Maryland
Department of the Environment

NO_x Ozone Season Emission Caps for Non-trading Large NO_x Units

AQCAC Meeting – September 18, 2017

Topics Covered

- Background Information
  - Purpose of Regulations
  - Overview
- Maryland NOx Budget
- Regulatory Requirements
- Affected Sources
- Regulation Timeline

Maryland
Department of
the Environment

Purpose

- The purpose of this action is to propose **new Regulations .01 - .04** under **new Chapter COMAR 26.11.40 - NO_x Ozone Season Emission Caps for Non-trading Large NO_x Units** to meet federal NO_x (nitrogen oxides) SIP (State Implementation Plan) Call requirements under the Clean Air Act

Background

- NO_x SIP Call – 1998
  - All large sources of NO_x required to report ozone season emission tonnage
  - EPA allocated each State a specific NO_x ozone season emission budget cap
  - EPA classified large sources as either electric generating units (EGUs) or Non-EGU
  - Large sources of NO_x were boilers and combustion turbines over 25 MW or 250 MMBTu/hr

Background

- Clean Air Interstate Rule (CAIR) - 2009
- Cross State Air Pollution Rule (CSAPR) – 2015
  - EPA's CAIR and CSAPR programs were developed to limit emissions from fossil fuel-fired EGUs that are part of the electricity grid and are > 25 MW (cap and trade programs)
  - Each affected State was tasked with preparing a plan to address the non-trading units – or boilers, combustion turbines or combined cycle units with a maximum design heat input greater than 250mmBtu/hr

Maryland NO_x Budget

- NOx budget caps for Non-trading large NO_x units (Non-EGUs) were established in Maryland's SIP revision to comply with the NO_x SIP Call
  - Set ozone season NO_x budget at 1,013 tons
- In 2010, under COMAR 26.11.14.07, MDE allocated all of the budget to the only identified source in Maryland – Luke Paper Mill
- A recent review of existing and proposed sources in Maryland has shown that there are additional facilities that now have units that fall under the Non-trading large NO_x unit requirements of the CAA

26.11.40 Requirements

- MDE needs to reallocate Maryland's Non-trading large NO_x unit ozone season NO_x budget among the affected sources

- Federal regulations also require "Part 75" continuous emission monitoring, reporting and record keeping for NO_x

Maryland
Department of the Environment

26.11.40 Requirements

- Each affected source will be required to limit their ozone season NO_x emissions to meet or be under the NO_x ozone season tonnage cap
- NO_x ozone season tonnage cap for each facility was calculated using permit conditions, regulatory emission rates and capacity factors
- The New Unit Set Aside is the remaining tons available to any potential new source

Affected Sources	*NO_x Ozone Season Emission Caps beginning May 1, 2018*
Cove Point LNG	*214 tons*
Luke Paper Mill	*656 tons*
American Sugar	*24 tons*
New Unit Set Aside	*119 tons*
Total	***1013 tons***

Maryland
Department of the Environment

Affected Units

- Dominion Energy Cove Point LNG
  - *Frame 5-1 , Frame 5-2 , Frame 7-A, Frame 7-B, Aux A and Aux B*
- American Sugar Refining, Inc.
  - Unit No. C6
- Luke Paper Mill
  - Units No. 24, 25 and 26

Dominion Energy Cove Point

- Dominion Energy is constructing liquefaction facilities for exporting liquefied natural gas (LNG) at its existing Cove Point Terminal on the Chesapeake Bay in Lusby, Maryland. The proposed liquefaction facilities, combined with existing facilities, will provide a bi-directional service of import and export of LNG.

Maryland
Department of
the Environment

Dominion Energy Cove Point

- Operates new combustion turbines and auxiliary boilers which meet the applicability threshold of COMAR 26.11.40.
  - existing combustion sources not affected by this rule: smaller boilers, vaporizor's, water-ethylene glycol (WEG) heaters, emergency generators and fire pumps.

- All of the new combustion turbines at the facility are equipped with selective catalytic reduction (SCR) post-combustion NO_X controls. SCR is one of the most effective ways of reducing NO_X in a flue gas stream.

- New equipment coming on-line. Anticipate 2018 annual NOx = 500 tpy.
  - revised permit for expansion requires BACT and LAER for all emissions.

Annual Facility NO_X Emissions

Year	2016	2015	2014	2013	2012	2011	2010	2009
NO_X (tpy)	41	41	36	44	48	34	35	41

Maryland
Department of the Environment

American Sugar Refining, Inc.

- American Sugar Refining, Inc. (ASR) operates a sugar manufacturing plant in Baltimore, MD which produces granulated and confectioners sugars from raw cane sugar. The facility also manufactures bulk quantities of liquid cane sugars and syrups for industrial consumption.

Maryland
Department of
the Environment

American Sugar Refining, Inc.

- Operates a centralized steam and electrical cogeneration energy production facility (boiler house).
- There are four (4) boilers (130 million Btu/hr each) which fire natural gas and use #6 fuel oil in curtailment and testing situations.
- The affected boiler (Unit C6) is rated at 300 million Btu/hr and fires natural gas only.
  - Unit C6 converted to NG (from coal) in 2014.
- Permit condition limits facility-wide daily NO_X emissions to 624 lbs/day and annual NO_X emissions to 60 tons per year.

Annual Facility NO_X Emissions

Year	2016	2015	2014	2013	2012	2011	2010	2009
NO_X (tpy)	52.6	45.3	49.6	34.4	52.3	126.2	149.2	156.4

Maryland
Department of the Environment

Luke Paper Mill

- Luke Paper Company in Luke, Maryland produces coated freesheet papers used for commercial and publication printing as well as coated one side papers for label applications.

Maryland
Department of
the Environment

Luke Paper Mill

- Operates three boilers that use a common stack for their emissions.
  - Already monitor and report NOx emissions per CFR Part 75.
  - Two recovery boilers and wood digester's not affected by proposed regulation.

- Significant reductions achieved for Regional Haze
  - Unit 24 repowered from coal to natural gas as a primary fuel, use fuel oil as a secondary power source only when the natural gas supply is constrained, and apply BART emission rate (NO_x @ 0.4 lbs/mmBtu).
  - Unit 25 coal/NG fired regulated under COMAR 26.11.14.07 (Ozone Season NO_x @ 0.7 lbs/mmBtu; non-OS NO_x @ 0.99 lbs/mmBtu)
  - Unit 26 NG fired regulated under COMAR 26.11.14.07

- Ozone Season NOx cap reduced from 947 tons to 656 tons.

Annual Facility NO_X Emissions

Year	2016	2015	2014	2013	2012	2011	2010	2009	2008
NO_X (tpy)	1927	1887	2696	2918	3116	3617	3583	3831	3919

Maryland
Department of the Environment

National Institutes of Health

- The National Institutes of Health (NIH) is responsible for biomedical and public health research. It is part of the United States Department of Health and Human Services with facilities mainly located in Bethesda, Maryland.

Maryland
Department of
the Environment

National Institutes of Health

- In 2000, NIH installed a combined cycle system for the purpose of hot water and space heating generation.
  - The combined cycle system is made up of a combustion turbine, boiler, and reheat unit.
- Historically, the reheat unit of the combined cycle system (with supplemental heat input) has never operated during the ozone season.
  - In fact the combined cycle system only operates minimally during the year. NIH has other space heater units available for heating purposes.
- NIH planning to take a permit condition which precludes operating the unit as a combined cycle system (prohibit operation of the supplemental heat input) during the ozone season (May 1 - Sept 30).
- Should NIH decide to maintain the flexibility to operate the combined cycle system during the ozone season, the emission caps and Part 75 monitoring requirements of this action shall apply.
- NIH would require an ozone season emission cap of ~ 40 tons.

Maryland
Department of
the Environment

Timeline

- EPA begins NOx SIP Call discussions
  - August 31, 2016
- Discussion with affected sources begins
  - October 2016
- AQCAC Action Item
  - September 18, 2017
- Regulation Adoption
  - NPA – December 8, 2017
  - Public Hearing – January 8, 2018
  - NFA – February 2, 2018
- Effective Date
  - February 12, 2018
- Regulatory requirements
  - May 1, 2018

Maryland
Department of
the Environment

Discussion

Maryland
Department of
the Environment