

MARYLAND REGISTER

Proposed Action on Regulations

Transmittal Sheet PROPOSED OR REPROPOSED Actions on Regulations	Date Filed with AELR Committee	TO BE COMPLETED BY DSD
	08/11/2015	Date Filed with Division of State Documents
		Document Number
		Date of Publication in MD Register

1. Desired date of publication in Maryland Register: 9/18/2015

2. COMAR Codification

Title Subtitle Chapter Regulation

26 11 38 01 — .07

3. Name of Promulgating Authority

Department of the Environment

4. Name of Regulations Coordinator

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6. Check applicable items:

- New Regulations

- Amendments to Existing Regulations

Date when existing text was downloaded from COMAR online: May 29, 2015.

Repeal of Existing Regulations

Recodification

Incorporation by Reference of Documents Requiring DSD Approval

Reproposal of Substantively Different Text:

: Md. R
(vol.) (issue) (page nos) (date)

Under Maryland Register docket no.: --P.

7. Is there emergency text which is identical to this proposal:

Yes - No

8. Incorporation by Reference

Check if applicable: Incorporation by Reference (IBR) approval form(s) attached and 18 copies of documents proposed for incorporation submitted to DSD. (Submit 18 paper copies of IBR document to DSD and one copy to AELR.)

9. Public Body - Open Meeting

OPTIONAL - If promulgating authority is a public body, check to include a sentence in the Notice of Proposed Action that proposed action was considered at an open meeting held pursuant to State Government Article, §10-506(c), Annotated Code of Maryland.

OPTIONAL - If promulgating authority is a public body, check to include a paragraph that final action will be considered at an open meeting.

10. Children's Environmental Health and Protection

Check if the system should send a copy of the proposal to the Children's Environmental Health and Protection Advisory Council.

11. Certificate of Authorized Officer

I certify that the attached document is in compliance with the Administrative Procedure Act. I also certify that the attached text has been approved for legality by Michael Strande, Assistant Attorney General, (telephone #410-537-3421) on 8/7/15. A written copy of the approval is on file at this agency.

Name of Authorized Officer

Benjamin H. Grumbles

Title

Secretary of the Environment

Telephone No.

410-537-3084

Date

8/10/15

Title 26
DEPARTMENT OF THE ENVIRONMENT

Subtitle 11 AIR QUALITY

26.11.38 Control of NO_x Emissions from Coal-Fired Electric Generating Units

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

Notice of Proposed Action

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The Secretary of the Environment proposes to amend Regulation .01, amend and recodify existing Regulations .04 and .05 to be Regulations .05 and .06, and adopt new Regulations .04 and .07 under COMAR 26.11.38 Control of NO_x Emissions from Coal-Fired Electric Generating Units.

Statement of Purpose

The purpose of this action is to establish new nitrogen oxide (NO_x) emission standards for coal-fired electric generating units (EGUs) in Maryland. The new standards for coal-fired EGUs in Maryland and resulting reductions in NO_x emissions are needed to attain and maintain the National Ambient Air Quality Standard (NAAQS) for ozone and satisfy the requirements of the federal Clean Air Act (CAA).

Background

In 2012, portions of Maryland were designated as nonattainment for the 2008 8-hour, 75 parts per billion (ppb), ozone NAAQS. Ozone is produced when volatile organic compounds (VOCs) and NO_x react in the presence of heat and sunlight. The Maryland Department of the Environment (MDE) has found through a research partnership with the University of Maryland that NO_x reductions are more effective at reducing ozone levels than VOC reductions. Under the federal Clean Air Act, sources in ozone nonattainment areas are subject to enforceable emission limitations and control measures appropriate to attain and maintain the applicable NAAQS.

Maryland has been implementing measures to reduce NO_x emissions for over 20 years. Modeling shows how the existing measures and future measures will help the state meet the current ozone standard.

Ozone levels in Maryland have dropped dramatically over the past 10 years. On June 1, 2015, EPA determined that the Baltimore area, the only moderate nonattainment area in the State, has attained the 2008 8-hour ozone NAAQS. See 80 Fed. Reg. 30,941 (June 1, 2015). The other two nonattainment areas have not yet attained the standard, but there is only a single monitor in each area that records ozone levels slightly above the standard.

This action is expected to reduce NOx emissions and is part of a series of initiatives that will allow Maryland to attain and maintain compliance with the current ozone standard.

Sources Affected

This proposed action applies to all coal-fired EGUs owned by Raven Power Finance LLC (Raven Power) and NRG Energy, Inc. (NRG) in Maryland. Plants that are part of the Raven system include Brandon Shores Units 1 and 2, H. A. Wagner Units 2 and 3, and C. P. Crane Units 1 and 2. Plants that are part of the NRG system include: Morgantown Units 1 and 2, Chalk Point Units 1 and 2, and Dickerson Units 1, 2 and 3.

Requirements

This proposed action is part of a broader strategy to reduce NOx emissions from coal-fired EGUs in the State. On May 1, 2015, the first phase of this strategy became effective. This action requires all of the affected units to minimize NOx emissions every day of the summer by optimizing the pollution controls that are already in place. This first step will reduce NOx emissions by about 9 tons each day and will lower ozone levels by about 0.5 ppb. This proposed action builds from this recent action that became effective on May 1 2015.

This proposed action implements phase 2 of this strategy and is designed to achieve further reductions by 2020. Regulation .04 contains the new substantive language to achieve the 2020 reductions. Regulation .04 requires the owner or operator of units that have not installed selective catalytic reduction (SCR) technology (H. A. Wagner Unit 2, C. P. Crane Units 1 and 2, Chalk Point Units 1 and 2, and Dickerson Units 1, 2 and 3) to choose from the following:

Option 1 – By June 1, 2020, install and operate an SCR control system that can meet a NOx emission rate of 0.09 lbs/MMBtu during the ozone season based on a 30-day rolling average;

Option 2 – By June 1, 2020, permanently retire the unit;

Option 3 – By June 1, 2020, switch fuel permanently from coal to natural gas and operate the unit on natural gas; or

Option 4 - By June 1, 2020, meet a systemwide, daily NOx tonnage cap of 21 tons per day for every day of the ozone season or meet a systemwide NOx emission rate of 0.13 lbs/MMBtu as a 24-hour block average. The rate and the cap in option 4 are consistent with levels assuming SCR controls on all units. If option 4 is selected, deeper reductions starting in May 2016, 2018 and 2020 must also be achieved.

2016 - Meet a 30-day systemwide rolling average NOx emission rate of 0.13 lbs/MMBtu during the ozone season.

2018 – Meet a 30-day systemwide rolling average NOx emission rate of 0.11 lbs/MMBtu during the ozone season.

2020 - Meet a 30-day systemwide rolling average NOx emission rate of 0.09 lbs/MMBtu during the ozone season.

Without option 4, the allowable 30-day systemwide rolling average NOx emission rate is 0.15 lbs/MMBtu during the ozone season.

Option 4 also includes provisions to ensure that the reliability of the electrical system is

maintained.

Expected Emissions Reductions and Ozone Benefits

MDE projects the implementation of new Regulation .04 requirements will (in combination with the phase 1 requirements) result in an ozone season NOx reduction between 2,207 and 2,627 tons depending on the option chosen. Option 4 achieves the higher 2,627 tons per ozone season level of reductions. If option 4 is chosen, ozone season average NOx emissions will be reduced by approximately 13 percent in 2016, 27 percent in 2018 and 40 percent in 2020. The early reductions will not be achieved if option 1, 2 or 3 are chosen.

MDE ozone modeling shows that all of the options in Regulation .04 result in an approximate 0.1 ppb ozone reduction in 2020. This is in addition to the phase 1 reductions which lower ozone by about 0.5 ppb starting in May 2015.

Comparison to Federal Standards

There is no corresponding federal standard to this proposed action.

Estimate of Economic Impact

I. Summary of Economic Impact.

As described above, the new regulation provides four options from which affected sources may choose to achieve compliance with the 2020 requirements. The flexible regulatory approach makes it difficult at this time to quantify future costs.

Implementation of these regulations will result in reduced ozone levels thereby reducing the adverse health impacts experienced by many Marylanders caused by exposure to high levels of ozone. These benefits include a lower incidence of hospitalizations, respiratory illnesses, and restricted activity days. Health benefits are influenced by many factors and monetizing benefits is difficult. Ozone season economic benefits from reduced incidents ranges from \$60,000 - \$300,000,000 (in 2010 dollars).

Under the first option for 2020 compliance, units currently equipped with SNCR or SACR control technologies could remove and replace those technologies with the more advanced SCR technology. Installation of state-of-the-art SCR controls on a unit can cost up to \$200 million. The performance and removal efficiency of the controls at a specific unit can depend in part on how much the unit operates.

The second compliance option is retirement of the unit(s). Many of the units subject to this regulation were built in the 1950's and are much less efficient than modern units. Some of these units may simply be reaching the end of their ability to efficiently produce energy and the costs associated with fuel switching or installation and operation of advanced NOx controls would not be cost-effective.

Under the third compliance option, affected units could convert to cleaner burning

natural gas. The installed cost of a new natural gas combined cycle unit is approximately \$1 million per megawatt of capacity. Retrofitting a coal boiler to burn natural gas has variable costs. The availability of natural gas, site specific constraints and market fuel prices will factor into decisions about selection of this option.

Under the fourth compliance option, affected generating units must meet more stringent NOx 30-day systemwide rolling average rates in 2016, 2018 and 2020 than those currently required by regulation .03B(1) of this chapter. Affected units must also choose between meeting a 24-hour systemwide NOx emission rate or a systemwide daily NOx tonnage cap. This will be done through averaging and operation curtailment resulting in lost revenue. The Department is unable to estimate the lost revenue.

There will be no expected impact on the Department, other State agencies, or local governments as a result of this action.

II. Types of Economic Impact.	Revenue (R+/R-)	Magnitude
	Expenditure (E+/E-)	
A. On issuing agency:	(E+)	Minimal
B. On other State agencies:	NONE	Minimal
C. On local governments:	NONE	Minimal
	Benefit (+) Cost (-)	Magnitude
D. On regulated industries or trade groups:		
Compliance Costs	(-)	430,000 to 300 million
E. On other industries or trade groups:	(+)	Indeterminate
F. Direct and indirect effects on public:		
(1) Electricity Rates	(-)	Indeterminate
(2) Health Benefits	(+)	\$60,000 - \$300 million

III. Assumptions. (Identified by Impact Letter and Number from Section II.)

A. MDE maintains both a compliance and permitting program for major sources as required by the Clean Air Act. These programs will implement these regulations.

B. There are no anticipated tasks or compliance activities required of other state agencies due to these regulations.

C. There are no anticipated tasks or compliance activities required of other local government due to these regulations.

D. It is difficult to determine the precise costs to regulated entities associated with implementation of this action because there can be a number of site-specific requirements and variables associated with the cost of installation and operation of pollution control equipment or installation of new equipment at specific plants. Companies can choose from various options to meet 2020 requirements. Raven Power and NRG submitted cost analyses in 2014 for the replacement of existing SNCR/SACR control technology with SCR control technology for certain units. Capital cost estimates for this change in technology on an individual unit range from \$40,000,000 to \$200,000,000. Operating and maintenance costs range from \$430,000 to \$4,300,000 (in 2014 dollars). Additionally, the regulations allow fuel switching to natural gas. Current publications and review of recently built facilities that have installed natural gas boilers indicates the cost of installation to be approximately \$1,000,000 per megawatt of capacity. Therefore an anticipated range of cost for installing a natural gas boiler is \$25,000,000 to \$300,000,000 (in 2014 dollars). In the case of a unit retirement, the company will lose revenue and may face decommissioning costs. Therefore MDE anticipates costs will range from \$430,000 to \$300 million for any of the options.

E. Installation of SCR technology or natural gas-fired boilers is usually performed by specially trained tradesmen. Maryland contractors and equipment manufacturers may see an increase in demand for services; however, the magnitude of the increase that may result is indeterminate.

F(1). Commercial and consumer electricity rates are influenced by many factors. The costs associated with implementation of this action may be one factor that influences these rates, but the magnitude of that influence is difficult to quantify when considered along with other factors that significantly affect electric rates.

F(2). Health benefits are influenced by many factors and monetizing benefits is difficult. Implementation of these regulations will result in a reduction of incidents in which Marylanders experience adverse health effects, including hospitalizations, illnesses, restricted activity days and other effects caused by air pollution and exposure to ground level ozone. Ozone season economic benefits from reduced incidents ranges from \$60,000 - \$300,000,000 (in 2010 dollars).

Economic Impact on Small Businesses

The proposed action has minimal or no economic impact on small businesses.

Impact on Individuals with Disabilities

The proposed action has no impact on individuals with disabilities.

Opportunity for Public Comment

Comments may be sent to , , , or call , or email to , or fax to . Comments will be accepted through . A public hearing will be held, The Department of the Environment will hold a public hearing on the proposed action on October 23, 2015 at 10a.m. at the Department of the Environment, 1800 Washington Boulevard, 1st Floor Conference Rooms, Baltimore, Maryland 21230-1720. Interested persons are invited to attend and

express their views. Comments may be sent to Mr. Randy Mosier, Chief of the Regulation Division, Air and Radiation Management Administration, Department of the Environment, 1800 Washington Boulevard, Suite 730, Baltimore, Maryland 21230-1720, or email to randy.mosier@maryland.gov. Comments must be received no later than October 20, 2015, or be submitted at the hearing. For more information, call Randy Mosier at (410) 537-4488.

Copies of the proposed action and supporting documents are available for review at the following locations:

- The Department of the Environment's website at:
<http://www.mde.state.md.us/programs/regulations/air/Pages/reqcomments.aspx>
- The Air and Radiation Management Administration; and
- Regional offices of the Department in Cumberland and Salisbury.

Anyone needing special accommodations at the public hearing should contact the Department's Fair Practices Office at (410) 537-3964.

TTY users may contact the Department through the Maryland Relay Service at 1-800-735-2258.

Economic Impact Statement Part C

A. Fiscal Year in which regulations will become effective: FY 2016

B. Does the budget for the fiscal year in which regulations become effective contain funds to implement the regulations?

Yes

C. If 'yes', state whether general, special (exact name), or federal funds will be used:

A combination of Maryland Clean Air Funds (Special) and Air Pollution Control Program Grant Funds (Federal) will be used.

D. If 'no', identify the source(s) of funds necessary for implementation of these regulations:

E. If these regulations have no economic impact under Part A, indicate reason briefly:

F. If these regulations have minimal or no economic impact on small businesses under Part B, indicate the reason and attach small business worksheet.

Commercial and consumer electricity rates are influenced by many factors. The costs associated with the implementation of this action may be one factor that influences these rates, but the magnitude of the influence is dependent on multiple other factors.

G. Small Business Worksheet:

Title 26 DEPARTMENT OF THE ENVIRONMENT

Subtitle 11 AIR QUALITY

Chapter 38 Control of NO_x Emissions from Coal-Fired Electric Generating Units

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

.01 Definitions.

A. (text unchanged)

B. Terms Defined.

(1) (text unchanged)

(2) *“Emergency operations” means an event called when PJM Interconnection, LLC or a successor independent system operator, acts to invoke one or more of the Warning or Action procedures in accordance with PJM Manual 13, Revision 57, as amended, to avoid potential interruption in electric service and maintain electric system reliability.*

[(2)] (3) (text unchanged)

[(3)] (4) (text unchanged)

[(4)] (5) (text unchanged)

[(5)] (6) (text unchanged)

(7) *“30-day rolling average emission rate” means a value in lbs/MMBtu calculated by:*

(a) *Summing the total pounds of pollutant emitted from the unit during the current operating day and the previous 29 operating days;*

(b) *Summing the total heat input to the unit in MMBtu during the current operating day and the previous 29 operating days; and*

(c) *Dividing the total number of pounds of pollutant emitted during the 30 operating days by the total heat input during the 30 operating days.*

[(6)] (8) (text unchanged)

[(7)] (9) (text unchanged)

(10) *“24-hour systemwide block average emission rate” means a value in lbs/MMBtu calculated by:*

(a) *Summing the total pounds of pollutant emitted from the system during 24 hours between midnight of one day and ending the following midnight;*

(b) *Summing the total heat input to the system in MMBtu during 24 hours between midnight of one day and ending the following midnight; and*

(c) *Dividing the total number of pounds of pollutant emitted during 24 system hours between midnight of one day and ending the following midnight by the total heat input during 24 system hours between midnight of one day and ending the following midnight.*

.02 (text unchanged)

.03 (text unchanged)

.04 Additional NO_x 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_x 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_x emission rate of 0.13 lbs/MMBtu as determined on a 24-hour systemwide block average or a systemwide NO_x 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_x 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_x 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_x 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_x 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(s) NO_x emissions from all operations during the entire operating day shall be used where the unit(s) burn coal at any time during that operating day.

E. Beginning June 1, 2020, if the unit(s) 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_x 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(s) 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.

[.04] .05 Compliance Demonstration Requirements.

A. (text unchanged)

B. Procedures for Demonstrating Compliance with NO_x Emission Rates under this Chapter.

(1) Compliance with the NO_x emission rate limitations in Regulations .03B(1) and D(2), .04B(1)(b), B(4), C(1), C(2), C(3), and E(1)(b), and [.04].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 Regulation .03B(1), .04C(1), C(2) and C(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 §.04B(1)(b), 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.

[.05] .06 Reporting Requirements.

A. (text unchanged)

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

(1) Daily pass or fail of the NO_x emission rates under Regulation [.04].05A(2) of this chapter;

(2) The reporting information as required under Regulation [.04].05A(3) of this chapter; [and]

(3) The 30-day systemwide rolling average emission rate for each affected electric generating unit to demonstrate compliance with Regulation .03B(1), .04C(1), C(2) and C(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_x emission rate as determined on a 24-hour block average or the actual systemwide daily NO_x 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_x emission rate as determined on a 24-hour block average for each day during the month.

.07 Electric System Reliability During Ozone Seasons.

A. In the event of emergency operations, a maximum of 12 hours of operations per system per ozone season may be removed from the calculation of the NO_x limitations in Regulation .04B(4) of this chapter from the unit(s) responding to the emergency operations provided that:

(1) Within one business day following the emergency operation, the owner or operator of the affected electric generating unit(s) notifies the Manager of the Air Quality Compliance Program of the emergency operations taken by PJM Interconnection; and

(2) Within five business days following the emergency operation, the owner or operator of the affected electric generating unit(s) provides the Department with the following information:

(a) PJM documentation of the emergency event called and the unit(s) requested to operate;

(b) Unit(s) dispatched for the emergency operation;

(c) Number of hours that the unit(s) responded to the emergency operation and the consecutive hours that will be used towards the calculation of the NO_x limitations in §.04B(4) of this chapter; and

(d) Other information regarding efforts the owner or operator took to minimize NO_x emissions in accordance with Regulation .03A(1) of this chapter on the day that the emergency operation was called.

B. Any partial hour in which a unit operated in response to emergency operations under §A of this regulation shall constitute a full hour of operations.