

**MARYLAND DEPARTMENT OF THE ENVIRONMENT**

**DELAWARE DEPARTMENT OF NATURAL RESOURCES AND**  
**ENVIRONMENTAL CONTROL**

**NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL**  
**PROTECTION**

# MARYLAND DEPARTMENT OF THE ENVIRONMENT

## Title 26 DEPARTMENT OF THE ENVIRONMENT

### Subtitle 11 AIR QUALITY

#### Chapter 38 Control of NO<sub>x</sub> Emissions from Coal-Fired Electric Generating Units

*Authority: Environment Article, §§1-404, 2-103, and 2-301—2-303, Annotated Code of Maryland*

##### **.02 Applicability.**

The provisions of this chapter apply to an affected electric generating unit as that term is defined in Regulation .01B of this chapter.

##### **.03 2015 NO<sub>x</sub> Emission Control Requirements.**

###### **A. Daily NO<sub>x</sub> Reduction Requirements During the Ozone Season.**

(1) Not later than 45 days after the effective date of this regulation, the owner or operator of an affected electric generating unit (the unit) shall submit a plan to the Department and EPA for approval that demonstrates how each affected electric generating unit will operate installed pollution control technology and combustion controls to meet the requirements of §A(2) of this regulation. The plan shall summarize the data that will be collected to demonstrate compliance with §A(2) of this regulation. The plan shall cover all modes of operation, including but not limited to normal operations, start-up, shut-down, and low load operations.

(2) Beginning on May 1, 2015, for each operating day during the ozone season, the owner or operator of an affected electric generating unit shall minimize NO<sub>x</sub> emissions by operating and optimizing the use of all installed pollution control technology and combustion controls consistent with the technological limitations, manufacturers' specifications, good engineering and maintenance practices, and good air pollution control practices for minimizing emissions (as defined in 40 CFR §60.11(d)) for such equipment and the unit at all times the unit is in operation while burning any coal.

###### **B. Ozone Season NO<sub>x</sub> Reduction Requirements.**

(1) Except as provided in §B(3) of this regulation, the owner or operator of an affected electric generating unit shall not exceed a NO<sub>x</sub> 30-day systemwide rolling average emission rate of 0.15 lbs/MMBtu during the ozone season.

(2) The owner or operator of an affected electric generating unit subject to the provisions of this regulation shall continue to meet the ozone season NO<sub>x</sub> reduction requirements in COMAR 26.11.27.

###### **(3) Ownership of Single Electric Generating Facility.**

(a) An affected electric generating unit is not subject to §B(1) of this regulation if the unit is located at an electric generating facility that is the only facility in Maryland directly or indirectly owned, operated, or controlled by the owner, operator, or controller of the facility.

(b) For the purposes of this subsection, the owner includes parent companies, affiliates, and subsidiaries of the owner.

C. Annual NO<sub>x</sub> Reduction Requirements. The owner or operator of an affected electric generating unit subject to the provisions of this regulation shall continue to meet the annual NO<sub>x</sub> reduction requirements in COMAR 26.11.27.

D. NO<sub>x</sub> Emission Requirements for Affected Electric Generating Units Equipped with Fluidized Bed Combustors.

(1) The owner or operator of an affected electric generating unit equipped with a fluidized bed combustor is not subject to the requirements of §§A, B(1) and (2), and C of this regulation.

(2) The owner or operator of an affected electric generating unit equipped with a fluidized bed combustor shall not exceed a NO<sub>x</sub> 24-hour block average emission rate of 0.10 lbs/MMBtu.

#### **.04 Additional NO<sub>x</sub> Emission Control Requirements.**

A. This regulation applies to C.P. Crane units 1 and 2, Chalk Point unit 2, Dickerson units 1, 2, and 3, and H.A. Wagner unit 2.

B. General Requirements. The owner or operator of the affected electric generating units subject to this regulation shall choose from the following:

(1) Not later than June 1, 2020:

(a) Install and operate a selective catalytic reduction (SCR) control system; and

(b) Meet a NO<sub>x</sub> emission rate of 0.09 lbs/MMBtu, as determined on a 30-day rolling average during the ozone season;

(2) Not later than June 1, 2020, permanently retire the unit;

(3) Not later than June 1, 2020, permanently switch fuel from coal to natural gas for the unit;

(4) Not later than June 1, 2020, meet either a NO<sub>x</sub> emission rate of 0.13 lbs/MMBtu as determined on a 24-hour systemwide block average or a systemwide NO<sub>x</sub> tonnage cap of 21 tons per day during the ozone season.

C. When option §B(4) of this regulation is selected:

(1) Not later than May 1, 2016, the owner or operator of an affected electric generating unit shall not exceed a NO<sub>x</sub> 30-day systemwide rolling average emission rate of 0.13 lbs/MMBtu during the ozone season.

(2) Not later than May 1, 2018, the owner or operator of an affected electric generating unit shall not exceed a NO<sub>x</sub> 30-day systemwide rolling average emission rate of 0.11 lbs/MMBtu during the ozone season.

(3) Not later than May 1, 2020, the owner or operator of an affected electric generating unit shall not exceed a NO<sub>x</sub> 30-day systemwide rolling average emission rate of 0.09 lbs/MMBtu during the ozone season.

D. In order to calculate the 24-hour systemwide block average emission rate and systemwide NO<sub>x</sub> tonnage cap under §B(4) of this regulation and the systemwide rolling average emission rates under §C of this regulation:

(1) The owner or operator shall use all affected electric generating units within their system as those terms are defined in Regulation .01B of this chapter; and

(2) The unit or units NO<sub>x</sub> emissions from all operations during the entire operating day shall be used where the unit or units burn coal at any time during that operating day.

E. Beginning June 1, 2020, if the unit or units included in a system, as that system existed on May 1, 2015, is no longer directly or indirectly owned, operated, or controlled by the owner, operator, or controller of the system:

- (1) The remaining units within the system shall meet either:
  - (a) The requirements of §B(1)—(3) of this regulation; or
  - (b) A NO<sub>x</sub> emission rate of 0.13 lbs/MMBtu as determined on a 24-hour systemwide block average and the requirements of §C(3) of this regulation.
- (2) The unit or units no longer included in the system shall meet the requirements of §B(1)—(3) of this regulation.

F. For the purposes of this regulation, the owner includes parent companies, affiliates, and subsidiaries of the owner.

**.05 Compliance Demonstration Requirements.**

A. Procedures for Demonstrating Compliance with Regulation .03A of this Chapter.

- (1) An affected electric generating unit shall demonstrate, to the Department’s satisfaction, compliance with Regulation .03A(2) of this chapter, using the information collected and maintained in accordance with Regulation .03A(1) of this chapter and any additional documentation available to and maintained by the affected electric generating unit.
- (2) An affected electric generating unit shall not be required to submit a unit-specific report consistent with §A(3) of this regulation when the unit emits at levels that are at or below the following rates:

Affected Unit	24-Hour Block Average NO <sub>x</sub> Emissions in lbs/MMBtu
Brandon Shores	
Unit 1	0.08
Unit 2	0.07
<650 MWg	0.15
≥650 MWg	
C.P. Crane	
Unit 1	0.30
Unit 2	0.28
Chalk Point	
Unit 1 only	0.07
Unit 2 only	0.33
Units 1 and 2 combined	0.20
Dickerson	
Unit 1 only	0.24
Unit 2 only	0.24
Unit 3 only	0.24

Two or more units combined	0.24
H.A. Wagner	
Unit 2	0.34
Unit 3	0.07
Morgantown	
Unit 1	0.07
Unit 2	0.07

(3) The owner or operator of an affected electric generating unit subject to Regulation .03A(2) of this chapter shall submit a unit-specific report for each day the unit exceeds its NO<sub>x</sub> emission rate under §A(2) of this regulation, which shall include the following information for the entire operating day:

- (a) Hours of operation for the unit;
- (b) Hourly averages of operating temperature of installed pollution control technology;
- (c) Hourly averages of heat input (MMBtu/hr);
- (d) Hourly averages of output (MWh);
- (e) Hourly averages of ammonia or urea flow rates;
- (f) Hourly averages of NO<sub>x</sub> emissions data (lbs/MMBtu and tons);
- (g) Malfunction data;
- (h) The technical and operational reason the rate was exceeded, such as:
  - (i) Operator error;
  - (ii) Technical events beyond the control of the owner or operator (e.g. acts of God, malfunctions); or
  - (iii) Dispatch requirements that mandate unplanned operation (e.g. start-ups and shut-downs, idling, and operation at low voltage or low load);
- (i) A written narrative describing any actions taken to reduce emission rates; and
- (j) Other information that the Department determines is necessary to evaluate the data or to ensure that compliance is achieved.

(4) An exceedance of the emissions rate under §A(2) of this regulation as a result of factors including but not limited to start-up, shut-down, days when the unit was directed by the electric grid operator to operate at low load or to operate pursuant to any emergency generation operations required by the electric grid operator, including necessary testing for such emergency operations, or which otherwise occurred during operations which are deemed consistent with the unit's technological limitations, manufacturers' specifications, good engineering and maintenance practices, and good air pollution control practices for minimizing emissions, shall not be considered a violation of Regulation .03A(2) of this chapter provided that the provisions of the approved plan as required in Regulation .03A(1) of this chapter are met.

**B. Procedures for Demonstrating Compliance with NO<sub>x</sub> Emission Rates under this Chapter.**

(1) Compliance with the NO<sub>x</sub> emission rate limitations in Regulations .03B(1) and D(2); .04B(1)(b) and B(4), C(1)—(3), and E(1)(b); and .05A(2) of this chapter shall be demonstrated with a continuous emission monitoring system that is installed, operated, and certified in accordance with 40 CFR Part 75.

(2) For Regulations .03B(1) and .04C(1)—(3) of this chapter, in order to calculate the 30-day systemwide rolling average emission rates, if 29 system operating days are not available from the current ozone season, system operating days from the previous ozone season shall be used.

*(3) For Regulation .04B(1)(b) of this chapter, in order to calculate the 30-day rolling average emission rates, if 29 operating days are not available from the current ozone season, operating days from the previous ozone season shall be used.*

## **.06 Reporting Requirements.**

### **A. Reporting Schedule.**

(1) Beginning 30 days after the first month of the ozone season following the effective date of this chapter, each affected electric generating unit subject to the requirements of this chapter shall submit a monthly report to the Department detailing the status of compliance with this chapter during the ozone season.

(2) Each subsequent monthly report shall be submitted to the Department not later than 30 days following the end of the calendar month during the ozone season.

### **B. Monthly Reports During Ozone Season.** Monthly reports during the ozone season shall include:

(1) Daily pass or fail of the NO<sub>x</sub> emission rates under Regulation .05A(2) of this chapter;

(2) The reporting information as required under Regulation .05A(3) of this chapter;

(3) The 30-day systemwide rolling average emission rate for each affected electric generating unit to demonstrate compliance with Regulation .03B(1), .04C(1)—(3) of this chapter, as applicable;

(4) For an affected electric generating unit which has selected the compliance option of Regulation .04B(1) of this chapter, beginning June 1, 2020, the 30-day rolling average emission rate calculated in lbs/MMBtu;

(5) For an affected electric generating unit which has selected the compliance option of Regulation .04B(4) of this chapter, beginning June 1, 2016, the 30-day rolling average emission rate and 30-day systemwide rolling average emission rate calculated in lbs/MMBtu;

(6) For an affected electric generating unit which has selected the compliance option of Regulation .04B(4) of this chapter, beginning June 1, 2020, data, information, and calculations which demonstrate the systemwide NO<sub>x</sub> emission rate as determined on a 24-hour block average or the actual systemwide daily NO<sub>x</sub> emissions in tons for each day during the month; and

(7) For an affected electric generating unit which has selected the compliance option of Regulation .04E(1)(b) of this chapter, beginning June 1, 2020, data, information, and calculations which demonstrate the systemwide NO<sub>x</sub> emission rate as determined on a 24-hour block average for each day during the month.

# **DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL**

## **Title 7**

### **Natural Resources and Environmental Control**

#### **1100 Air Quality Management Section**

#### **1146 Electric Generating Unit (EGU) Multi-Pollutant Regulation**

**12/11/2006**

#### **1.0 Preamble**

This regulation establishes Nitrogen Oxides (NO<sub>x</sub>), Sulfur Dioxide (SO<sub>2</sub>), and mercury emissions limits to achieve reductions of those pollutants from Delaware's large electric generation units. The reduction in NO<sub>x</sub>, SO<sub>2</sub>, and mercury emissions will: 1) reduce the impact of those emissions on public health; 2) aid in Delaware's attainment of the State and National Ambient Air Quality Standard (NAAQS) for ground level ozone and fine particulate matter; 3) help address local scale fine particulate and mercury problems attributable to coal and residual oil-fired electric generating units, 4) satisfy Delaware's obligations under the Clean Air Mercury Rule (CAMR), and 5) improve visibility and help satisfy Delaware's EGU-related regional haze obligations.

While the purpose of this regulation is to reduce air emissions, any emission control equipment installed to meet the requirements of this regulation may impact other media (e.g., water), and any overall environmental impacts must be considered by subject entities when they design their overall compliance strategy. Any emission controls installed to meet the requirements of this regulation will be subject to public review and comment through air permitting requirements of 7 DE Admin. Code 1102 and 1130.

Separate from this regulation the Department will propose regulations to address CO<sub>2</sub> emissions from these units, and regulations to satisfy direct fine particulate matter Reasonably Available Control Technology (RACT) and Best Available Retrofit Technology (BART) requirements. Together, these regulations will cover current and foreseeable requirements relative to the subject units.

**12/11/2006**

#### **2.0 Applicability**

This regulation applies to coal-fired and residual oil-fired electric generating units located in Delaware with a nameplate capacity rating of 25 MW or greater that commenced operation on or before the effective date of this regulation.

**12/11/2006**

#### **4.0 NO<sub>x</sub> Emissions Limitations**

4.1 From May 1, 2009 through December 31, 2011, no unit subject to this regulation shall emit NO<sub>x</sub> at a rate exceeding 0.15 lb/MMBTU.

4.1.1 Compliance with the requirements of 4.1 of this regulation shall be demonstrated on a rolling 24-hour average basis.

4.1.2 NO<sub>x</sub> emissions from multiple units subject to this regulation at a common facility may be averaged on a heat input basis to demonstrate compliance with the requirements of 4.1 of this regulation.

4.2 On and after January 1, 2009, no unit subject to this regulation shall emit annual NO<sub>x</sub> mass emissions that exceed the values shown in Table 4-1 of this regulation.

4.2.1 From January 1, 2009 through December 31, 2011, compliance with the requirements of 4.2 of this regulation may be achieved by demonstrating that the total number of tons of NO<sub>x</sub> emitted from a common facility does not exceed the sum of the tonnage limitations for all of the units subject to this regulation at that facility.

4.2.2 Compliance with the requirements of 4.2 of this regulation shall not be achieved by using, tendering, or otherwise acquiring NO<sub>x</sub> allowances under any state or federal emission trading program.

4.2.3 For the purpose of determining compliance with the requirements of 4.2. of this regulation, the total tons for a specified period shall be calculated as the sum of all recorded hourly emissions, with any remaining fraction of a ton equal to or greater than 0.50 ton deemed to equal one ton and any remaining fraction of a ton less than 0.50 ton deemed equal to zero tons.

4.3 On and after January 1, 2012, no unit subject to this regulation shall emit NO<sub>x</sub> at a rate exceeding 0.125 lb/MMBTU, demonstrated on a rolling 24-hour average basis.

4.4 Compliance with the requirements of 4.1 through 4.3 of this regulation shall be demonstrated with a continuous emissions monitoring system that is installed, calibrated, operated, and certified in accordance with 40 CFR Part 75 (May 18, 2005 amendment) or other method approved by the Department and the Administrator, and meeting the requirements of 40 CFR Part 96, subpart HH (April 28, 2006 amendment).

**NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL  
PROTECTION**

**NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION  
NEW JERSEY ADMINISTRATIVE CODE  
TITLE 7  
CHAPTER 27  
SUBCHAPTER 19  
CONTROL AND PROHIBITION OF AIR POLLUTION FROM  
OXIDES OF NITROGEN**

**Section Page**

7:27-19.1 Definitions.....	4
7:27-19.4 Boilers serving electric generating units.....	26
7:27-19.15 Procedures and deadlines for demonstrating compliance .....	60

**7:27-19.1 Definitions**

The following words and terms, when used in this subchapter, shall have the following meanings, unless the content clearly indicates otherwise.

"Calendar day" means the 24 hour period from 12:00 o'clock midnight to 12:00 o'clock midnight the following day.

**7:27-19.4 Boilers serving electric generating units**

(a) The owner or operator of any boiler serving an electric generating unit shall cause it to emit NO<sub>x</sub> at a rate no greater than the applicable maximum allowable NO<sub>x</sub> emission rate specified in Tables 1, 2 and 3 below, as applicable, unless the owner or operator is complying with N.J.A.C. 7:27-19.3(f) or unless otherwise specified in an enforceable agreement with the Department. Table 1 is operative through December 14, 2012. Table 2 is operative starting December 15, 2012 through April 30, 2015, except that a coal-fired boiler serving an electric generating unit may be eligible for up to a one-year extension of the December 15, 2012 compliance date pursuant to (f) below. Table 3 is operative on and after May 1, 2015. A boiler serving an electric generating unit is also subject to the state-of-the-art requirements at N.J.A.C. 7:27-8.12 and 22.35, lowest achievable emission rate requirements at N.J.A.C. 7:27-18, and best available control technology requirements at 40 CFR 52.21, incorporated herein by reference, as applicable.

TABLE 1  
(Operative through December 14, 2012)

Maximum Allowable NO<sub>x</sub> Emission Rates for  
Boilers Serving Electric Generating Units  
(pounds per million BTU)

Fuel/Boiler Type	Firing Method		
	Tangential	Face	Cyclone
Coal –Wet Bottom	1.0	1.0	0.60
Coal – Dry Bottom	0.38	0.45	0.55
Oil and/or Gas	0.20	0.28	0.43
Gas Only	0.20	0.20	0.43

TABLE 2  
(Operative from December 15, 2012 through April 30, 2015)  
Maximum Allowable NO<sub>x</sub> Emission Rates for  
Boilers Serving Electric Generating Units  
(pounds per megawatt hour)

Boiler Type	Firing Method		
	Tangential	Face	Cyclone
Coal	1.50	1.50	1.50
Oil and/or Gas	2.00	2.80	4.30
Gas Only	2.00	2.00	4.30

TABLE 3  
(Operative on and after May 1, 2015)  
Maximum Allowable NO<sub>x</sub> Emission Rates for  
Boilers Serving Electric Generating Units  
(pounds per megawatt hour)

Fuel	
Coal	1.50
Heavier than No. 2 fuel oil	2.00
No. 2 and lighter fuel oil	1.00
Gas only	1.00

(b) The owner or operator of any boiler serving an electric generating unit shall install on the boiler a continuous emissions monitoring system satisfying the requirements of N.J.A.C. 7:27-19.18.

(c) The owner or operator of any boiler serving an electric generating unit shall adjust the boiler's combustion process before May 1st of each calendar year in accordance with N.J.A.C. 7:27-19.16, except the adjustment may occur within seven days of the first period of operation after May 1, if the boiler has not operated between January 1 and May 1 of that year.

(d) The owner or operator of a boiler serving an electric generating unit shall demonstrate compliance with its applicable maximum allowable NO<sub>x</sub> emission rate in Table 2 or 3 as follows:

1. Using the methods at N.J.A.C. 7:27-19.15(a), any coal-fired boiler that is subject to an emission rate at Table 2 above shall demonstrate compliance with the maximum allowable NO<sub>x</sub> emission rate in Table 2 either by June 15, 2013 or, if the boiler or control apparatus is altered to meet the Table 2 emission rate, by the date determined by N.J.A.C. 7:27-19.15(c), whichever date is earlier, and thereafter according to the schedule in the approved permit, except that a coal-fired boiler may be eligible for up to a one-year extension of the June 15, 2013 compliance demonstration date pursuant to (f) below; and
2. Using the methods at N.J.A.C. 7:27-19.15(a), any boiler that combusts any fuel other than coal and that is subject to an emission rate at Table 3 above shall demonstrate compliance with the applicable maximum allowable NO<sub>x</sub> emission rate in Table 3 by November 1, 2015 or, if the boiler or control apparatus is altered to meet the applicable Table 3 emission rate, by the date determined by N.J.A.C. 7:27-19.15(c), whichever date is earlier, and thereafter according to the schedule in the approved permit.

(e) When calculating a 24-hour NO<sub>x</sub> emission rate for an affected coal-fired unit, the owner or operator may exclude emissions from:

1. A unit that has ceased firing fossil fuel, the period of time, not to exceed eight hours, from initial firing of the unit until the unit is fired with coal and synchronized with a utility electric distribution system; and
2. A unit that is to be shut down, the period of time in which the unit is no longer synchronized with any utility electric distribution system and is no longer fired with coal.

(f) The owner or operator of a coal-fired boiler that is subject to Table 2 at (a) above may request up to a one-year extension past the December 15, 2012 Table 2 emission limit compliance deadline required at (a) and the June 15, 2013 compliance demonstration deadline required at (d)1 above by sending a written request to the address at N.J.A.C. 7:27-19.30(c)3. The request shall document the reasons the extension is needed. The Department will approve an extension request only if compliance by December 15, 2012 is not possible due to circumstances beyond the control of the owner or operator that are not reasonably foreseeable, including, but not limited to, the unavailability of a control apparatus needed to comply with the December 15, 2012 compliance deadline or a contractor needed to install the control apparatus.

(g) Each owner or operator identified at N.J.A.C. 7:27-19.29(a) shall submit to the Department a 2009 HEDD Emission Reduction Compliance Demonstration Protocol and annual reports pursuant to N.J.A.C. 7:27-19.29.

(h) Each owner or operator of a boiler serving an electric generating unit that is a HEDD unit shall submit to the Department a 2015 HEDD Emission Limit Achievement Plan and annual progress updates, as applicable, pursuant to N.J.A.C. 7:27-19.30.

## **7:27-19.15 Procedures and deadlines for demonstrating compliance**

(a) Except as set forth in (d) and (e) below, the owner or operator of equipment or a source operation subject to an emission limit under this subchapter shall demonstrate compliance with the emission limit as follows:

1. If a continuous emissions monitoring system has been installed on the equipment or source operation, or if any other provision of this subchapter requires emissions from the equipment or source operation to be monitored by a continuous emissions monitoring system under N.J.A.C. 7:27-19.18, the owner or operator shall calculate the average NO<sub>x</sub> emission rate using the data from such a system for the NO<sub>x</sub> concentration in the flue gas and either the flue gas flow rate or the fuel flow rate. To calculate the emission rate using the NO<sub>x</sub> concentration and fuel flow rate, the owner or operator shall use the conversion procedure set forth in the Acid Rain regulations at 40 CFR 75, Appendix F, or an alternative procedure that the Department determines will yield the same result. Compliance with the limit shall be based upon the average of emissions:

- i. Between May 1 and September 30, over each calendar day; and
- ii. From October 1 through April 30 of the following year, over the 30-day period ending on each such day; or

2. If no continuous emissions monitoring system has been or is required to be installed on the equipment or source operation, compliance with the limit shall be based upon the average of three one-hour tests, each performed over a consecutive 60-minute period specified by the Department, and performed in compliance with N.J.A.C. 7:27-19.17. Any NO<sub>x</sub> testing conducted pursuant to this section shall be conducted concurrently with CO testing. The applicable NO<sub>x</sub> emission limits in this subchapter will not be considered to have been met unless the concurrent CO testing demonstrates compliance with the CO limit in N.J.A.C. 7:27-16.8, 16.9, 16.10, 16.11, or the permit limit for CO, whichever is more stringent, is also met.