

EXHIBIT B



Maryland

Department of the Environment

Larry Hogan
Governor

Boyd Rutherford
Lieutenant Governor

Ben Crumles
Secretary

AIR QUALITY CONTROL ADVISORY COUNCIL AGENDA December 11, 2017

Maryland Department of the Environment
Aeris Conference Room (1st Floor MDE Lobby)
1800 Washington Boulevard
Baltimore MD 21230

<https://global.gotomeeting.com/join/804905789>

United States: +1 (408) 650-3123

Access Code: 804-905-789

8:15 a.m.	Welcome and Introductions	John Quinn, Advisory Council Chair Tad Aburn, Air Director
-----------	---------------------------	---

8:25 a.m.	Approval of Meeting Minutes	John Quinn
-----------	-----------------------------	------------

Action Items for Discussion/Approval:

8:30 a.m.	NOx RACT for Municipal Waste Combustors COMAR 26.11.01, 26.11.08 and 26.11.09	Randy Mosier
-----------	--	--------------

Briefings:

10:15 a.m.	2017 Path Forward presentation	Tad Aburn
------------	--------------------------------	-----------

11:15 a.m.	Adjourn	
------------	---------	--

Next Meeting Dates:

March 12, 2018

June 11, 2018

September 17, 2018

December 10, 2018

December 8, 2017

Amendments to COMAR 26.11.01 – General Administrative Provisions, COMAR 26.11.08 - Control of Incinerators and COMAR 26.11.09 - Control of Fuel Burning Equipment, Stationary Internal Combustion Engines, and Certain Fuel-Burning Installations

Purpose

The purpose of this action is to repeal nitrogen oxide (NO_x) reasonable available control technology (RACT) requirements under COMAR 26.11.09.08H and establish new NO_x RACT and State Implementation Plan (SIP) strengthening requirements under COMAR 26.11.08.10 for Large municipal waste combustors (MWCs). Additionally, this action amends opacity requirements under 26.11.01, adds definitions, and repeals 26.11.08.08-1 and updates references to 26.11.08.08-2, which is the current emission standards and requirements for hospital, medical and infectious waste incinerators (HMIWIs). The amendments related to Small MWCs and HMIWIs are part of Maryland's 111(d)/129 plan.

Submission to EPA as Revision to Maryland's State Implementation Plan (SIP)

The amendments pertaining to Large MWCs will be submitted to the U.S. Environmental Protection Agency (EPA) for approval as part of Maryland's State Implementation Plan (SIP). The amendments pertaining to Small MWCs and HMIWIs will be submitted to the U.S. Environmental Protection Agency (EPA) for approval as part of Maryland's 111(d) and 129 plans.

Background

Ozone Standards

On March 12, 2008, the EPA revised the National Ambient Air Quality Standards (NAAQS) for ozone to a level of 75 parts per billion (ppb) to provide increased protection of public health and the environment. In 2012, EPA designated portions of Maryland as nonattainment for the 75 ppb ozone NAAQS.

On June 1, 2015, the Maryland Department of the Environment (MDE or the Department) demonstrated that the Baltimore area ozone monitor data had achieved the NAAQS. EPA issued a final Clean Data Determination for the Baltimore ozone nonattainment area. In 2017, EPA proposed that the Washington, D.C. and the Philadelphia ozone nonattainment areas, which include portions of Maryland, had clean monitoring data as well. EPA has not yet finalized these proposed determinations of attainment.

Even with the Clean Data Determination, the designation status of the Baltimore Area will remain nonattainment for the 2008 75ppb ozone NAAQS until such time as EPA determines that the Area meets the CAA requirements for re-designation to attainment, including an approved redesignation request and maintenance plan. Additionally, the determination of attainment is separate from, and does not influence or otherwise affect, any future designation determination or requirements for the Baltimore Area based on any new or revised ozone NAAQS.

On October 1, 2015, EPA strengthened the NAAQS for ozone to 70 ppb, based on scientific evidence about ozone's effects on public health and welfare. Reductions in NO_x emissions from major sources of NO_x are necessary to attain and maintain compliance with the 75 ppb standard and will also be necessary to achieve compliance with the more stringent 70 ppb ozone standard.

NO_x RACT Requirements

Under the CAA, 42 U.S.C. § 7401 et seq., sources in ozone nonattainment areas classified as moderate and above are subject to a NO_x RACT requirement. Section 182 of the CAA requires MDE to review and revise NO_x RACT requirements in the Maryland SIP as necessary to achieve compliance with new, more stringent ambient air quality standards. EPA defines RACT as the lowest emissions limitation (e.g., on a part per million or pound per million Btu basis) that a particular source is capable of meeting by the application of control technology (e.g., installation and operation of low-NO_x burners) that is reasonably available considering technological and economic feasibility. In reviewing existing NO_x RACT requirements for adequacy, the Department considers technological advances, the stringency of the revised ozone standard and whether new sources subject to RACT requirements are present in the nonattainment area. For inclusion in Maryland's RACT SIP, the Department must examine existing controls on major sources of NO_x to determine whether additional controls are economical and technically feasible.

Region-wide, several states have proposed or revised NO_x RACT standards for large MWCs. On April 20, 2009, New Jersey adopted Regulation 7:27-19.12 that established a NO_x RACT emission rate of 150 parts per million by volume, dry basis (ppmvd) based on a calendar day average. In May of 2013, Massachusetts proposed a NO_x RACT of 150 ppmvd for MWCs equivalent to the type of large MWC plants operating in Maryland. To date, Massachusetts proposal has not moved forward for adoption. In 2016, Connecticut adopted a 150 ppm limit for mass burn waterwall combustors on a 24-hour daily average as specified under § 22a-174-38(c)(8) Table

32-a. On April 23, 2016, Pennsylvania updated RACT requirements and established a NO_x emission rate of 180 ppmvd for MWCs.

Large MWCs in Maryland have demonstrated the ability to reduce NO_x emissions through analysis and optimization of existing controls. Based upon regional NO_x RACT amendments, optimization studies, and upgrades performed by Maryland sources, the Department has concluded that Maryland MWCs are capable of meeting more stringent NO_x RACT requirements.

Hospital, Medical and Infectious Waste Incinerators

On April 2, 2012, Maryland adopted COMAR 26.11.08.08-2 - new emission standards and requirements for hospital, medical and infectious waste incinerators. These new requirements went into effect on October 6, 2014, and replaced the existing HMIWI requirements codified under 26.11.08.08-1. Under this action, Maryland repeals 26.11.08.08-1 and updates references throughout the Chapter to 26.11.08.08-2.

Continuous Opacity Monitoring Requirements

On May 10, 2016, Maryland submitted State Implementation Plan (SIP) Revision #16-04 containing definitions and requirements for the monitoring of opacity for cement kilns, clinker coolers and municipal waste combustors. The U.S. Environmental Protection Agency (EPA) has informed the Department that the existing definitions of "Continuous burning" and "Operating time" in COMAR 26.11.01.01 create an exemption for MWCs which is not permissible under EPA's startup, shutdown and malfunction (SSM) policy; 40 CFR Part 52. Maryland proposes to repeal these definitions as requested by EPA.

Sources Affected and Location

There are two large MWCs in Maryland, Wheelabrator Baltimore, L.P. (Wheelabrator), and Montgomery County Resource Recovery Facility (MCRRF).

There is one small MWC facility in Maryland, the Fort Detrick Solid Waste Management Plant located in Frederick County. There are two HMIWI facilities in Maryland, Curtis Bay Energy, L.P. and Fort Detrick Solid Waste Management Plant.

Requirements

Large MWC NOx RACT

This action establishes new NOx RACT standards and requirements for large MWCs with a capacity greater than 250 tons per day. New COMAR 26.11.08.10 requires that as of May 1, 2019, Maryland's two Large MWCs shall meet new, individual NOx 24-hour block average emission rates. The Montgomery County Resource Recovery Facility shall meet a NOx 24-hour block average emission rate of 140 ppmv. The Wheelabrator Baltimore, Inc. facility shall meet a NOx 24-hour block average emission rate of 150 ppmv.

Additionally, to further ensure consistent long-term operation of NOx control technologies, this action establishes a 30-day rolling average emission rate. As of May 1, 2020 Large MWCs are required to meet new, individual NOx 30-day rolling average emission rates. The Montgomery County Resource Recovery Facility shall meet a NOx 30-day rolling average emission rate of 105 ppmv. The Wheelabrator Baltimore, Inc. facility shall meet a NOx 30-day rolling average emission rate of 145 ppmv.

Large MWCs are required to meet the NOx 24-hour block average and NOx 30-day rolling average emission rates, except for periods of startup and shutdown. During periods of startup and shutdown it is technically infeasible for MWCs to comply with the emission rates due to the "7 percent oxygen correction factor" that is required to be applied to the NOx 24-hour and 30-day emission rates. During periods of startup and shutdown, excess ambient air is introduced into the furnace. Applying the correction factor of 7 percent oxygen at this time grossly misrepresents the actual NOx emissions produced. Therefore, concentration-based emission limitations are not a practical limitation during periods of startup and shutdown, and the substitution of equivalent mass-based emission limits are needed. During periods of startup and shutdown the Montgomery County Resource Recovery Facility shall meet a facility wide NOx emission limit of 202 lbs/hr timed average mass loading over a 24-hour ~~block~~ period and the Wheelabrator Baltimore, Inc. facility shall meet a facility wide NOx emission limit of 252 lbs/hr timed average mass loading over a 24-hour ~~block~~ period. When the unit is in periods of startup and shutdown, the NOx 24-hour block average emission rate will apply for the 24-hour period after startup and before shutdown. The duration of startup and shutdown procedures for a Large MWC are not to exceed three hours per occurrence, and the NOx 24-hour block average mass emission limits apply during these times.

The mass emission limits are based upon the 24-hour block average NO_x RACT rates applicable to each Large MWC (incorporating the NO_x 24-hour block average emission rates of COMAR 26.11.08.10B into the calculation) and provide equivalent stringency to the concentration limits that apply at all other times. Mass based emission calculations are derived utilizing 40 CFR 60.1460 (Concentration correction to 7 percent oxygen) or 40 CFR 60.45 (Conversion procedures to convert CEM data into applicable standards). EPA Method 19 may also be utilized to determine NO_x emission rates based upon oxygen concentrations. Facility average flue gas flow rates are also utilized into the calculations. The calculation methodology for the mass emission limits is based upon the Prevention of Significant Deterioration (PSD) Approval for each affected facility.

The new NO_x RACT further specifies that a Large MWC shall minimize NO_x 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, including periods of startup and shutdown. Large MWCs shall continuously monitor NO_x emissions with a continuous emission monitoring system (CEM) in accordance with COMAR 26.11.01.11. Large MWCs are also required to submit quarterly reports to the Department containing data, information, and calculations which demonstrate compliance with the NO_x RACT emission rates and NO_x mass loading emission limits. The reports shall include flagging of periods of startup and shutdown and exceedance of emission rates, as well as documented actions taken during periods of startup and shutdown in signed, contemporaneous operating logs.

Additional NO_x Emission Control Requirements

The proposed NO_x RACT requirements, when effective, will result in immediate reductions in NO_x emissions from Large MWCs. This action also contains additional NO_x emission control requirements, which are needed by Maryland to attain and maintain compliance with federal ozone standards.

No later than January 1, 2020, Wheelabrator Baltimore, Inc. is required to submit a feasibility analysis for control of NO_x emissions as prepared by an independent, third-party to the Department. This report shall provide a written narrative and schematics detailing the existing facility operations, boiler design, NO_x control technologies and relevant emission performance. An overview of state of the art

NOx control technologies for achieving additional NOx emission reductions from existing MWCs in consideration of the current boiler configuration at Wheelabrator Baltimore Inc. and an analysis of whether each state of the art control technology could be implemented is also to be included. The report shall also contain a cost-benefit analysis and schedule for installation and implementation of each NOx emission control technology. Concluding the report shall be proposed NOx 24-hour block average emission rate, NOx 30-day rolling average emission rate, and NOx mass loading emission limitation for periods of startup, shutdown, and malfunction based upon the results of the feasibility analysis. The feasibility analysis and the proposed NOx emission limits are to be approved by the Department. Wheelabrator Baltimore, Inc. shall provide the Department with no less than two weeks notice and the opportunity to observe any optimization procedure, including installation or operation of NOx emission control technology, for the express purpose of complying with the additional NOx emission control requirements.

The Department intends to initiate rulemaking in 2020 to adopt the NOx emission control limits for the Wheelabrator Baltimore, Inc. facility that have been identified by the feasibility analysis and approved by the Department. The additional NOx emission control requirements would need to go through full public comment and hearing process as required by Maryland law.

Projected Emission Reductions

MDE projects the implementation of the new NOx RACT requirements for Large MWCs will result in approximately 200 tons of NOx emissions reduced on an annual basis.

There are no expected NOx emission reductions for Small MWCs.

Minimal emissions reductions are expected from existing HMIWI sources in Maryland as a result of meeting the requirements of COMAR 26.11.08.08-2. As of October 6, 2014, Maryland sources have already applied control technologies to the incineration process and to post incineration emissions to meet the NOx emission standards, and other requirements, as specified in the 111(d) plan of COMAR 26.11.08.08-2.

Economic Impact on Affected Sources, the Department, other State Agencies, Local Government, other Industries or Trade Groups, the Public

Large MWCs are expected to incur a small increase in operating costs as a result of optimization of existing control technology and increase of urea consumption. The operating cost increase is projected to be in the range \$1,123 to \$1,269 per ton of NOx reduced based on the increase in urea consumption. Additional capital costs have been incurred at the Wheelabrator Baltimore, Inc. facility in an effort to meet the proposed NOx RACT emission rates. Wheelabrator Baltimore, Inc. has conducted several analyses of existing operating combustion and control systems, and has modified urea injection systems to be optimized for multiple parameters. The facility has also modified interface combustion controls with SNCR operation and control through automation of the urea feed system. Specific cost information has not been made available to the Department.

| There are no expected economic impacts for Small ~~MCWs~~ MWCs and HMIWIs. There will be no impact on the Department or other state agencies or local government as a result of this action.

Economic Impact on Small Businesses

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

Is there an Equivalent Federal Standard to this Proposed Regulatory Action?

This regulatory action proposes new NOx RACT standards for Large MWCs. There is no equivalent federal RACT standard for Large MWCs. Maryland's existing NOx RACT for Large MWCs is based upon 40 CFR 60, Subpart Eb - New Source Performance Standards for Large Municipal Waste Combustors constructed after September 20, 1994 and 40 CFR 60, Subpart Cb - Emission Guidelines and Compliance Times for Large Municipal Waste Combustors constructed on or before September 20, 1994.

COMAR 26.11.08.08-2 serves as Maryland's HMIWI 111(d)/129 Plan and adopts EPA's EGs as specified under 40 CFR 60, Subpart Ce and 40 CFR 62, Subpart HHH.

DRAFT 11-13-2017
DOWNLOAD 09-27-2017

Title 26 DEPARTMENT OF THE ENVIRONMENT

Subtitle 11 AIR QUALITY

Chapter 01 General Administrative Provisions

Authority: Environment Article, §§1-101, 1-404, 2-101—2-103, 2-301—2-303, 10-102, and 10-103,
Annotated Code of Maryland

.01 Definitions.

- A. (text unchanged)
- B. Terms Defined.
 - (1) — (8) (text unchanged)
 - (8-1) *Repealed.*
 - (9) — (27) (text unchanged)
 - (27-1) *Repealed.*
 - (28) — (53) (text unchanged)

.02 — .11 (text unchanged)

DRAFT 12-8-2017
DOWNLOAD 02-12-2016 (includes NPA updates from 11-13-2015)

Title 26 DEPARTMENT OF THE ENVIRONMENT

Subtitle 11 AIR QUALITY

Chapter 08 Control of Incinerators

Authority: Environment Article, §§1-404, 2-103, 2-301—2-303, 2-406, Annotated Code of Maryland

.01 Definitions.

- A. (text unchanged)
- B. Terms Defined.
 - (1) — (7-1) (text unchanged)
 - (7-2) *Continuous Burning.*
 - (a) *“Continuous burning” means the continuous, semi-continuous, or batch feeding of municipal solid waste for purposes of waste disposal, energy production, or providing heat to the combustion system in preparation for waste disposal or energy production.*
 - (b) *“Continuous burning” begins once municipal solid waste is fed to the combustor.*
 - (8) — (45) (text unchanged)
 - (46) *“Operating day” means a 24-hour period beginning [between 12] midnight of one day and ending the following midnight, or an alternate 24-hour period approved by the Department, during which time an installation consumes- fuel or causes emissions.[any amount of hospital waste or medical/infectious waste is combusted at any time in the HMIWI].*
 - (47) — (53) (text unchanged)
 - (54) *Shutdown.*
 - (a) — (d) (text unchanged)
 - (e) *“Shutdown” for the Montgomery County Resource Recovery Facility, a Large MWC commences thirty minutes after the chute to the loading hopper of the combustion train is closed ~~or after municipal solid waste feed to the loading hopper has ceased,~~ and ends no later than three hours thereafter.*
 - (f) *“Shutdown” for the Wheelabrator Baltimore Inc. facility commences thirty minutes after municipal solid waste feed to the loading hopper has ceased and ends no later than three hours thereafter.*
 - (55) (text unchanged)
 - (55-1) *“Small MWC” means a municipal waste combustor which has a capacity of at least 35 tons and less than or equal to 250 tons per day.*
 - (56) — (59) (text unchanged)
 - (60) *Startup.*

(a) — (b) (text unchanged)

(c) “Startup” for a Large MWC commences when the unit begins the continuous burning of municipal solid waste and continues for a period of time not to exceed three hours, but does not include any warm-up period when the particular unit is combusting fossil fuel or other non-municipal solid waste fuel, and no municipal solid waste is being fed to the combustor.

(61) “30-day rolling average emission rate” means a value of NO_x emissions in ppmv, corrected to 7 percent oxygen, calculated by:

(a) Summing the total hourly ppmv of NO_x emitted from the unit during the current operating day and the previous 29 operating days, excluding periods of startup and shutdown; and

(b) Dividing the total hourly ppmv of NO_x emitted from the unit during the 30 operating days summed in Regulation .01B(61)(a) of this Chapter by 30.

(62) “24-hour block average emission rate” means a value of NO_x emissions in ppmv, corrected to 7 percent oxygen, calculated by:

(a) Summing the hourly average ppmv of NO_x emitted from the unit during 24 hours between midnight of one day and ending the following midnight, excluding periods of startup and shutdown; and

(b) Dividing the total sum of hourly NO_x ppmv values emitted during 24 hours between midnight of one day and ending the following midnight by 24.

[(61)] (63) “Wet scrubber” means an add-on air pollution control device that utilizes an alkaline scrubbing liquor to collect particulate matter (including nonvaporous metals and condensed organics) or to absorb and neutralize acid gases, or both.

.02 Applicability.

A. (text unchanged)

B. Regulation .07 of this chapter applies to [an] a Small MWC that was constructed on or before August 30, 1999 [and has a capacity of at least 35 tons and less than or equal to 250 tons per day].

C. — F. (text unchanged)

G. *Repealed.* [If there is any discrepancy between the terms defined in this chapter and any federal definition in the Clean Air Act, 42 U.S.C. §§7401—7671 (CAA), and 40 CFR Part 60 Subparts A, B, Eb, and Ec, the federal definition applies.]

H. *Repealed.* [The requirements in Regulation .08-1 of this chapter apply to a person who owns or operates an HMIWI for which construction was commenced on or before June 20, 1996, except as provided in 40 CFR §60.50c(b)—(i).]

I. All provisions of Regulation [.08-1] .08-2 of this chapter and the related HMIWI 111(d)/129 plan approval, 40 CFR Part 62, Subpart V, are applicable[, except as amended or revised under Regulation .08-2 of this chapter and approved by EPA as part of the Maryland HMIWI 111(d)/129 plan].

J. Regulation .10 of this chapter applies to Large MWCs.

.03 (text unchanged)

.04 Visible Emissions.

A. In Areas I, II, V, and VI, the following apply:

(1) Except as provided in Regulations .08 and [.08-1] .08-2 of this chapter, a person may not cause or permit the discharge of emissions from any incinerator, other than water in an uncombined form, which is greater than 20 percent opacity;

(2) (text unchanged)

B. — D. (text unchanged)

.05 Particulate Matter.

A. Requirements for Areas I, II, V, and VI.

(1) Calculations. Except as provided in Regulations .08 and [.08-1] .08-2 of this chapter, incinerator or hazardous waste incinerator emissions shall be adjusted to 12 percent carbon dioxide.

(2) Incinerators Constructed Before January 17, 1972. Except as provided in Regulations .08 and [.08-1] .08-2 of this chapter, a person may not cause or permit the discharge of particulate matter into the outdoor atmosphere from any incinerator constructed before January 17, 1972, particulate matter to exceed the following limitations:

(a) — (b) (text unchanged)

(3) Incinerators Constructed on or After January 17, 1972. Except as provided in Regulations .07, .08, and [.08-1] .08-2 of this chapter, a person may not cause or permit the discharge of particulate matter into the outdoor atmosphere from any incinerator or crematory constructed on or after January 17, 1972, to exceed 0.10 grains per standard cubic foot dry 0.10 gr/SCFD (229 mg/dscm).

(4) (text unchanged)

B. Requirements for Areas III and IV.

(1) Calculations. Except as provided in Regulations .08 and [.08-1] .08-2 of this chapter, incinerator or hazardous waste incinerator emissions shall be adjusted to 12 percent carbon dioxide.

(2) Except as provided in Regulations .07, .08, and [.08-1] .08-2 of this chapter, a person may not cause or permit the discharge of particulate matter into the outdoor atmosphere from any incinerator, hazardous waste incinerator, or crematory to exceed the following limitations:

(a) — (b) (text unchanged)

.06 (text unchanged)

.07 Requirements for *Small Municipal Waste Combustors* [with a Capacity of 35 tons or greater per day and less than or equal to 250 Tons Per Day].

A person may not operate a *Small MWC* [municipal waste combustor that has a burning capacity of 35 tons or more per day and less than or equal to 250 tons per day] that was constructed on or before August 30, 1999 which results in violation of the provisions of 40 CFR 62 Subpart JJJ.

.08 (text unchanged)

.08-1 Emission Standards and Requirements for HMIWIs. *Repealed.***.08-2 Emission Standards and Requirements for HMIWIs Under 40 CFR 60 Subpart Ce as Revised October 6, 2009.**

A. Applicability and Emission Standards. [Notwithstanding the requirements of Regulation .08-1 of this chapter, the] *The* emission standards and requirements of §B(1)—(7) and §C(1)—(6) of this regulation apply to a person who owns or operates an HMIWI subject to 40 CFR Part 60, Subpart Ce, as revised, October 6, 2009.

B. — H. (text unchanged).

.09 (text unchanged)

.10 *NO_x* Requirements for Large Municipal Waste Combustors.

A. *The owner and operator of a Large MWC shall minimize NO_x 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, including periods of startup and shutdown.*

B. *As of May 1, 2019, the owner or operator of a Large MWC shall meet the following applicable NO_x emission rates, except for periods of startup and shutdown:*

<i>Affected Sources</i>	<i>NO_x 24-hour block average emission rate</i>
<i>Montgomery County Resource Recovery Facility</i>	<i>140 ppmv</i>
<i>Wheelabrator Baltimore Inc.</i>	<i>150 ppmv</i>

C. *As of May 1, 2020, the owner or operator of a Large MWC shall meet the requirements of §B of this Regulation and the following applicable NO_x emission rates, except for periods of startup and shutdown:*

<i>Affected Sources</i>	<i>NO_x 30-day rolling average emission rate</i>
<i>Montgomery County Resource Recovery Facility</i>	<i>105 ppmv</i>
<i>Wheelabrator Baltimore Inc.</i>	<i>145 ppmv</i>

D. Startup and Shutdown NO_x Emission Limitations.

As of May 1, 2019, during periods of startup and shutdown the following emission limitations shall apply:

(1) *For Montgomery County Resource Recovery Facility, a facility wide NO_x emission limit of 202 lbs/hr timed average mass loading over a 24-hour ~~block~~ period.*

(2) *For Wheelabrator Baltimore Inc., a facility wide NO_x emission limit of 252 lbs/hr timed average mass loading over a 24-hour ~~block~~ period.*

(3) *When the unit is in periods of startup and shutdown, the NO_x 24-hour block average emission rate under §B will apply for the 24-hour period after startup and before shutdown.*

E. Additional NO_x Emission Control Requirements.

(1) *Not later than January 1, 2020, the owner or operator of Wheelabrator Baltimore Inc. shall submit a feasibility analysis for additional control of NO_x emissions from the Wheelabrator Baltimore Inc. facility to the Department. This analysis shall be prepared by an independent third party and include the following:*

(a) *A written narrative and schematics detailing existing facility operations, boiler design, NO_x control technologies, and relevant emission performance;*

(b) *A written narrative and schematics detailing state of the art NO_x control technologies for achieving additional NO_x emission reductions from existing MWCs in consideration of the current boiler configuration at Wheelabrator Baltimore Inc.;*

(c) *An analysis of whether each state of the art control technology identified under §E(1)(b) could be implemented at the Wheelabrator Baltimore Inc. facility;*

(d) *Capital and operating costs, NO_x emission benefits, and air quality impacts of for installation of each state of the art control technology as identified under §E(1)(b) of this Regulation;*

(e) An estimated timeline for installation of each state of the art control technology as identified under §E(1)(b) of this Regulation which shall include design time, construction, operational testing and start up; and

(f) Any other information that the Department determines is necessary to evaluate the feasibility analysis.

(2) Not later than January 1, 2020, based upon the results of the feasibility analysis as required under §E(1) of this Regulation, the owner or operator of Wheelabrator Baltimore Inc. shall propose and submit a NO_x 24-hour block average emission rate, NO_x 30-day rolling average emission rate, and NO_x mass loading emission limitation for periods of startup, shutdown and malfunction for approval by the Department.

F. The owner or operator of a Large MWC shall continuously monitor NO_x emissions with a continuous emission monitoring system in accordance with COMAR 26.11.01.11.

G. Not later than 45 days after the effective date of this regulation, the owner or operator of a Large MWC shall submit a plan to the Department and EPA for approval that demonstrates how the Large MWC will operate installed pollution control technology and combustion controls to meet the requirements of §A of this Regulation. The plan shall summarize the data that will be collected to demonstrate compliance with §A of this Regulation. The plan shall cover all modes of operation, including but not limited to normal operations, startup, and shutdown.

H. Beginning July 1, 2019, the owner or operator of a Large MWC shall submit a quarterly report to the Department containing:

(1) Data, information, and calculations which demonstrate compliance with the NO_x 24-hour block average emission rate as required in §B of this Regulation, ~~as applicable~~;

(2) Data, information, and calculations, including NO_x continuous emission monitoring data and stack flow data, which demonstrate compliance with the startup and shutdown mass NO_x emission limits as required in §D(3) of this Regulation, ~~as applicable~~;

(3) Flagging of periods of startup and shutdown and exceedances of emission rates;

(4) NO_x continuous emission monitoring data and total urea flow rate to the boiler averaged over a 1-hour period, in a Microsoft Excel format; and

(5) Documented actions taken during periods of startup and shutdown in signed, contemporaneous operating logs.

I. Beginning July 1, 2020, the quarterly report to be submitted pursuant to §H of this Regulation shall also include data, information, and calculations which demonstrate compliance with the NO_x 30-day rolling average emission rate as required in §C of this Regulation, ~~as applicable~~.

J. No less than two weeks advance notice and the opportunity to observe activities shall be provided to the Department prior to any optimization procedure, including installation or operation of NO_x emission control technology, for the express purpose of complying with the requirements of §E(1) of this Regulation.

~~L~~K. Compliance with the NO_x emission standards in §§B, C, and D of this Regulation shall be demonstrated with a continuous emission monitoring system.

~~M~~L. Compliance with the NO_x mass loading emission limitation for periods of startup and shutdown in §D(3) of this Regulation shall be demonstrated by calculating the 24-hr block average of all hourly average NO_x emission concentrations from continuous emission monitoring systems, utilizing stack flow rates derived from flow monitors, for all the hours during the startup or shutdown period.

DRAFT 03-11-2016
DOWNLOAD 02-12-2016

Title 26 DEPARTMENT OF THE ENVIRONMENT

Subtitle 11 AIR QUALITY

Chapter 09 Control of Fuel-Burning Equipment, Stationary Internal Combustion Engines, and Certain Fuel-Burning Installations

Authority: Environment Article, §§1-101, 1-404, 2-101—2-103, 2-301—2-303, 10-102, and 10-103, Annotated Code of Maryland

.01 — .07 (text unchanged)

.08 Control of NO_x Emissions for Major Stationary Sources.

A. — G. (text unchanged)

H. *Repealed.* [Requirements for Municipal Waste Combustors, and Hospital, Medical, and Infectious Waste Incinerators.

(1) A person who owns or operates a municipal waste combustor shall install, operate, and maintain a CEM for NO_x emissions.

(2) NO_x emissions from municipal waste combustors may not exceed the NO_x emissions standards in COMAR 26.11.08.07 and COMAR 26.11.08.08 or applicable Prevention of Significant Deterioration limits, whichever is more restrictive.

(3) NO_x emissions from hospital, medical, and infectious waste incinerators as defined in COMAR 26.11.08.01B(18) may not exceed the NO_x emission standards in COMAR 26.11.08.08-1A(2) (250 ppm 24-hour average) as applicable.]

I.— K. (text unchanged)

.09 — .12 (text unchanged)

**Air Quality Control Advisory Council Meeting Minutes
December 11, 2017 @ 8:15 am
MDE Headquarters
1800 Washington Boulevard
Baltimore, MD 21230**

AQCAC MEMBERS PRESENT

John Quinn - Chairman
John Kumm, P.E., BCEE – Vice Chairman
Sania Amr, M.D.
Todd Chason, Esq.
Benjamin (Ben) Hobbs, PhD
Lawrence Kasecamp (via webinar and phone line)
Jonathan Kays
Julian Levy
Ross Salawitch, PhD
Lawrence (Larry) Schoen, P.E.
Rebecca Rehr
Sara Tomlinson
Weston Young, P.E.

MDE-ARA

George (Tad) Aburn
Randy Mosier
Susan Nash
Carolyn Jones, P.E.
Husain Waheed, PhD
Joshua Shodeinde
Megan Ulrich, Esq.
Wendy Sollohub
Kathleen Wehnes
Steve Lang
Karen Irons
Jay Apperson
Eddie Durant
Brian Hug

AQCAC MEMBERS ABSENT

Sue Garonzik- (via webinar- No audio so recorded as listen only)
Hon. Leta Mach

VISITORS

Ariel Solaski - CBF
Alayna Chuney - CBF
David Cramer - NRG
Justine Fernen - Baltimore Resident
Andrew Cantz
Laalitha Surapaneni - JHSPH EDU
Brad Keller - Wheelabrator Baltimore
Tim Porter - Wheelabrator Technologies
Chris Skaggs - Northeast, MD/Waste Authority
Benjamin Kunstman - Environmental Integrity Project
Ken Jackson- Curtis Bay Energy-Medical Waste Energy
Tracy Fearson - Curtis Bay Energy
Leah Kelly- Environmental Integrity Project
Taylor Smith-Hams - Chesapeake Climate Action Network
Keith Schmidt - GEN ON
Greg Sawtell - Curtis Bay resident
Edith Gerald - Curtis Bay resident
Dr. Gwen Dubois - Chesapeake PSR MD
Jennifer Kunze - Clean Water
Mike Ewall - Energy Justice Network
Andy Bodnarik - OTC
Andrea Areodano - Earth Compliance Solutions
Pam Kasemeyer - Schwartz, Metz & Wise
Richard Tabuteau - Schwartz, Metz & Wise

This is a summary of the Dec. 11, 2017, Air Quality Control Advisory Council Meeting and serves as a record of the Council's vote on regulatory action items. The meeting is recorded and the digital file is maintained by MDE/ARA. This digital file is considered public information and may be reviewed in its entirety by anyone who is interested in the details of the discussions.

Available at MDE website:

<http://mde.maryland.gov/programs/workwithmde/Pages/AOCAmeetingminutes.aspx>

MEETING OPENING/OPENING REMARKS

Chairman John Quinn opened the meeting by welcoming everyone to the Air Quality Control Advisory Council (AQCAC or the Council) meeting. Chairman Quinn noted that Mr. Aburn would be arriving shortly and the Council should move ahead to review the previous meeting minutes.

Approval of Minutes from Sept. 18, 2017 meeting:

Chairman John Quinn called for a motion on the Sept 18, 2017 meeting minutes at approximately 8:26 a.m.

Motion to approve the minutes was made by Julian Levy and seconded by Dr. Amr. All members voted in favor, and none opposed, at approximately 8:28 a.m. (~ 5 min into recording).

Chairman John Quinn asked the recent guests to the meeting to announce themselves.

ACTION ON REGULATIONS

COMAR 26.11.08 – NO_x RACT for Municipal Waste Combustors (MWCs):

Mr. Randy Mosier presented on the proposed regulation amendments to COMAR 26.11.01.01 Definitions, COMAR 26.11.08 – Control of Incinerators and COMAR 26.11.09 – Control of Fuel Burning Equipment at approximately 8:30 a.m. (~ 6 min. into the webinar recording).

The primary purpose of this action is to propose nitrogen oxide (NO_x) reasonable available control technology (RACT) emission rates for large MWCs that will result in lower NO_x emissions allowing Maryland to meet and maintain the 2008 Ozone National Ambient Air Quality Standard (NAAQS) requirements. In order to address federal startup and shutdown requirements, the proposed action requires large MWCs to meet mass based emission limits during these periods of operation. This action also requires a feasibility analysis from Wheelabrator Baltimore, Inc. and contains additional NO_x emission control requirements that may be needed by Maryland to attain and maintain compliance with the 2015 federal ozone standard.

There are two large MWC facilities in Maryland: Wheelabrator Baltimore, Inc. and Montgomery County Resource Recovery Facility (MCRRF). The Department has been meeting with affected sources and EPA since 2015 to discuss MWC operations, emissions data and NO_x RACT proposals. The Department began a formal stakeholder process in 2016 and held three meetings where stakeholder comments were received and incorporated into the proposed regulations. In an effort to establish a regionally consistent NO_x RACT rate for large MWCs and address the recommendations of stakeholders, the Department is proposing a 24-hour 150 ppmv NO_x rate for the Wheelabrator Baltimore, Inc. facility and a 24-hour 140 ppmv NO_x rate for MCRFF. RACT requirements are intended to acknowledge the different design and age of equipment at existing MWCs and to require “reasonable”, cost effective controls. New MWC’s would be subject to best available control technology (BACT).

Mr. Mosier explained that the proposed regulations would focus on three key elements. A requirement would be established for large MWCs to optimize control technologies to minimize NOx emissions each day of operation, paired with a daily 24-hour block average limit, beginning May 1, 2019, to ensure peak daily emissions are addressed and then a 30-day rolling average limit, beginning May 1, 2020, to ensure that even lower limits are met throughout the year. Reporting requirements would ensure compliance with the proposed NOx RACT rates including mass limits for periods of startup and shutdown.

Under COMAR 26.11.08.10E - Additional NOx Emission Control Requirements, the Department requires Wheelabrator Baltimore, Inc. to submit a feasibility analysis to the Department by January 1, 2020. Based upon the results of the feasibility analysis, Wheelabrator Baltimore, Inc. shall propose new NOx emissions limits for consideration and approval by the Department.

The Council inquired about what makes the two Maryland facilities different, what are the RACT emission limits in surrounding States, how the continuous emission monitors work at the facilities and how is the data recorded. The Department provided details regarding the age of the plants and design differences, operations of emission monitors and compliance determinations, regional NOx RACT limits. The Council also inquired as to the emission reductions expected from this action. The Department estimates approximately 200 tons per year will be reduced from meeting the 24-hour block rates, which also equates to an emission reduction of 0.50 tons per day. Mr. Aburn explained that 0.50 tons per day is significant in ozone attainment and modeling.

Dr. Salawitch questioned the public availability of NOx continuous emission monitoring (CEM) data and whether data from each facility could be made public. Chris Skaggs responded that MCRFF maintains a web site where public data is posted. The Department mentioned that Wheelabrator data had been available through a telemetry system, though the Department has lost the means to access data in this fashion. The proposed action will improve the reporting requirements for Large MWCs and Tad Aburn made a commitment to make data from the Wheelabrator facility available.

Dr. Hobbs raised the issue that stakeholder comments submitted to the Council were requesting a cost-benefit analysis to be conducted. Dr. Hobbs argued that larger social benefits do not come into play for RACT analysis and are more typically considered during the development of NAAQS.

The Department further explained that health benefits for NOx RACT are typically tied to the NAAQS review every five years, though additional health benefits can be considered when the Department looks beyond RACT such as with the proposed feasibility study.

Several questions were raised concerning the feasibility analysis. In particular whether other states require a feasibility analysis, the timing of the analysis, and the purpose considering a new emission limit is being established in the proposed action. The Department responded that feasibility studies have not been a requirement from other states NOx RACT proposals. While the proposed NOx RACT requirements will result in near-term reductions in NOx emissions, the feasibility analysis will require Wheelabrator to explore whether state of the art control technologies may be technically implemented at the facility. Additional controls may be needed at Wheelabrator to attain and maintain compliance and meet obligations under the Clean Air Act.

After hearing debate on this proposed action from the Council, Chairman Quinn then invited stakeholders the opportunity to comment or ask questions. Stakeholders showed an interest in the public health outcome for residents in Maryland, and specifically those living in South Baltimore near the Wheelabrator facility. Information was shared with the Council concerning the public health effects of pollutants emitted by municipal waste incinerators. Stakeholders recommended that the Department take meaningful steps to reduce air pollution and continue to seek NOx pollution reductions from Wheelabrator beyond the RACT process.

Tim Porter, representing Wheelabrator, mentioned that the facility is committed to achieving the proposed NOx RACT rates and plans to make necessary modifications to meet those rates on a permanent basis. Wheelabrator will continue to work with the Department to make NOx CEMs data publicly available. Wheelabrator requested that the Department amend the proposed regulation to allow additional time between the effective date of the regulations and the enforcement date of actions.

Chris Skaggs, representing MCRFF, commented that they are in support of the limits proposed in the rule and that they have submitted additional comments on the regulations to MDE.

Several stakeholders requested that the Council reject the proposed regulation in its current form and amend the regulation so that it is more protective of human health and the environment. Requests were made to include a presumptive limit in the rule (or a stronger commitment from the Department to make a stronger rule in the future) and for MDE to add clarity to what information will be present in a feasibility study. Mr. Aburn responded that one of the reasons the feasibility study was built into the proposed regulation was to assess the possibility of Wheelabrator meeting a more stringent limit, and further reviewing potential controls with stakeholders and Baltimore City government.

The discussion and presentation by each speaker has been recorded and is available for public review. In general the speakers had varying degrees of support for the proposals, and many argued that the proposal should be rejected as it was not stringent enough. The facility representatives express a desire to work with the Department to achieve improvement.

Having heard statements from the public and the regulated facilities the Council discussed the desire to have available pollution emission data for the MWC facilities. Current MDE regulations require the facilities to maintain compliance records on site and submit quarterly reports. Commentors suggested, and the Council agreed, that data should be available via an excel spreadsheet for third party analysis. MCRFF mentioned that they provide compliance data that meets the state regulations on their own website.

The Council agreed to propose a Recommendation to the Department to obtain CEM performance data for the Wheelabrator facility for the past five years and to post that data with-in 30 days to the MDE website. The data should be in a one-hour format. Mr. Schoen made this recommendation which was seconded by Dr. Hobbs. Twelve members voted in favor, none opposed, and none abstained at approximately 10:58 a.m. (~2 hr 35 min into webinar recording)

The Council agreed that their role was to advise the Secretary on responsible proposals and that not voting today would be a delay in reducing the current NOx pollutant level. The Council agreed to vote on the proposal in separate actions.

First Motion to approve the proposed RACT rates (Sections B, C and D of the regulation was made by Mr. Levy and seconded by Dr. Amr. Twelve members voted in favor, none opposed, and none abstained at approximately 11:11 a.m. (~2 hr 47 min into webinar recording)

The second motion that the Council discussed was the requirements for the feasibility study (Regulation .10, Section E). The Department was concerned that there is not currently enough data to support setting a predetermined limit and expects the feasibility study to inform any possible future limit. Some Council members agreed, others suggested a presumptive limit be set now to ensure NOx reductions. Ms. Rehr recommends that a Health Impact Assessment be included in the feasibility study to accurately capture health impacts. Dr. Hobbs recommends that the feasibility study include a range of reductions down to New Source Performance Standards (NSPS) levels of new facilities and associated cost.

Mr. Schoen read the proposed text that could be inserted into the regulation feasibility study requirements: “The feasibility analysis described in paragraph E included analysis of multiple controls and construction measures to achieve various levels of NOx emissions including levels comparable to those of a new source.”

Second Motion to approve the feasibility study as proposed in the Regulation with the text edits as detailed by Larry Schoen was made by Dr. Hobbs and seconded by Mr. Levy. Twelve members voted in favor, none opposed, and none abstained at approximately 11:33 AM (~3 hr 10 min into webinar recording)

BRIEFINGS

No briefing presentations because of the time.

Motion to adjourn meeting was made by Mr. Chason and seconded by Mr. Levy.

The meeting was adjourned at approximately 11:40 a.m.

Next meeting dates proposed:

March 12, 2018
June 11, 2018
September 17, 2018
December 10, 2018



Maryland
Department of
the Environment

NOx RACT for Municipal Waste Combustors (MWCs)



AQCAC Meeting – December 11, 2017

Topics Covered

- Municipal Waste Combustors (MWCs) in Maryland
 - Purpose of NOx RACT review
 - Stakeholder process
 - MWC overview
- MDE NOx RACT update
 - Proposed NOx RACT regulation
- Additional NOx Emission Control Requirements beyond 2020
- Timeline



Maryland
Department of
the Environment

MD NO_x RACT for Large MWCs

- The purpose of this action is to establish new NO_x RACT (Reasonably Available Control Technology) requirements for large MWCs with a capacity greater than 250 tons per day
- There are two large MWCs in Maryland;
 - Wheelabrator Baltimore, Inc. and
 - Montgomery County Resource Recovery Facility (MCRRF)
- The Department has been meeting with affected sources and EPA since 2015 to discuss MWC operations, emissions data and NO_x RACT proposals
- June 6, 2016 – AQCAC briefing
- August 30, 2016 – 1st Stakeholder Meeting
 - October 27, 2016 – Stakeholder comments received
- January 17, 2017 – 2nd Stakeholder Meeting
 - May 9, 2017 - Stakeholder comments received
- September 22, 2017 – 3rd Stakeholder Meeting
 - October 6-20, 2017 - Stakeholder comments received



Maryland
Department of
the Environment

Key Stakeholder Comments

- MDE must set NO_x RACT limits that are consistent with limits in other leadership states ... at or below 150 ppm on a 24-hour basis
 - Consider even more stringent limits
- RACT requirements are intended to acknowledge the different design and age of equipment at existing MWCs and to require “reasonable” controls
 - New units are subject to BACT
- Requirements for SSM are important
 - Mass based versus rate based requirement



Maryland
Department of
the Environment

MWC NOx RACT - Other States

State	24-hour Limit	30-day Limit	Additional 2020 Requirements?
MD	150 ppmv at Wheelabrator 140 ppmv at MCRFF	145 ppmv at Wheelabrator 105 ppmv at MCRFF	Yes at Wheelabrator No at MCRRF
PA	180 ppmv	NA	NA
CT	150 ppmv	NA	NA
NJ	150 ppmv	NA	NA
MA	150 ppmv *	NA	NA
VA	Under development - Stringent limits under consideration		

* Proposed May of 2013

NOx Emissions: 2015/2016

Top 15 Stationary Sources

No.	2016 Top 15 NOx Emissions Sources in MD	NOx Emissions (Tons Per Year)* 2016	NOx Emissions (Tons Per Year) * 2015
1	Lehigh Cement Company LLC	2,781	2,936
2	Raven Power Fort Smallwood LLC	2,569	3,102
3	NRG Chalk Point Generating Station	2,326	2,126
4	Luke Paper Company	1,927	1,887
5	Wheelabrator Baltimore, LP	1,141	1,123
6	NRG Dickerson Generating Station	987	987
7	NRG Morgantown Generating Station	949	897
8	C P Crane Generating Station	661	1,078
9	Montgomery County Resource Recovery Facility (MCRRF)	418	441
10	AES Warrior Run Inc	359	445
11	Holcim (US), Inc **	331	1,225
12	Constellation Power - Westport	195	65
13	Constellation Power - Perryman Generating Station	150	190
14	Rock Springs Generation Facility	141	127
15	KMC Thermo-Brandywine Power Facility	137	144
Total Mobile Source NOx Emissions in MD - 2014		88,568 tons per year	

* Facility-wide NOx emissions

** Company converted to preheater/precalciner kiln process, operating hours and NOx emissions were lower – operated for 153 days

Wheelabrator

2,250

Tons of Waste Processed per day

722,789

Tons of Waste Processed Last Year



64 MW

Energy Generation Capacity

40,000

Homes Powered

1985

Began Operations



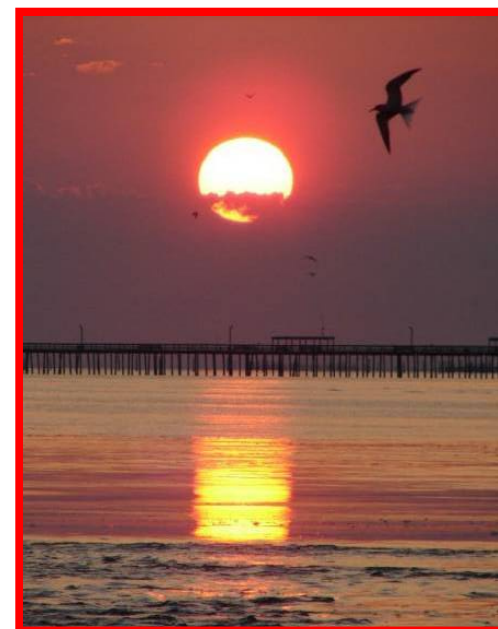
Maryland
Department of
the Environment

Wheelabrator NOx Emissions

Year	NOx Tons	Long Term (Annual) Average NOx 24-Hr Block Concentration
2013	1067	169 ppm
2014	1076	162 ppm
2015	1123	168 ppm
2016	1141	169 ppm
Average	1102	167 ppm

Wheelabrator NOx Control Technology

- Wheelabrator operates an SNCR for NOx Control (urea based)
- Optimized existing SNCR systems to target proposed NOx RACT limits
 - Injector locations, number of injectors, fuel-tip design, urea injection rate, operating parameters (dilution water flow, air pressure)
- Conducted long-term analysis of optimized system to ensure system capabilities
- The optimized control system and SNCR result in lowering the NOx emission rate range from 167 ppmv to below 150 ppmv



Maryland
Department of
the Environment

Montgomery County Resource Recovery Facility

1,800

Tons of Waste Processed per day

599,250

Tons of Waste Processed Last Year



52 MW

Energy Generation Capacity

37,000

Homes Powered

1995

Began Operations



Maryland
Department of
the Environment

MCRRF NOx Emissions

Year	NOx Tons	Long Term (Annual) Average NOx 24-Hr Block Concentration
2013	387.7	85 ppm
2014	426.7	88 ppm
2015	441.2	89 ppm
2016	418	87 ppm
Average	418	87 ppm

MCRRF NOx Control Technology

- An SNCR system is integrated to a combustion Low NOx (LN™) system with modifications to the location of the injectors
- The Covanta LN™ technology employs a unique combustion system design, including modifications to combustion air flows, reagent injection and control systems logic
- The LN™ control system and SNCR result in lowering the NOx emission rate range to 85-89 ppm long-term (annual average) basis
- Approximate 47 percent reduction on long term basis, but subject to high variability on daily basis, lesser can be assured on a short-term basis
- The LN™ control system installation started in 2008 and was completed in 2010 at a capital cost of \$6.7 million and the average operating costs over the last three years has been \$566,000 per year

MDE Updates to MWC NOx RACT

- Based upon:
 - regional RACT amendments in other states
 - review of MWC NOx emissions data analysis of optimization studies
 - recent combustion upgrades at Wheelabrator
- The Department has concluded that the NOx RACT standards for MWCs can be strengthened within the definition of RACT
- MDE proposing to pair daily (24-hour) limits with longer (30-day rolling average) limits



MDE Proposed NO_x RACT

- Three key elements:
 - Requirement to optimize control technologies to minimize NO_x emissions each day of operation
 - Daily, 24-hour block average limits to ensure peak daily emissions are addressed
 - Longer term, 30-day rolling average limits to ensure that even lower limits are met throughout the year



Maryland
Department of
the Environment

Requirement to Minimize NOx Emissions Every Day

- .10A - The owner and operator of a Large MWC shall minimize NOx emissions by operating and optimizing the use of all installed pollution control technology at all times the unit is in operation, including periods of startup and shutdown
 - Ensures NOx control technologies are operated in the best possible manner to minimize emissions
 - Satisfies part of EPA's SSM policy (more on that later)
- .10G – Not later than 45 days after effective date of regulation, a plan is due to the Department demonstrating how Large MWCs will operate controls during all modes of operation including but not limited to normal operations, startup and shutdown

Daily and Longer Term Limits

- .10B and C – NO_x emission rates
- 24-hour block average rates effective May 1, 2019
- 30-day rolling average rates effective May 1, 2020
 - Allows time to ensure more stringent, long-term rates can be met on a consistent basis

Unit	24 Hour Block Average Rate	30 Day Rolling Average Rate
Wheelabrator	150 ppmv	145 ppmv
MCRRF	140 ppmv	105 ppmv

ppmv = parts per million volume

Reporting Requirements

- .10H and I – Reporting Requirements
- Beginning July 1, 2019, the owner or operator of a Large MWC shall submit a quarterly report to the Department containing:
 - (1) Data, information, and calculations which demonstrate compliance with the NO_x 24-hour block average emission rates;
 - (2) NO_x continuous emission monitoring data and stack flow data, which demonstrate compliance with the startup and shutdown mass NO_x emission limits;
 - (3) Flagging of periods of startup and shutdown and exceedances of emission rates;
 - (4) NO_x continuous emission monitoring data and total urea flow rate to the boiler averaged over a 1-hour period, in a Microsoft Excel format; and
 - (5) Documented actions taken during periods of startup and shutdown in signed, contemporaneous operating logs.
- Beginning July 1, 2020, the owner or operator of a Large MWC shall submit a quarterly report to the Department containing data, information, and calculations which demonstrate compliance with the NO_x 30-day rolling average emission rate

Monitoring and Compliance

- .10F, K and L – Monitoring and Compliance
- The owner or operator of a Large MWC shall continuously monitor NOx emissions with a continuous emission monitoring system in accordance with COMAR 26.11.01.11 - Continuous Emission Monitoring (CEM) Requirements
- Compliance with NOx emission standards to be demonstrated with a CEM
- Compliance with NOx mass loading limits for periods of startup and shutdown demonstrated by calculating the 24-hr average of all hourly average NOx emission concentrations from continuous emission monitoring systems, utilizing stack flow rates derived from flow monitors, for all the hours during the startup or shutdown period

EPA SSM Policy – June 12, 2015

- Provides a mechanism for facilities to meet alternative emission limits during periods of startup/shutdown
- EPA requires seven specific criteria be met when developing SS limits
- MDE addressing SS criteria directly in proposed regulation and within Technical Support Documents



Maryland
Department of
the Environment

Startup/Shutdown Limits

- .10D – Startup and Shutdown NOx Emission Limitations
- Higher volumes of air are present in furnace during SS events & adjustment to 7% oxygen does not represent actual NOx emissions
- Mass based emission standards take into account the design flue gas flow rate & represent the worst case actual NOx emissions
 - Applied facility wide on a 24-hour period
 - When the unit is in periods of startup and shutdown, the NOx 24-hour block average emission rate will apply for the 24-hour period after startup and before shutdown
- Mass based calculations based upon 24 hour block average NOx RACT limits

Unit	24 Hour Block Average Rate	Mass Loading NOx Limit
Wheelabrator	150 ppmv	252 lbs/hr
MCRRF	140 ppmv	202 lbs/hr

ppmv = parts per million volume

Additional NOx Emission Control Requirements

- .10E - Additional NOx Emission Control Requirements
- Requires feasibility analysis to be submitted by Wheelabrator by January 1, 2020
- Based upon the results of the feasibility analysis, Wheelabrator to propose new NOx emissions limits for consideration by the Department
- Two steps:
 - Feasibility analysis due January 1, 2020
 - MDE to initiate rulemaking after submittal of feasibility analysis



Maryland
Department of
the Environment

The Feasibility Analysis

- **Step 1 - Feasibility Analysis**
 - In 2020, Wheelabrator would submit a feasibility analysis describing options for achieving lower NO_x emissions based upon results of third-party study. Would include information like:
 - A written narrative and schematics detailing existing facility operations, boiler design, NO_x control technologies, and relevant emission performance
 - A written narrative and schematics detailing state of the art NO_x control technologies for achieving additional NO_x reductions from existing MWCs in consideration of the current boiler configuration at Wheelabrator
 - A feasibility analysis of whether each identified NO_x control could be implemented at Wheelabrator
 - A cost-benefit analysis
 - An estimated timeline for implementation
 - Any other information MDE deems necessary to evaluate the review



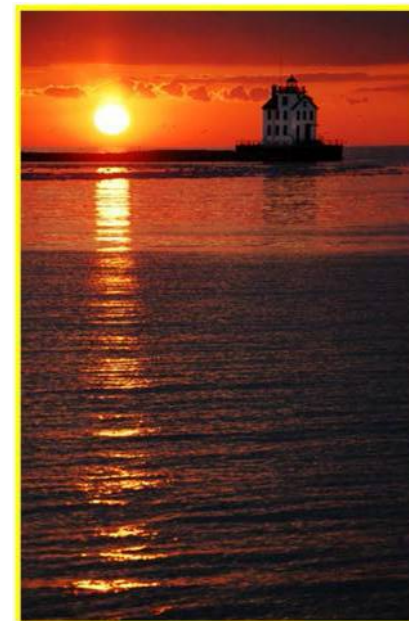
Process for Establishing New NOx Limits

- **Step 2 – Proposal and Promulgation**
 - Not later than January 1, 2020, based upon the results of the feasibility analysis, Wheelabrator shall propose new NOx emission limits for approval by the Department
 - MDE to initiate rulemaking to adopt new NOx limits for the Wheelabrator facility after approval of feasibility analysis
 - The additional NOx emission control requirements would need to go through full public comment and hearing process as required by Maryland law



Timeline

- **Stakeholder Meetings**
 - August 30, 2016
 - January 17, 2017
 - September 22, 2017
- **AQCAC**
 - December 11, 2017
- **Regulation Adoption**
 - NPA – May 2018
 - Public Hearing – June 2018
 - NFA – August 2018
- **Effective Date**
 - September 2018



Maryland
Department of
the Environment

Discussion



Maryland
Department of
the Environment