

OTC Committee Meeting  
April, 23 2015  
Hall of States  
Washington, DC

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Stationary and Area Source Committee  
Update



# Outline

- **Update on Committee efforts**
- **Update on completing Charge**
- **Moving Forward- Next steps for the SAS Committee**



# Abbreviated Committee Charge

## • **LARGEST CONTRIBUTOR ANALYSIS**

- Identify the largest individuals and groupings of NO<sub>x</sub> emitters *within states where* that *state* contributes at least 1% of the 2008 ozone NAAQS of 75 ppb to OTC states;
- Identify emission sources with the highest short-term emissions of NO<sub>x</sub> and VOC;
- Evaluate real world achievable NO<sub>x</sub> emission rates across load ranges to adjust long and short term expectations for emission reductions.
- Develop individual state EGU NO<sub>x</sub> emission rates achievable, considering reasonable available controls.

## • **Demand and Emergency Generator Information**

- Estimate the emissions from the use of demand response generation units in place of cleaner sources of energy on High Electric Demand Days. Collaborate with other Committees of the OTC to analyze the estimated data to understand the air quality impact of the operation of the distributed and emergency generators and make recommendations for potential control strategies to the Commission

## • **Reasonably Available Control Technology**

- To provide each state with a common base of information, a workgroup will develop a listing of emission rates in each state within the OTR for source categories responsible for significant NO<sub>x</sub> and VOC emissions and identify a range of emissions rates that the respective state has determined to be RACT.

# Top 25 NOx Emitters- 2014 OS

State	Facilty Name	Facility ID	Unit ID	Average NOx rate	NOx (tons)
OH	W H Zimmer Generating Station	6019	1	0.28	4,639
IN	Rockport	6166	MB2	0.22	4,536
AR	White Bluff	6009	1	0.32	4,481
AR	White Bluff	6009	2	0.31	4,348
MO	New Madrid Power Plant	2167	1	0.54	4,304
PA	Conemaugh	3118	2	0.31	3,893
MO	New Madrid Power Plant	2167	2	0.42	3,810
WV	Harrison Power Station	3944	3	0.38	3,636
WV	Pleasants Power Station	6004	2	0.36	3,576
PA	Bruce Mansfield	6094	3	0.29	3,402
PA	Homer City	3122	3	0.37	3,365
IN	Rockport	6166	MB1	0.22	3,317
PA	Conemaugh	3188	1	0.32	3,249
PA	Keystone	3136	2	0.25	3,151
WV	Harrison Power Station	3944	1	0.36	3,120
WV	Harrison Power Station	3944	2	0.37	2,986
PA	Homer City	3122	1	0.36	2,978
AR	Independence	6641	2	0.23	2,926
AR	Independence	6641	1	0.21	2,632
MI	Monroe	1733	2	0.41	2,618
PA	Montour	3149	2	0.41	2,608
MO	Thomas Hill Energy Center	2168	MB2	0.57	2,463
PA	Keystone	3136	1	0.21	2,291
IN	Cayuga	1001	1	0.33	2,291
MO	Thomas Hill Energy Center	2168	MB3	0.2	2,238



\*Pink highlight indicates units with SCR installed

\* Conemaugh has planned controls to be installed in 2015

# Largest Contributor (EGU) Analysis

The draft EGU Emissions Inventory Analysis Whitepaper includes\*:

- Analysis of 2011 and 2012 state level ozone season EGU NOx emissions (tons) and ozone season state average EGU NOx emission rate (lb/mmBtu) data.
  - Analysis 1 - NOx controls and EGU retirements
  - Analysis 2 - Short Term (Hourly) EGU NOx Emissions - 2012
  - Analysis 3 - EGU NOx emissions during the 2011 Ozone Season including emissions, fuel type, and temperature charts.
  - Analysis 4 - “Coal SCR Scorecard” Analysis - 2011 & 2012
  - Analysis 5 - Recommendation for modeling of Short Term NOx emission limits for EGUs
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- The OTC SAS Committee is working with the OTC Modeling Committee and the University of Maryland to model Analysis 1 of the EGU Emission Inventory Analysis Whitepaper
  - Additional modeling runs based on the Emissions Inventory Analysis Whitepaper will be conducted in the future



\* available on the OTC website at [www.otcair.org](http://www.otcair.org)

# Largest Contributor Cost Analysis

- Largest Contributor Workgroup is looking into both the capital cost and the operating and maintenance cost of pollution control devices.
- Preliminary SCR and SNCR control costs were reproduced using the Sargent & Lundy control cost methodology developed for EPA's IPM Model v.5.13
- S&L SCR control cost methodology includes 2004 to 2006 industry cost estimates, additional 2010 cost estimates prepared by consultants for UARG, and S&L in-house data for recent SCR Projects (2007-2012). Data converted to 2012 dollars based on Chemical Engineering Plant Index (CEPI) data
- S&L SNCR control cost methodology includes S&L in-house data from recent quotes (2009 to 2012) for lump sum contracts
- Detailed examples of the SCR and SNCR control cost spreadsheet analyses can be found at:



[http://www.epa.gov/airmarkets/progsregs/epa-ipm/docs/v513/attachment5\\_3.pdf](http://www.epa.gov/airmarkets/progsregs/epa-ipm/docs/v513/attachment5_3.pdf) &

[http://www.epa.gov/airmarkets/progsregs/epa-ipm/docs/v513/attachment5\\_4.pdf](http://www.epa.gov/airmarkets/progsregs/epa-ipm/docs/v513/attachment5_4.pdf)

# Sargent and Lundy vs. Modified Sargent and Lundy

Sargent and Lundy	Modified Sargent and Lundy
Sargent and Lundy	Modified Sargent and Lundy
Reagent use and Unit costs (VOMR)	Reagent use and Unit costs (VOMR)
Catalyst replacement and disposal costs (VOMW)	Catalyst replacement and disposal costs (VOMW)
Additional power required and unit power cost (VOMP)	Additional power required and unit power cost (VOMP)
Steam required and unit steam cost (VOMM)	Steam required and unit steam cost (VOMM)
“Base” Year = 2011	“Base” Year = 2011
Uncontrolled NOx Emission Rate	Uncontrolled NOx Emission Rate
NOx Removal Efficiency	NOx Removal Efficiency
<b>Electric Generator Heat Input Capacity</b> (Name Plate Rating x Heat Rate)	<b>Steam Generator Heat Input Capacity</b>



# Avoided Cost of Operating SCR's

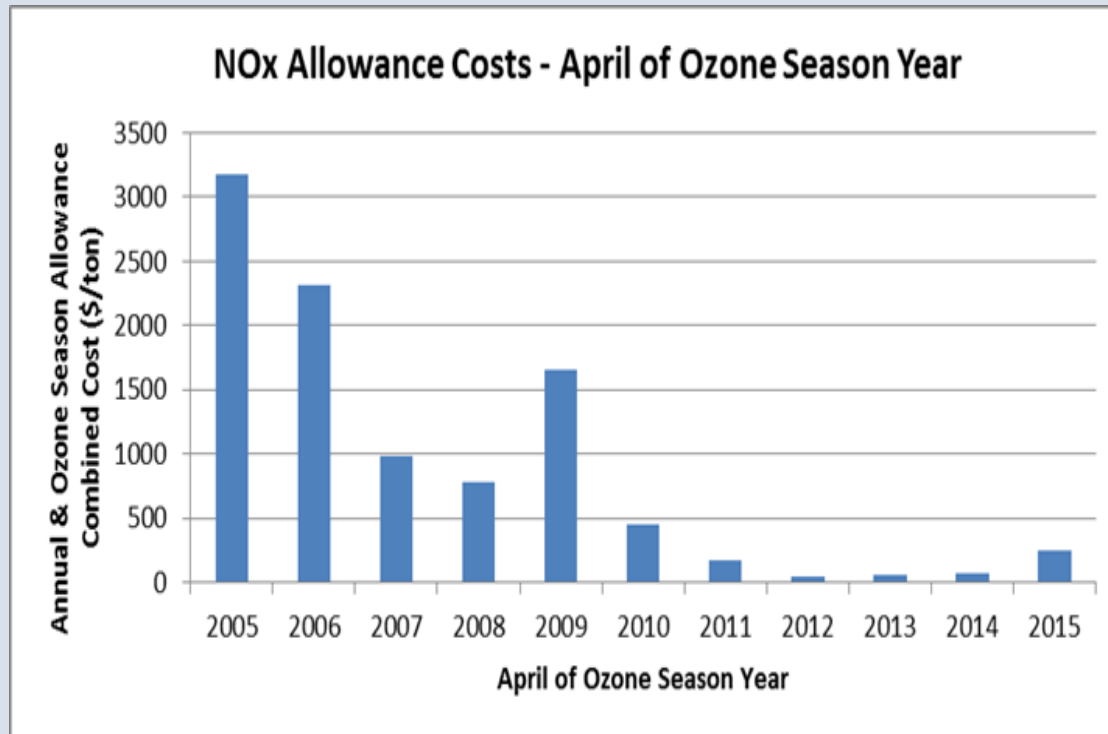
	Unit 1		Unit 2		Unit 3	
	S & L Method	S & L Modified	S & L Method	S & L Modified	S & L Method	S & L Modified
Boiler Size (MW)	153.1	N/A	403.7	N/A	958.8	N/A
Variable O/M (\$/ton)	\$748- \$1,985	\$439- \$1598	\$744- \$2,118	\$440- \$1,785	\$529- \$1,755	\$439- \$1,680
2011 Ozone Season Steam Generator Heat Input Capacity (MMBtu/hr)	N/A	2,322	N/A	6,372	N/A	11,107
2011 Ozone Season Capacity	23.7%		35.1%		73.9%	



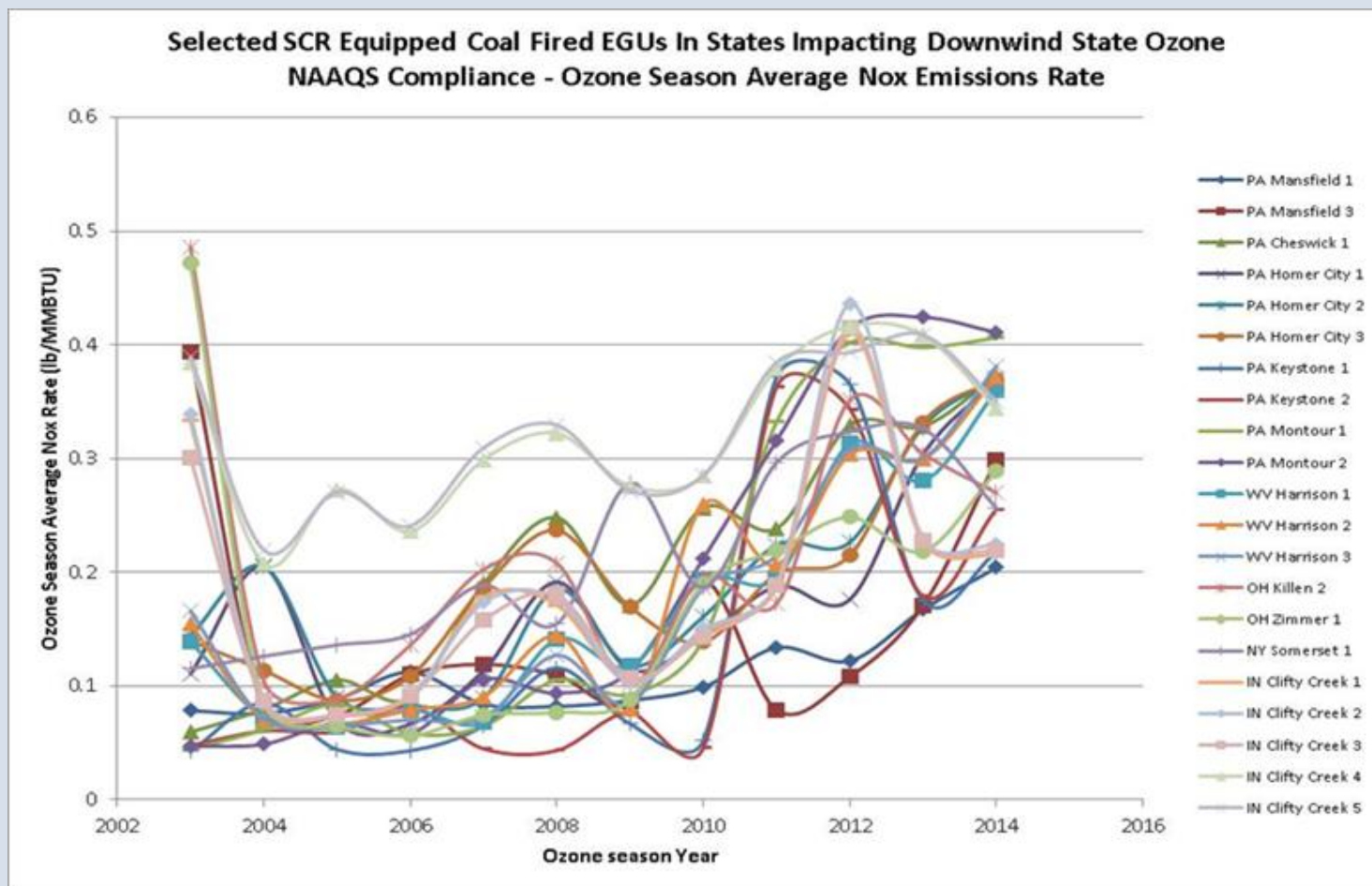
# CSAPR Allowances vs. Cost of Running Controls

Unit	S&L Variable O&M (\$/ton)	S&L Modified Variable O&M	CSAPR Allowance (per short ton)
Unit 1	\$748-\$1,985	\$439- \$1598	Annual: \$125 Seasonal: \$125
Unit 2	\$744- \$2,118	\$440- \$1,785	Annual: \$125 Seasonal: \$125
Unit 3	\$529- \$1,755	\$439- \$1,680	Annual: \$125 Seasonal: \$125

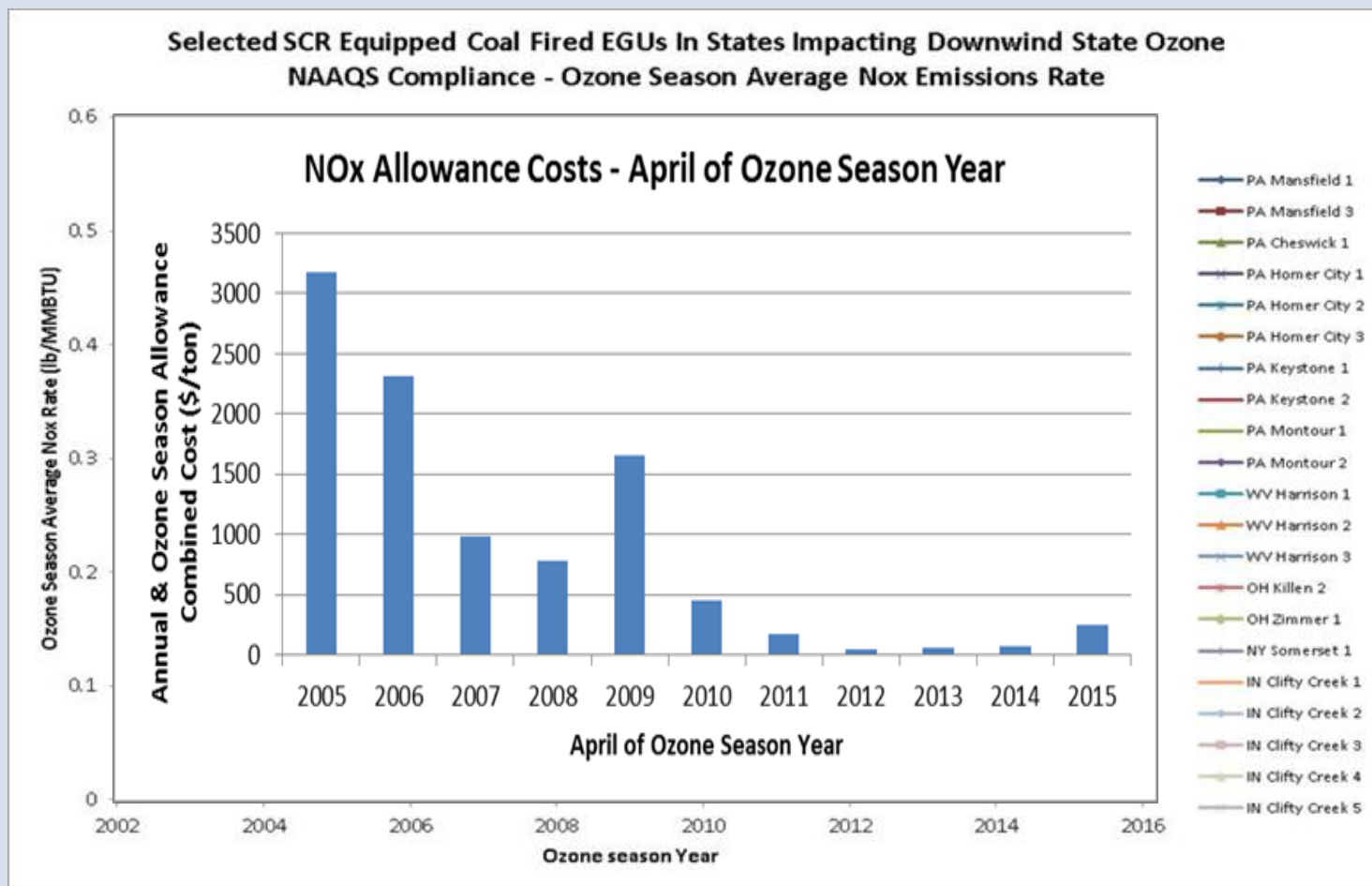
# Running Controls and Cost of Allowances



# Running Controls and Cost of Allowances



# Running Controls and Cost of Allowances



# ICI Boiler Workgroup

- Using EMF evaluate how ICI Boiler Emissions changed from 2007 and 2011, and estimate how emissions will change in 2018;
- Do ICI boiler warrant additional analysis based on their impact on total emissions

# ICI Boiler Workgroup

## •Preliminary conclusions:

- NO<sub>x</sub> and SO<sub>2</sub> for the Northeast states plus VA region decreased by 22% and 40% respectively between 2007 and 2011
- Modest NO<sub>x</sub> decreases are expected between 2011 and 2018; ranging from 5% for the Northeast states to 11% for the Southeast states.
- For 2011 total annual ICI boiler emissions:
  - NO<sub>x</sub> ranged from 6 to 7% of the total from all sectors for the NE, MW, & SE regions
  - NO<sub>x</sub> for the CONUS was 5% of the total from all sectors
- For 2018 total annual ICI boiler emissions:
  - NO<sub>x</sub> ranges from 9 to 10% of the total from all sectors for the NE, MW, & SE regions
  - NO<sub>x</sub> for the CONUS is 7% of the total from all sectors

# Distributed and Emergency Generator Inventory

- Evaluating different ways to account for behind the meter generations on air quality impacts, especially on High Electric Demand Days
- Coordinating with OTC Modeling Committee to do a sensitivity run that would account for behind the meter emissions
- Working with ISO's to determine the impact of FERC order 745
- Tracking Delaware lawsuit against EPA with regard to RICE NESHAP





# Other SAS Committee Updates

## CSAPR Workgroup

- Reviewing EPA memo (January 22, 2015) on Good Neighbor provision of the Clean Air Act
- Tracking CSAPR first year implementation, budgets, and implementation issues

## RACT Workgroup

- Compiling and evaluating each states NOx and VOC limits for source categories, as well as reviewing CTG's

## Consumer Products Rule

- OTC Sent EPA a request to adopt the OTC Consumer Products Model Rule as a National Rule
  - Available at <http://www.otcair.org>

# Other SAS Committee Updates

## AIM

- OTC AIM Model Rule updated with Stakeholder comments.

## Vapor Recovery

- Delaware and Maryland have proposed regulation for the Stage II program
- Continue to look at ways to improve Stage I
- Preparing letter to send to CARB requesting certification of EVO Nozzles

# Next Steps for the Committee

- Continue to evaluate EGU NO<sub>x</sub> real world emission data including daily EGU NO<sub>x</sub> emissions during ozone season episodes and HEDD days
- Continue to look at ICI Boiler Emissions
- Continue developing the AIM model rule to send to EPA.
- Continue to evaluate Vapor Recovery strategy options.
- Continue to track and monitor CSAPR implementation
- Continue to evaluate RACT limits in each State
- Continue to provide an economic impact assessment of each new or significantly revised strategy that is presented to the Commission for action or consideration

# Questions?

