

# DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

## DIVISION OF AIR AND WASTE MANAGEMENT

Statutory Authority: 7 Delaware Code, Chapter 60, (7 **Del.C.** Ch. 60)

### FINAL

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

#### ~~Regulation No. 46~~ 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 ~~Regulation 1102 and 1130~~ 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.

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##### 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

##### 3.0 Definitions

The following words and terms, when used in this regulation, shall have the following meanings:

“**Administrator**” means the Administrator of the United States Environmental Protection Agency or the Administrator's duly authorized representative.

“**Coal**” means any solid fuel classified as anthracite, bituminous, sub-bituminous, or lignite.

“**Coal-fired**” means combusting any amount of coal or coal-derived fuel, alone or in combination with any amount of other fuel, during any year.

“**Department**” means the State of Delaware Department of Natural Resources and Environmental Control as defined in ~~Title 29, Delaware Code~~ 29 Del.C., Chapter 80, as amended.

**“Designated representative”** means the natural person who is authorized by the owners and operators of the source and all units at the source to legally bind each owner and operator in matters pertaining to this regulation. If the source subject to this regulation is also subject to the Federal Acid Rain Program, then this natural person shall be the same person as the designated representative under the Acid Rain Program.

**“Emissions”** means air pollutants exhausted from a unit or source into the atmosphere.

**“Generator”** means a device that produces electricity.

**“Heat input”** means the product (in MMBTU/time or TBTU/time) of the gross calorific value of the fuel (in MMBTU/lb or TBTU/lb) and the fuel feed rate (in lb of fuel/time) into a combustion device; or as calculated by any other method approved by the Department and the Administrator, and does not include the heat derived from pre-heated combustion air, recirculated flue gasses, or exhaust from other sources.

**“Inlet mercury”** means the average concentration of mercury in the flue gas at the inlet to any pollution control device(s) or devices.

**“Nameplate capacity”** means, starting from the initial installation of a generator, the maximum electrical generating output (in MWe) that the generator is capable of producing on a steady state basis and during continuous operation (when not restricted by seasonal or other de-ratings) as specified by the manufacturer of the generator or, starting from the completion of any physical change in the generator resulting in an increase in the maximum electrical generating output (in MWe) that the generator is capable of producing on a steady state basis and during continuous operation (when not restricted by seasonal or other de-ratings), such increased maximum amount as specified by the person conducting the physical change.

**“Operator”** means any person who operates, controls, or supervises a unit or source subject to this regulation and shall include, but not be limited to, any holding company, utility system, or plant manager of such unit or source.

**“Ounce”** means 28.4 grams.

**“Owner”** means: A) any holder of any portion of the legal or equitable title in a unit; B) any purchaser of power from a unit under a life-of-the-unit, firm power contractual arrangement; provided that, unless expressly provided for in a leasehold agreement, owner shall not include a passive lessor, or a person who has an equitable interest through such lessor, whose rental payments are not based (either directly or indirectly) on the revenues or income from the unit.

**“Residual oil”** means No. 5 or No. 6 fuel oil.

**“Ton”** means 2000 pounds.

**“Unit”** means, for the purposes of this regulation, a stationary, fossil-fuel-fired boiler supplying all or part of its output to an electric generating device.

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#### **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 ~~paragraph~~ 4.1 of this ~~section~~ 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 ~~paragraph~~ 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~~ 4-1 of this regulation.
  - 4.2.1 From January 1, 2009 through December 31, 2011, compliance with the requirements of ~~paragraph~~ 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 ~~paragraph~~ 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 ~~paragraph~~ 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 ~~paragraphs~~ 4.1 through 4.3 of this ~~section~~ 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).

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## **5.0 SO<sub>2</sub> Emissions Limitations**

- 5.1 From May 1, 2009 through December 31, 2011, no coal fired unit subject to this regulation shall emit SO<sub>2</sub> at a rate exceeding 0.37 lb/MMBTU heat input.
  - 5.1.1 Compliance with the requirements of ~~paragraph~~ 5.1 of this ~~section~~ regulation shall be demonstrated on a 24-hour rolling average basis.
  - 5.1.2 SO<sub>2</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 ~~paragraph~~ 5.1 of this regulation.
- 5.2 On and after January 1, 2012, no coal-fired unit subject to this regulation shall emit SO<sub>2</sub> at a rate exceeding 0.26 lb/MMBTU heat input, demonstrated on a rolling 24-hour average basis.
- 5.3 On and after January 1, 2009, no unit subject to this regulation shall emit annual SO<sub>2</sub> mass emissions that exceed the values shown in Table # 5-1 of this regulation.
  - 5.3.1 From January 1, 2009 through December 31, 2011, compliance with the requirements of ~~paragraph~~ 5.3 of this regulation may be achieved by demonstrating that the total number of tons of SO<sub>2</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.
  - 5.3.2 Compliance with the requirements of ~~paragraph~~ 5.3 of this regulation shall not be achieved by using, tendering, or otherwise acquiring SO<sub>2</sub> allowances under any state or federal emission trading program.
  - 5.3.3 For the purpose of determining compliance with the requirements of ~~paragraph~~ 5.3 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.
- 5.4 Compliance with the requirements of ~~paragraphs~~ 5.1 through 5.3 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 monitoring and reporting requirements of 40 CFR Part 96, subpart HHH (April 28, 2006 amendment).
- 5.5 On and after January 1, 2009, no residual oil with a sulfur content in excess of 0.5%, by weight, shall be received for any residual oil-fired unit subject to this regulation.

- 5.5.1 Compliance with the requirements of ~~paragraph~~ 5.5 of this regulation shall be demonstrated by fuel oil sampling and analysis. Samples shall be collected:
  - 5.5.1.1 From the transport vessel for each shipment of residual fuel oil received at the facility for combustion in the subject residual oil-fired unit, or
  - 5.5.1.2 From the supply pipeline each day residual oil is delivered to the facility via pipeline for combustion in a residual oil-fired unit subject to this regulation, after sufficient fuel oil has been drained from the sampling line to remove any fuel oil that may have been standing in the sampling line, or
  - 5.5.1.3 From the supply pipeline at the inlet to the residual oil-fired unit subject to this regulation each day the unit fires any quantity of oil fuel, after sufficient fuel oil has been drained from the sampling line to remove any fuel oil that may have been standing in the sampling line.
- 5.5.2 Fuel oil samples shall be analyzed in accordance with ASTM D 129-00, ASTM D 1552-03, ASTM D 2622-05, or ASTM D 4294-03.

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## **6.0 Mercury Emissions Limitations**

- 6.1 From January 1, 2009 through December 31, 2012, any coal-fired unit subject to this regulation shall, on a quarterly average basis:
  - 6.1.1 Emit mercury at a rate that does not exceed 1.0 lb/TBTU heat input, or
  - 6.1.2 Capture and control a minimum 80% of baseline inlet mercury emissions.
- 6.2 On or after January 1, 2013, any coal-fired unit subject to this regulation shall, on a quarterly average basis:
  - 6.2.1 Emit mercury at a rate that does not exceed 0.6 lb/TBTU heat input, or
  - 6.2.2 Capture and control a minimum 90% of baseline inlet mercury emissions.
- 6.3 Annual mercury mass emissions from the coal-fired units subject to this regulation shall not exceed the values shown in Table ~~¶~~ 6-1 of this regulation.
  - 6.3.1 Compliance with the requirements of ~~paragraph~~ 6.3 of this regulation shall be demonstrated on an annual basis.
  - 6.3.2 Compliance with the requirements of ~~paragraph~~ 6.3 of this regulation shall not be achieved by using, tendering, or otherwise acquiring mercury allowances under any state or federal emissions trading program.
- 6.4 Compliance with the requirements of ~~paragraphs~~ 6.1 through 6.3 of this regulation shall be demonstrated as follows:
  - 6.4.1 Compliance with the requirements of ~~paragraphs~~ 6.1.1, 6.2.1 and 6.3 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) and meeting the monitoring and reporting requirements of 40 CFR Part 60 (June 9, 2006 amendment).
  - 6.4.2 Compliance with the requirements of ~~paragraphs~~ 6.1.2 and 6.2.2 of this regulation shall be demonstrated as follows:
    - 6.4.2.1 During the period January 1, 2007 through March 31, 2008, the owner or operator shall conduct at least four quarterly stack tests to measure the mercury in the flue gas stream.
      - 6.4.2.1.1 Except as provided for in 6.4.2.1.2 of this regulation, the test sampling location shall be located upstream of any pollution control device.
      - 6.4.2.1.2 The sampling location may be located downstream of any SNCR injection points.
    - 6.4.2.2 There shall be at least three valid stack tests per quarter and at least 45 days between stack tests performed for a given quarter and the stack tests performed for the preceding quarter, unless otherwise approved by the Department.
    - 6.4.2.3 Each stack test shall be conducted in accordance with a testing protocol approved by the Department. Proposed test protocols shall be submitted to the Department no less than 90 days prior to conducting the mercury tests.

- 6.4.2.4 The baseline inlet mercury emission rate for the affected unit, in lb/TBTU, shall be determined as the arithmetic average of the quarterly stack tests conducted on that unit in accordance with ~~section~~ 6.4.2.1 of this regulation.
- 6.4.2.5 No later than June 1, 2008, the owner or operator shall submit a petition to the Department requesting the establishment of a unit specific mercury emission rate limit. As a minimum, the report shall contain the following information:
  - 6.4.2.5.1 Identification and brief description of the affected unit.
  - 6.4.2.5.2 A list and brief description of all emissions control equipment installed on the affected unit at the time of the stack tests, including operating status at the time of the stack tests.
  - 6.4.2.5.3 An accounting of all fuels and fuel quality being fired during the emissions tests.
  - 6.4.2.5.4 Results of each quarterly mercury emissions tests.
  - 6.4.2.5.5 Proposed mercury emission limits that are no greater than 20% of the baseline uncontrolled mercury emission rate determined in accordance with ~~section~~ 6.4.2 of this regulation for the annual periods January 1, 2009 through December 31, 2012, and no greater than 10% of the baseline uncontrolled mercury emission rate determined in accordance with ~~section~~ 6.4.2 of this regulation for the annual periods starting January 1, 2013 and beyond.
  - 6.4.2.5.6 Summary description of the actions anticipated by the owner or operator of the affected unit to attain compliance with the proposed mercury emission limits.
- 6.4.2.6 The owner or operator of the affected unit shall submit to the Department any additional information requested by the Department necessary for review and approval of the petition.
- 6.4.2.7 The Department shall establish, for the affected unit, a unit specific mercury emission rate no greater than 20% of the unit's baseline uncontrolled mercury emissions rate for the period January 1, 2009 through December 31, 2012, and no greater than 10% of the unit's baseline uncontrolled mercury emission rate for the period January 2013 and beyond.

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## 7.0 Recordkeeping and Reporting

- 7.1 The owner or operator of a unit subject to this regulation shall comply with all applicable recordkeeping and reporting requirements of 40 CFR Part 75 (May 18, 2005) and this regulation.
- 7.2 The owner or operator of a unit subject to this regulation shall maintain, for a period of at least five years, copies of all measurements, tests, reports, and other information required by 40 CFR Part 75 (May 18, 2005 amendment) and this regulation. This information shall be provided to the Department upon request at any time.
- 7.3 After January 1, 2009, the owner or operator of a unit subject to this regulation shall submit to the Department semi-annual reports in conjunction with the ~~Regulation No. 39~~ reporting requirements of 7 DE Admin. Code 1130. The semi-annual reports shall contain, as a minimum, the following information:
  - 7.3.1 Tabulation of emission monitoring results reduced to 4 ~~one~~-hour averages, on a clock basis, for the period in units consistent with the applicable emission standard.
  - 7.3.2 In addition to the requirements of ~~Section~~ 8.3.1 of this regulation, the following calculations shall be made and reported in the semi-annual report:
    - 7.3.2.1 For mass emission standards based on daily limits, the daily mass emission on a calendar day basis for each day in the period, in units consistent with the applicable emission standard.
    - 7.3.2.2 For mass emissions based on an annual limit, the calendar year-to-date summation of mass emissions through the period being reported, in units consistent with the applicable emission standard.

- 7.3.2.3 For emission rate averaging, identification of the units being averaged, hourly heat input of the respective units, hourly emission rate of the respective units, and the hourly combined heat input weighted emission average for the affected units.
- 7.3.3 Identification of any period(s) or periods of, and cause for, any invalid data averages.
- 7.3.4 Records of any repairs, adjustment, or maintenance to the monitoring system.
- 7.3.5 The results of all fuel oil sulfur analysis.
- 7.3.6 Identification of any exceedance of any emission standard provided by this regulation, cause of the exceedance, and corrective action taken in response to the exceedance.
- 7.3.7 Results from all tests, audits, and recalibrations performed during the period.
- 7.3.8 Any other relevant data requested by the Department.
- 7.3.9 A statement, "I am authorized to make this submission on behalf of the owners and operators of the affected facility or affected units for which this submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge true, accurate and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment."
- 7.3.10 Signature by the designated representative.

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## **8.0 Compliance Plan**

- 8.1 The owner or operator of a unit subject to this regulation shall submit a compliance plan to the Department on or before July 1, 2007.
- 8.2 The compliance plan shall contain, at a minimum, the following information:
  - 8.2.1 Identification of the subject unit.
  - 8.2.2 A description of any existing NO<sub>x</sub>, SO<sub>2</sub>, ~~and~~/or mercury emissions control technologies installed on the unit, including identification of the initial installation date of the control technologies.
  - 8.2.3 Identification of the requirements of this regulation applicable to the unit.
  - 8.2.4 A description of the plan or methodology that will be utilized to demonstrate compliance with this regulation.
  - 8.2.5 Identification of emission control technologies, ~~and~~/or modifications to existing emission control technologies, that will be utilized to comply with the applicable emissions limitations of this regulation. This shall include:
    - 8.2.5.1 A description of the control technology and its applicability to the subject unit.
    - 8.2.5.2 The design control effectiveness or design emission rate following installation of the emission control technology on the subject unit.
    - 8.2.5.3 Estimated dates for start of construction, start-up of the emissions control technology, and estimated project completion date.
  - 8.2.6 A description of the emissions monitoring methodology to be utilized for demonstrating compliance with the emissions limitations of this regulation, including estimated installation dates, start-up dates, and testing dates.
  - 8.2.7 Identification of any planned changes to administrative or operating procedures or practices intended to achieve compliance with applicable emissions limitations of this regulation.
  - 8.2.8 Any other relevant information requested by the Department.
  - 8.2.9 A statement, "I am authorized to make this submission on behalf of the owners and operators of the affected facility or affected units for which this submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with

primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge true, accurate and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.”

8.2.10 Signature by the designated representative.

8.3 A facility that has submitted a complete compliance plan for its impacted units in accordance with the requirements of ~~Section~~ 8.0 of this regulation may on one occasion for each unit request an extension of up to one year for any deadline set out in ~~Sections~~ 5.1 and 5.3 of this regulation. The facility shall have the burden of demonstrating that good faith efforts have been made to comply with the original deadline; that the facility is unable to comply because of events or circumstances beyond the control of the facility, including any entity controlled by it; that the delay could not have been prevented by the facility’s exercise of due diligence; and that the facility has taken all reasonable steps or measures to avoid or minimize the delay. The Secretary shall exercise his discretion to grant a request that satisfies all the criteria.

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**9.0 Penalties**

The Department may enforce all of the provisions of this regulation under 7 Del.C. Chapter 60.

**Table # 4-1  
Annual NO<sub>x</sub> Mass Emissions Limits**

<b>Unit</b>	<b>Control Period NO<sub>x</sub> Mass Emissions Limit (tons)</b>
Edgemoor 3	773
Edgemoor 4	1339
Edgemoor 5	1348
Indian River 1	601
Indian River 2	628
Indian River 3	977
Indian River 4	2032
McKee Run	244

**Table # 5-1  
Annual SO<sub>2</sub> Mass Emissions Limits**

<b>Unit</b>	<b>Control Period SO<sub>2</sub> Mass Emissions Limit (tons)</b>
Edgemoor 3	1391
Edgemoor 4	2410
Edgemoor 5	2427
Indian River 1	1082
Indian River 2	1130

Indian River 3	1759
Indian River 4	3657
McKee Run	439

**Table # 6-1**  
**Annual Mercury Mass Emissions Limits**

<b>Unit</b>	<b>Mercury Mass Emissions 2009 - 2012 (ounces)</b>	<b>Mercury Mass Emissions 2013 and Beyond (ounces)</b>
Edgemoor 3	266	106
Edgemoor 4	462	183
Indian River 1	207	82
Indian River 2	216	86
Indian River 3	337	134
Indian River 4	700	278

**12 DE Reg. 347 (09/01/08) (Final)**