

**OTC /MANE-VU Spring Meeting**

**June 6, 2017**

**Saratoga Springs, NY**

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Stationary and Area Sources Committee**



**OZONE TRANSPORT COMMISSION**

# Stationary and Area Sources Committee

- Finalized Work Products Forwarded to EPA on Feb. 13, 2017, posted on OTC website:
  - ✓ White Paper on NO<sub>x</sub> Controls (*finalized February 2017*)
  - ✓ White Paper on HEDD units (*finalized November 2016*)
- Comment Letters to EPA on 2015 O<sub>3</sub> NAAQS:
  - ✓ Proposed Implementation Rule: Nonattainment Area Classifications & State Implementation Plan Requirements (*Sent February 13, 2017*)
  - ✓ NODA on Preliminary Interstate Ozone Transport Modeling Data (*Sent April 6, 2017*)
- Workgroups Progress in Fulfilling 2017 SAS Charges:
  - ✓ Largest Contributors (EGUs)
  - ✓ High Electricity Demand Days (HEDD)
  - ✓ Control Measures
- Legislative Activity on Ozone

# White Papers from RACT and HEDD Workgroups

## *Control Technologies & OTC State Regulations for Nitrogen Oxides (NOx) Emissions from Eight Source Categories*

Source Categories	Emissions Control Technologies		
<ol style="list-style-type: none"> <li>1. Industrial/Commercial/Institutional (ICI) Boilers</li> <li>2. Stationary Gas (Combustion) Turbines</li> <li>3. Stationary Internal Combustion (IC) Engines</li> <li>4. Municipal Waste Combustors (MWCs)</li> <li>5. Cement Kilns</li> <li>6. Hot Mix Asphalt Production Facilities</li> <li>7. Glass Furnaces</li> <li>8. Natural Gas Pipeline Compressors</li> </ol>	<u>Combustion Modification</u> <ul style="list-style-type: none"> <li>• Low Excess Air (LEA) or Reducing O<sub>2</sub> levels</li> <li>• Lean Combustion</li> <li>• Staged Combustion</li> <li>• Low Nitrogen Fuel Oil</li> <li>• Flue Gas Recirculation (FGR)</li> <li>• Low-NOx Burner (LNB) &amp; Overfire Air (OFA)</li> <li>• Wet controls</li> </ul>	<u>Post-Combustion Modifications</u> <ul style="list-style-type: none"> <li>• Gas Reburn</li> <li>• Non-Selective Catalytic Reduction (NSCR)</li> <li>• Selective Catalytic Reduction (SCR)</li> <li>• Selective Non-Catalytic Reduction (SNCR)</li> </ul>	<u>Other Control Strategies</u> <ul style="list-style-type: none"> <li>• Combustion Tuning &amp; Optimization</li> <li>• Use of Preheated Cullet in Glass Manufacture</li> </ul>

## *Examining the Air Quality Effects of Small EGUs, Behind the Meter Generators, and Peaking Units during HEDD*

	Small EGUs ( <i>&lt;25 MW not in CAMD</i> )	Backup Generators (BUGs)	Peaking Units ( <i>EGUs &gt;25 MW in CAMD</i> )
<b>Potential Peak Ozone Contribution</b>	5 ppb	1 ppb	~184 tons (Potential Peak Day NOx Emissions in OTR)
<b>Recommendations</b>	Incorporate improved temporal profiles into photochemical modeling platforms - Completed	States doing well in regulating BUGs, but there's room for improvement	Where not done so already, adopt NOx RACT for O&G combustion turbines; Pursue rulemaking or other mechanisms to ensure that all EGU types meet their best historic NOx rates at all times during the ozone season; Pursue HEDD-based rules (e.g. New Jersey's HEDD Rule).

# Work Described in White Papers → Current Work by SAS Workgroups → Recommendations & Model Rules → Consider in GN SIPs Due in 2018

Current Considerations	HEDD	Largest Contributors	Control Measures
Source Categories & Geography	<ul style="list-style-type: none"> <li>boilers serving EGUs</li> <li>ICI boilers</li> <li>simple cycle or combined cycle combustion turbines</li> <li>landfill/digester gas-fired reciprocating engines</li> <li>other fuel-burning equipment</li> </ul> <p>define maximum rated capacity for each "ozone season" = May 1<sup>st</sup> through Sept. 30<sup>th</sup></p>	<p>Large EGUs - <math>\geq 25</math> MW that report to CAMD</p> <p>No Post-Combustion Controls (Uncontrolled)</p> <p>Not running existing controls optimally</p> <p>CSAPR Update states + OTR + NC</p>	<ul style="list-style-type: none"> <li>Natural Gas Pipeline Compressors</li> <li>Cement Kilns</li> <li>Paper Mills</li> <li>Glass Furnaces</li> <li>Municipal Waste Treatment &amp; Disposal</li> </ul> <p>CSAPR Update states + OTR</p>
Control Strategies & Technologies	<p>Rule-Based Strategy - enforceable</p> <p>Outreach-Based strategy - voluntary</p>	<p>SCR &amp; SNCR operations performance rate threshold:</p> <p>SCR = 0.10 lb/mmBTU</p> <p>SNCR = 0.30 lb/mmBTU</p>	
Fuel Type	coal, gas, & residual or other oils	coal & residual oil	coal, residual oil, & natural gas

# OTC Comment Letters to EPA on 2015 Ozone NAAQS

## Proposed Implementation Rule: Nonattainment Area Classifications & State Implementation Plan Requirements

*(sent Feb. 13<sup>th</sup>, 2017 with OTC white papers on NOx controls and on HEDD as attachments)*

<b>Issues Raised:</b>	Revoking 2008 Ozone NAAQS; RFP: Baseline Year Agreement & Milestone Demonstration	Inventory: HEDD
	Methodology used to establish thresholds for nonattainment designation classification	Nonattainment NSR Offset Requirement: Inter-pollutant Precursor Trading for Ozone Offsets
	RACT SIP revision submittal, implementation deadlines, CTG	RACM Outside of NAA Boundaries
	SIP Certification for Non-Attainment Areas	International Transport and Background Ozone

## Notice of Data Availability (NODA) - Preliminary Interstate Ozone Transport Modeling Data *(sent Apr. 6<sup>th</sup>, 2017)*

<b>Issues Raised:</b>	Air quality modeling under-prediction	Contribution time period
	IPM projections	Use of projections for determining contribution
	Projections for other sectors (OTC appreciates EPA's use of MARAMA growth factors)	Use of EPA modeling for states' good neighbor SIPs
	Meteorology and transport patterns	

# Largest Contributors (EGUs) Workgroup

**OTC SAS Charge, November 17, 2016:**

Report on OTC, EPA, & individual state efforts on: 1. optimal operation of existing EGU controls to ensure maximum NO<sub>x</sub> emission reductions, focusing on EGUs in OTC modeling domain; 2. addition of controls to large uncontrolled EGUs inside & outside of the OTR.

## Progress to Date in Fulfilling Charges:

- Drafted Outline of Reports
- Analyzing status of SCR & SNCR operations (CSAPR Update TSD, State RACT)
- Reviewing available datasets (NEEDS, ERTAC, etc.)

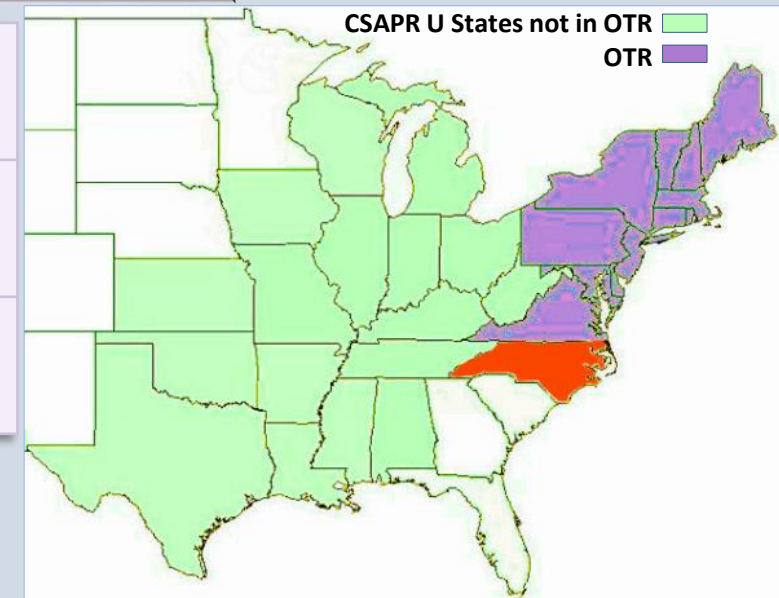
**Large EGU** =  $\geq 25$  MW that report to CAMD

**EGU Fuel type** = coal & residual oil

**Uncontrolled EGU** = having no post-combustion controls

**Geography** = states in CSAPR Update + OTR + NC

**Metric** = “potential reductions” based on performance rates per CSAPR-U:  
SCR = 0.10 lb/mmBTU; SNCR = 0.30 lb/mmBTU

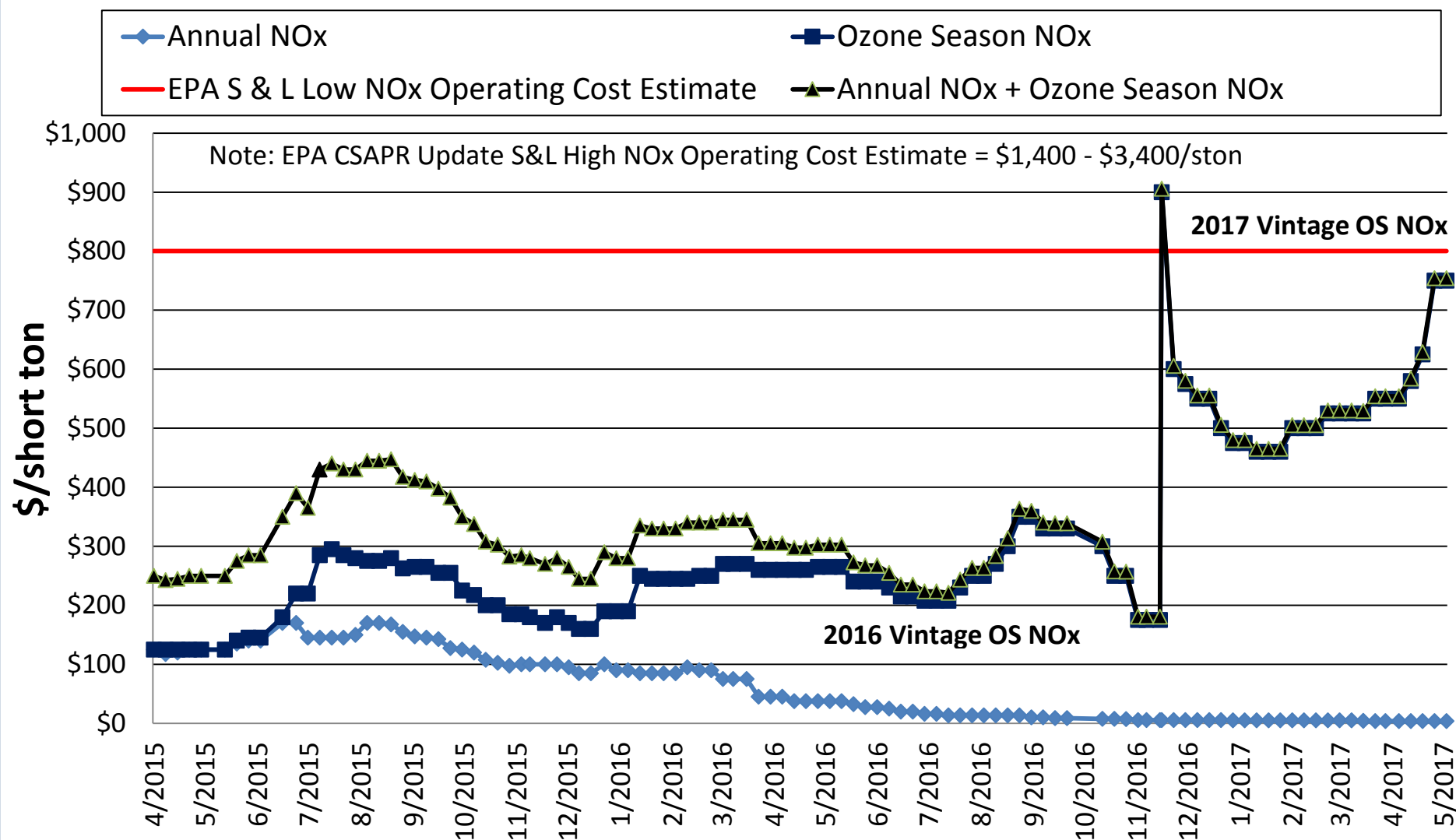


# Top 25 2016 Ozone Season CSAPR State NO<sub>x</sub> Emitters

	State	Facility Name	Facility - Unit ID	Avg. NO <sub>x</sub> Rate (lb/MMBtu)	NO <sub>x</sub> (tons)	2017 Allocations	SCR?	Best Observed Rate (lb/mmBTU)	Year
1	LA	Ninemile Point	1403-4	0.394	3,918	662			
2	MO	New Madrid Power Plant	2167-2	0.457	3,832	695	Yes	0.094	2009
3	IN	Rockport	6166-MB2	0.195	3,444	2,153			
4	OH	W H Zimmer Generating Station	6019-1	0.199	3,239	1,063	Yes	0.056	2006
5	MO	New Madrid Power Plant	2167-1	0.709	3,000	681	Yes	0.090	2008
6	LA	Ninemile Point	1403-5	0.346	2,922	746			
7	TX	Oklahoma Power Station	127-1	0.302	2,791	1,000			
8	AR	Independence	6641-1	0.273	2,686	980			
9	IN	Rockport	6166-MB1	0.197	2,578	2,229			
10	AR	Independence	6641-2	0.247	2,528	1,006			
11	AR	White Bluff	6009-1	0.356	2,460	1,084			
12	WV	Fort Martin Power Station	3943-1	0.293	2,416	590			
13	PA	Brunner Island, LLC	3140-3	0.401	2,414	452			
14	TX	Limestone	298-LM2	0.198	2,369	1,482			
15	IN	Cayuga	1001-2	0.296	2,320	723			
16	PA	Montour, LLC	3149-1	0.379	2,316	478	Yes	0.044	2003
17	MO	Thomas Hill Energy Center	2168-MB3	0.233	2,225	907	Yes	0.054	2009
18	PA	Montour, LLC	3149-2	0.233	2,225	432	Yes	0.047	2003
19	IA	Walter Scott Jr. Energy Center	1082-3	0.373	2,129	1,052			
20	PA	Cheswick	8226-1	0.196	2,128	310	Yes	0.060	2003
21	VA	Clover Power Station	7213-1	0.356	2,460	349			
22	WV	Harrison Power Station	3944-3	0.277	2,052	696	Yes	0.066	2005
23	MO	Thomas Hill Energy Center	2168-MB2	0.186	2,033	397	Yes	0.066	2009
24	PA	Bruce Mansfield	6094-3	0.185	2,009	656	Yes	0.074	2005
25	WV	Harrison Power Station	3944-2	0.241	2,004	648	Yes	0.067	2006

**Many Units with SCR Continue to Operate above the Best Observed Rate (BOR)**

# CSAPR Allowance Prices (4/17/15 - 5/19/17)



Allowance Price Data Source: Argus Air Daily, Control cost estimates calculated using Sargent and Lundy method

**Still a Little Cheaper to Buy Allowances than to Run Controls in most cases!**



# Control Measures Workgroup

## OTC SAS Charge, November 17, 2016:

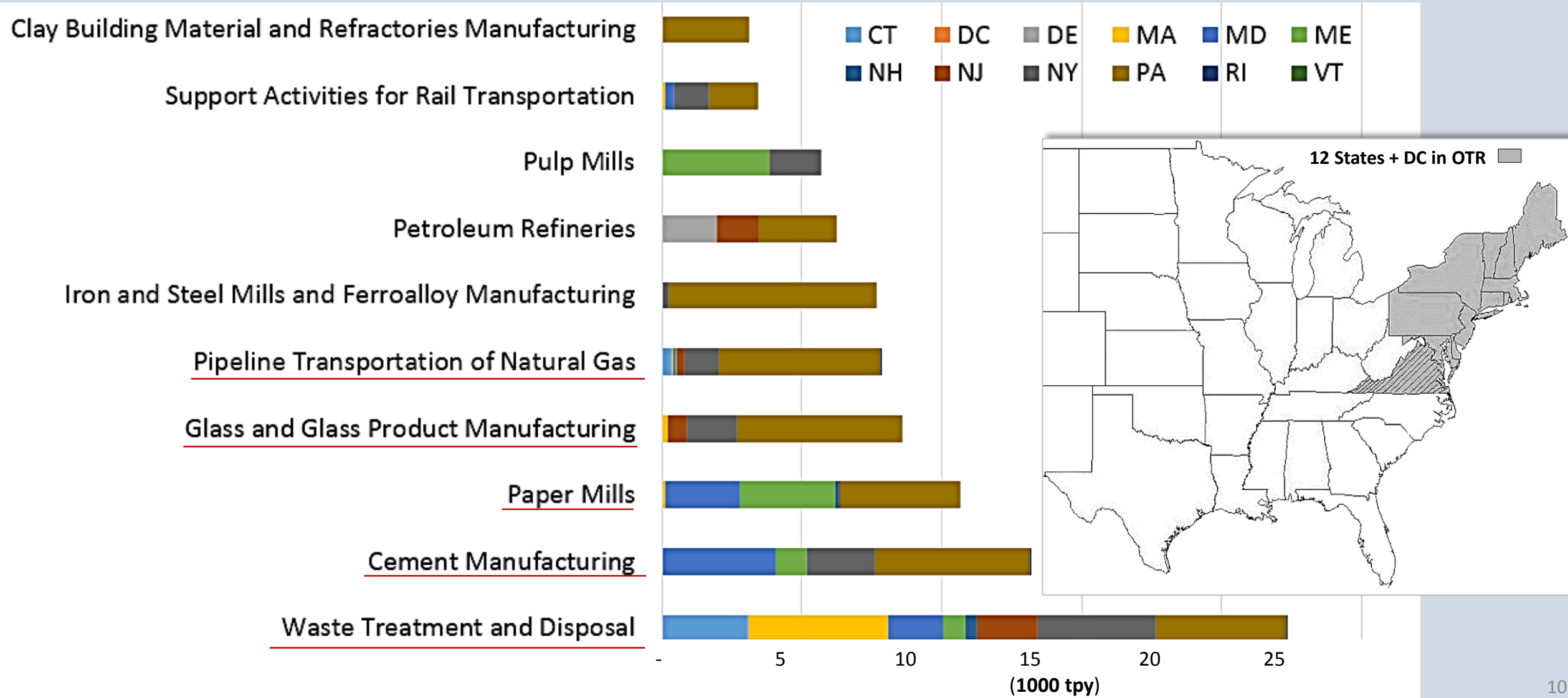
Develop recommendations & model rules for SAS strategies for 2018 Good Neighbor SIPs considering sector NO<sub>x</sub>/VOC emissions, potential emissions reduction, cost, ease of implementation, etc.

### Progress to Date in Fulfilling Charge:

- Drafted Control Measures Workbook
- Identified top five NO<sub>x</sub> source categories (**Natural Gas Pipeline Compressors, Cement Kilns, Paper Mills, Glass & Glass Product Manufacturing, Municipal Waste Combustors**) and geography (**CSAPR Update & OTR States**) and
- Surveyed NO<sub>x</sub> & VOC control measures for SAS sources that OTC states are considering for inclusion in GN SIPs
- Draft analysis of 2014 NEIv1 using 5 digit NAICS codes (D. Mackintosh, EPA)
  - Top 10 Non-EGU Stationary Source Categories of NO<sub>x</sub> in OTR (all OTC states except VA)
  - Top 15 Non-EGU Stationary Source Categories of NO<sub>x</sub> in CSAPR Update & OTR states
- Collecting information on control costs for implementing NO<sub>x</sub> controls, time for implementation & ease of implementation (EPA's CSAPR Update TSD for 2008 Ozone NAAQS)

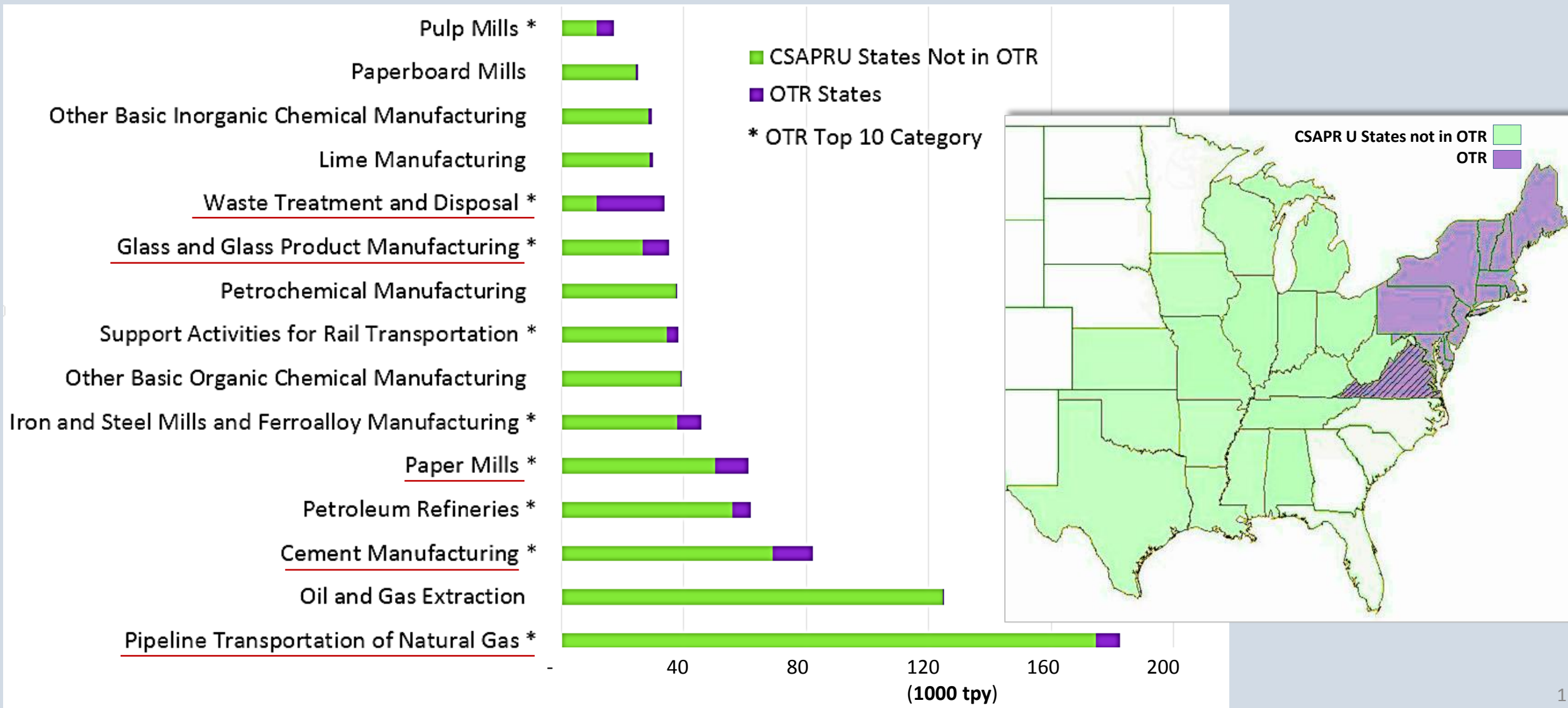
# Control Measures Workgroup (Continued)

Top 10 NOx Emitting Stationary Source Categories in OTR (Excluding EGUs, Airport LTO, & Sources from VA); Source: 2014 NEI v.1



# Control Measures Workgroup (Continued)

Top 15 NOx Emitting Stationary Source Categories in CSAPR Update & OTR States (Excluding EGUs, Airport LTO, & Sources from VA); Source: 2014 NEI v.1



# HEDD Workgroup

**OTC SAS Charge, November 17, 2016:**

Develop recommendations for at least one specific strategy to reduce HEDD emissions and an implementation mechanism.

Progress to Date in Fulfilling Charge:

## Potential strategies for implementation

- *Identify & define types of units, and the geography to focus on*
- *Quantify potential NOx emissions reductions*
- *Develop & recommend strategies for implementation*

### Rule-Based Strategy

Surveyed member states on current landscape of existing & planned rules & regs on HEDD NOx emissions control

Developing a draft template and menu of options

Formal Action: MOU / Statement / Model Rule ?

### Outreach-Based Strategy

Developing a template around forecasted high ozone days &/or high electric demand days

voluntary strategy to raise awareness of general public and unit/facility owners

## **Workgroup Reconvened to:**

Review & Update the 2010 OTC Model Rule for Consumer Products based on the California CP Regulations published in January 2015

Address Implementation Issues Related to CP & AIM model rules

# Legislative Activity on Ozone

Bill	Latest Action	Summary
<a href="#">S.263</a>	05/23/17: Legislative Hearing on S.263 and S.452	<p><b>Ozone Standards Implementation Act of 2017</b></p> <p><u>Amends CAA by revising NAAQS program:</u></p> <ol style="list-style-type: none"> <li>1. Delays implementation of 2015 O<sub>3</sub> NAAQS with new deadlines:               <ul style="list-style-type: none"> <li>Oct. 26, 2024: for states to submit designations</li> <li>Oct. 26, 2025: for EPA to designate state areas</li> <li>Oct. 26, 2026: for SIP submittal</li> </ul> </li> <li>2. Changes the review cycle for criteria pollutant NAAQS from 5 years to 10 years EPA may not complete its next review of O<sub>3</sub> NAAQS before Oct. 26, 2025.</li> <li>3. Requires EPA (before establishing or revising NAAQS) to seek advice from SAC on public health, welfare, socioeconomic, or energy impacts from attaining &amp; maintaining the NAAQS</li> <li>4. Requires EPA to publish regulations &amp; guidance for NAAQS implementation concurrently with issuance of new / revised standard.</li> <li>5. Requires publication of regulations &amp; guidance for new / revised NAAQS before it can be applied to preconstruction permits for modifying a major emitting facility or major stationary source</li> <li>6. Revises SIP requirements for extreme nonattainment areas for O<sub>3</sub> &amp; PM</li> </ol>
<a href="#">HR.806</a>	03/22/2017: Subcommittee Hearings	
<a href="#">S.J.Res.21</a>	02/03/2017: Read twice & referred to the Committee on Environment & Public Works.	<p>This joint resolution <b>nullifies the Cross-State Air Pollution Rule Update</b> finalized by the Environmental Protection Agency on October 26, 2016. The rule addresses interstate transport of ozone pollution with respect to the 2008 ozone National Ambient Air Quality Standards under the Clean Air Act.</p>

Congressional Research Service AQ legislative update (Feb. 7, 2017): J. E. McCarthy [Clean Air Act Issues in the 115<sup>th</sup> Congress](#)

# Questions?

