

OTC Stakeholder Meeting  
April 12, 2016  
Hall of States  
Washington, D.C.

Ali Mirzakhali, P.E.  
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 largest NO<sub>x</sub> emitters *within all states* that contribute at least 1% of the 2008 ozone NAAQS of 75 ppb to OTC states;
- Identify sources with the highest short-term emissions of NO<sub>x</sub> and VOC;
- Evaluate achievable NO<sub>x</sub> emission rates to adjust long and short term expectations for emission reductions;
- Develop achievable EGU NO<sub>x</sub> emission rates by state, considering reasonably available controls.

## Demand and Emergency Generator Information

- Estimate emissions from the use of demand response generation units on HEDDs;
- Collaborate with other OTC Committees to analyze and better understand the air quality impacts;
- Recommend potential control strategies to the Commission.

## Reasonably Available Control Technology

- Develop list of emission rates in each OTR state for significant NO<sub>x</sub> and VOC categories;
- Identify range of emissions rates that each state has determined to be RACT.

# Accomplishments

- Published Final Draft EGU Emissions Inventory Analysis Whitepaper\*
- Continued analysis of the energy sector:
  - Top 25 NOx emitters
  - EGU utilization by fuel type
  - Demand response
  - Behind the Meter Units (BUGs)
  - Smaller EGUs not in CAMD - Less than 25 MW
  - Air quality impact
  - CSAPR
- Published Final Draft ICI Boiler Whitepaper\*

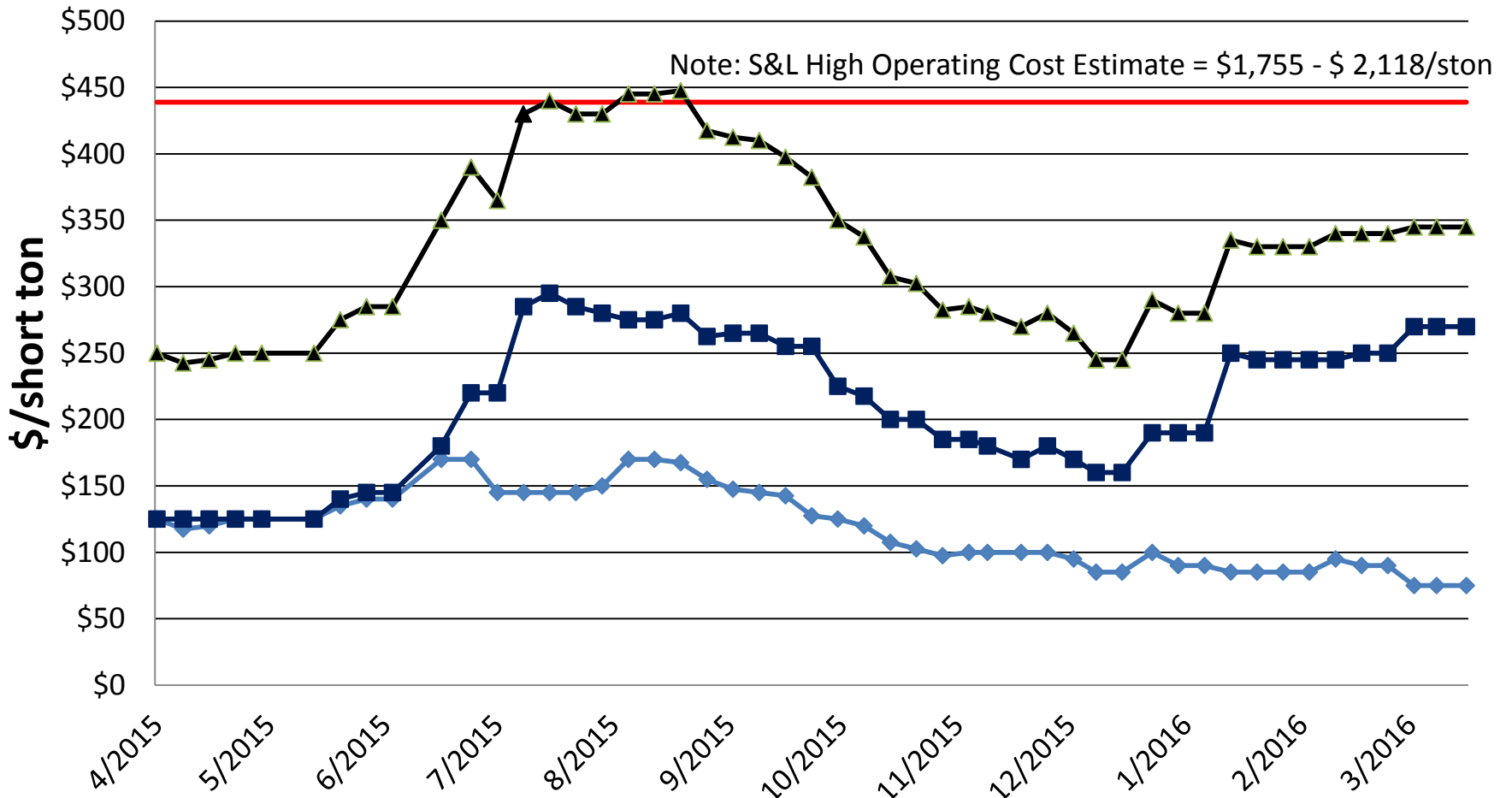
\* available on the OTC website at [www.otcair.org](http://www.otcair.org)

# Top 25 NO<sub>x</sub> Emitters – 2015 Ozone Season

State	Facility Name	Facility ID	Unit ID	NO <sub>x</sub> (tons)	Avg. NO <sub>x</sub> Rate (lb/MMBtu)	SCR?	Best Observed Rate (lb/MMBtu)	Year
IN	Rockport	6166	MB1	3,976	0.208			
IN	Rockport	6166	MB2	3,677	0.207			
LA	Ninemile Point	1403	5	3,008	0.319			
WV	Harrison Power Station	3944	3	2,965	0.342	Y	0.066	2005
AR	White Bluff	6009	1	2,898	0.276			
WV	Harrison Power Station	3944	2	2,855	0.364	Y	0.066	2005
LA	Ninemile Point	1403	4	2,717	0.343			
PA	Homer City	3122	1	2,624	0.351	Y	0.067	2006
OH	Avon Lake Power Plant	2836	12	2,617	0.396			
NC	Marshall	2727	4	2,460	0.272			
PA	Bruce Mansfield	6094	1	2,409	0.242	Y	0.076	2004
AR	White Bluff	6009	2	2,398	0.286			
PA	Conemaugh*	3118	1	2,353	0.227	Y	-	-
PA	Montour, LLC	3149	1	2,246	0.309	Y	0.044	2003
PA	Montour, LLC	3149	2	2,203	0.336	Y	0.047	2003
PA	Keystone	3136	1	2,198	0.232	Y	0.042	2003
WV	Harrison Power Station	3944	1	2,155	0.318	Y	0.063	2005
PA	Homer City	3122	3	2,131	0.282	Y	0.087	2005
PA	Brunner Island, LLC	3140	3	2,111	0.325			
PA	Conemaugh*	3118	2	2,012	0.200	Y	-	-
WV	Mountaineer (1301)	6264	1	1,979	0.108	Y	0.039	2007
AR	Flint Creek Power Plant	6138	1	1,970	0.264			
IN	IPL - Petersburg Generating Station	994	4	1,946	0.264			
PA	Keystone	3136	2	1,907	0.243	Y	0.043	2008
AR	Independence	6641	1	1,771	0.239			

\*Conemaugh installed SCR in 2014. Not enough data to determine Best Observed Rate.

# CSAPR Allowance Prices (4/17/15 to 4/1/16)



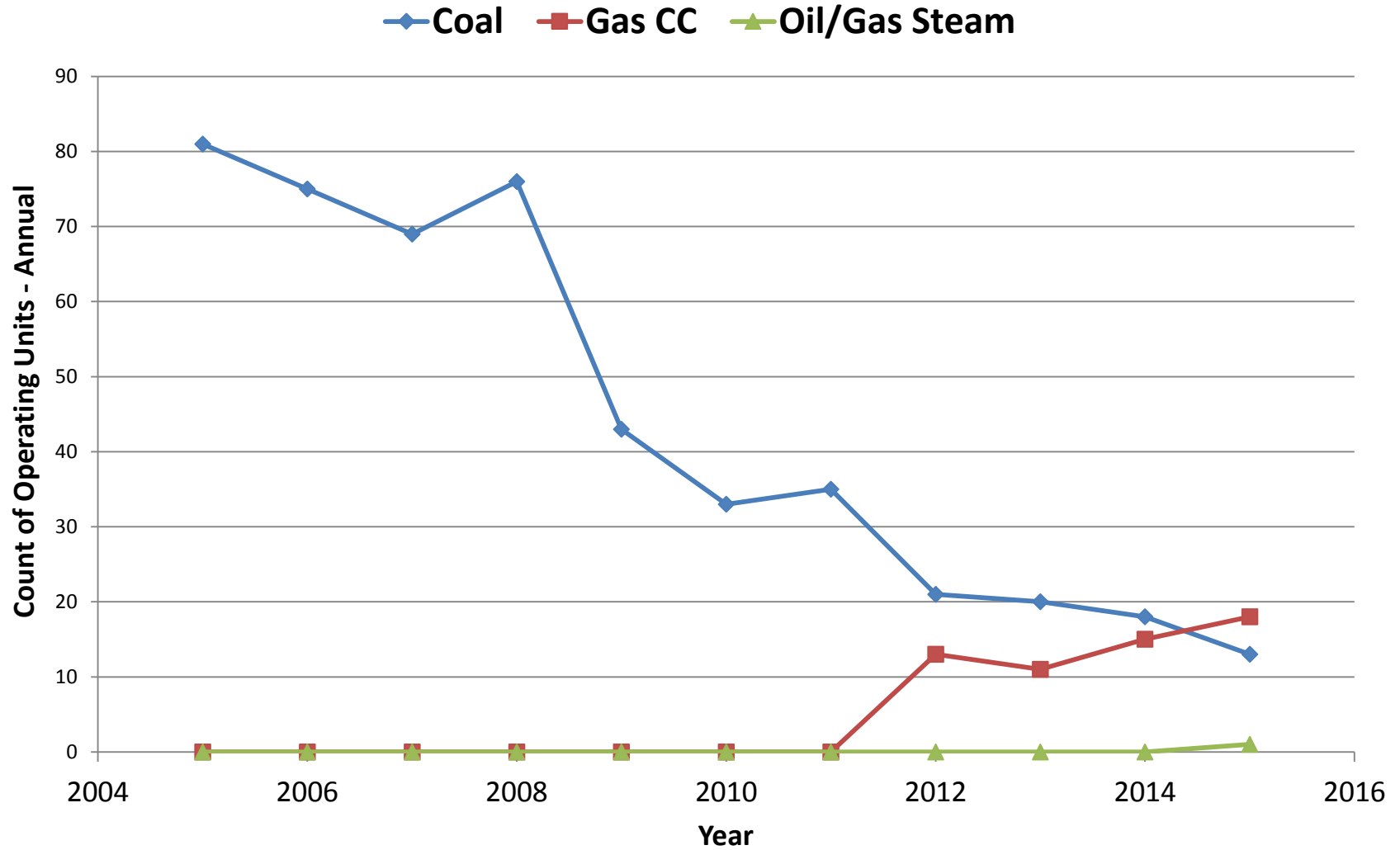
Allowance Price Data Source: Argus Air Daily, Control cost estimates calculated using Sargent and Lundy method

# Analysis of the utilization of coal fired EGU resources

Over the last decade there has been a significant shift in the makeup of the EGU fleet actually operating in PJM states that have historically been primarily served by coal-fired units. There are a number of contributing factors including:

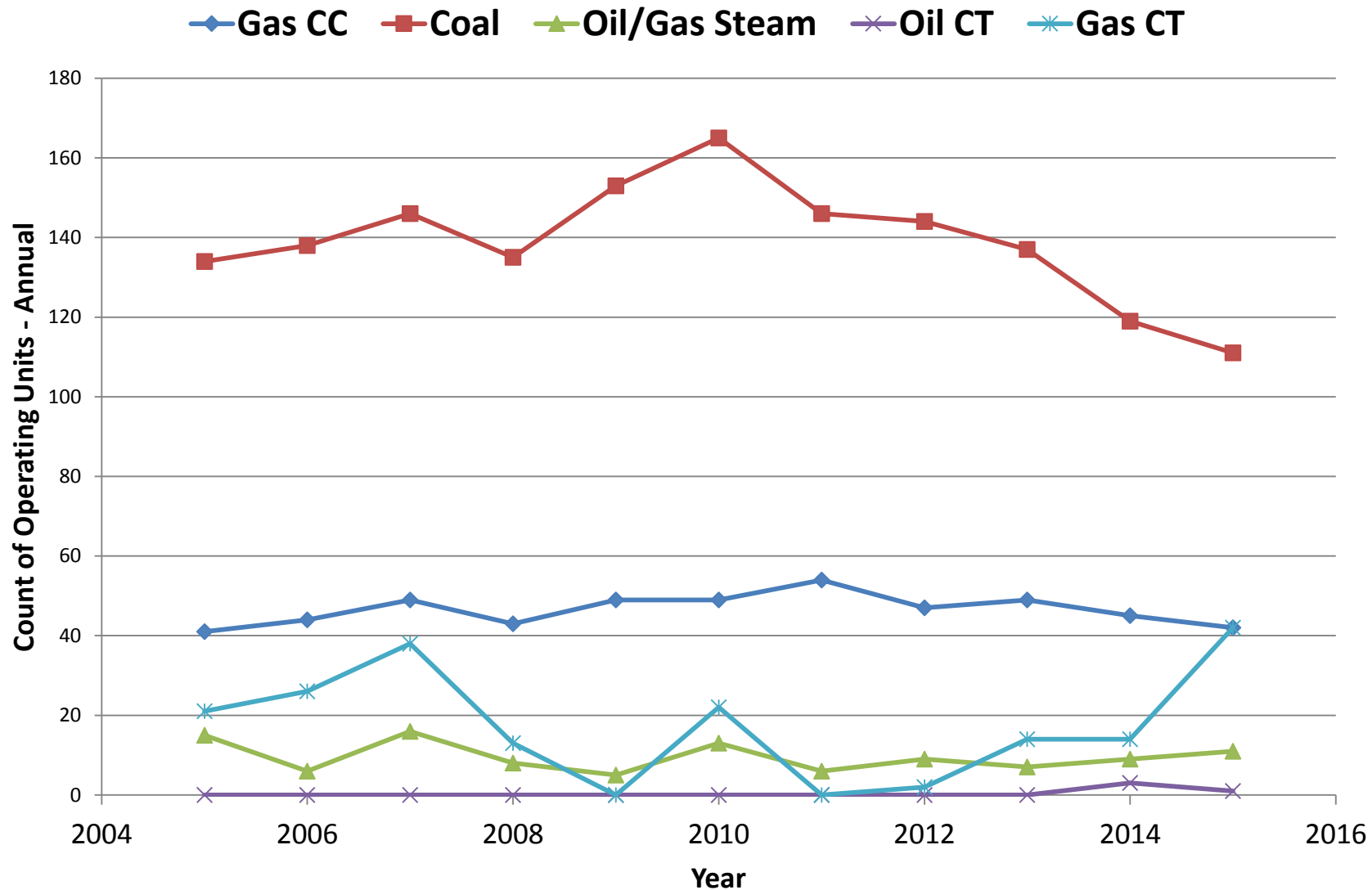
- Long term effects of deregulation
- Various environmental programs and initiatives
- Renewables requirements
- Utilization of demand response resources
- Improved availability of relatively low cost natural gas

# Operating "Baseload" EGUs in MD-OH-PA-VA-WV

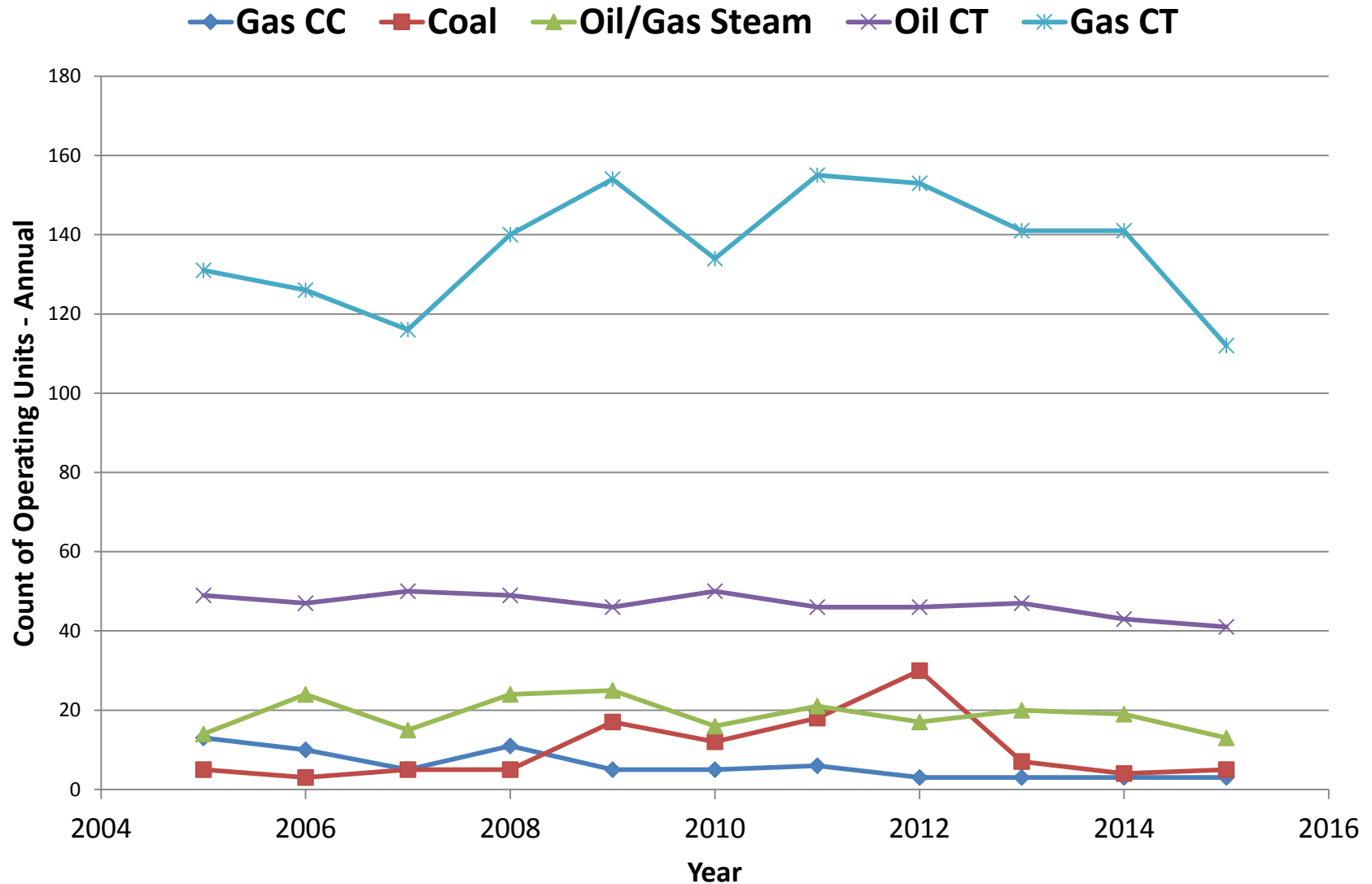




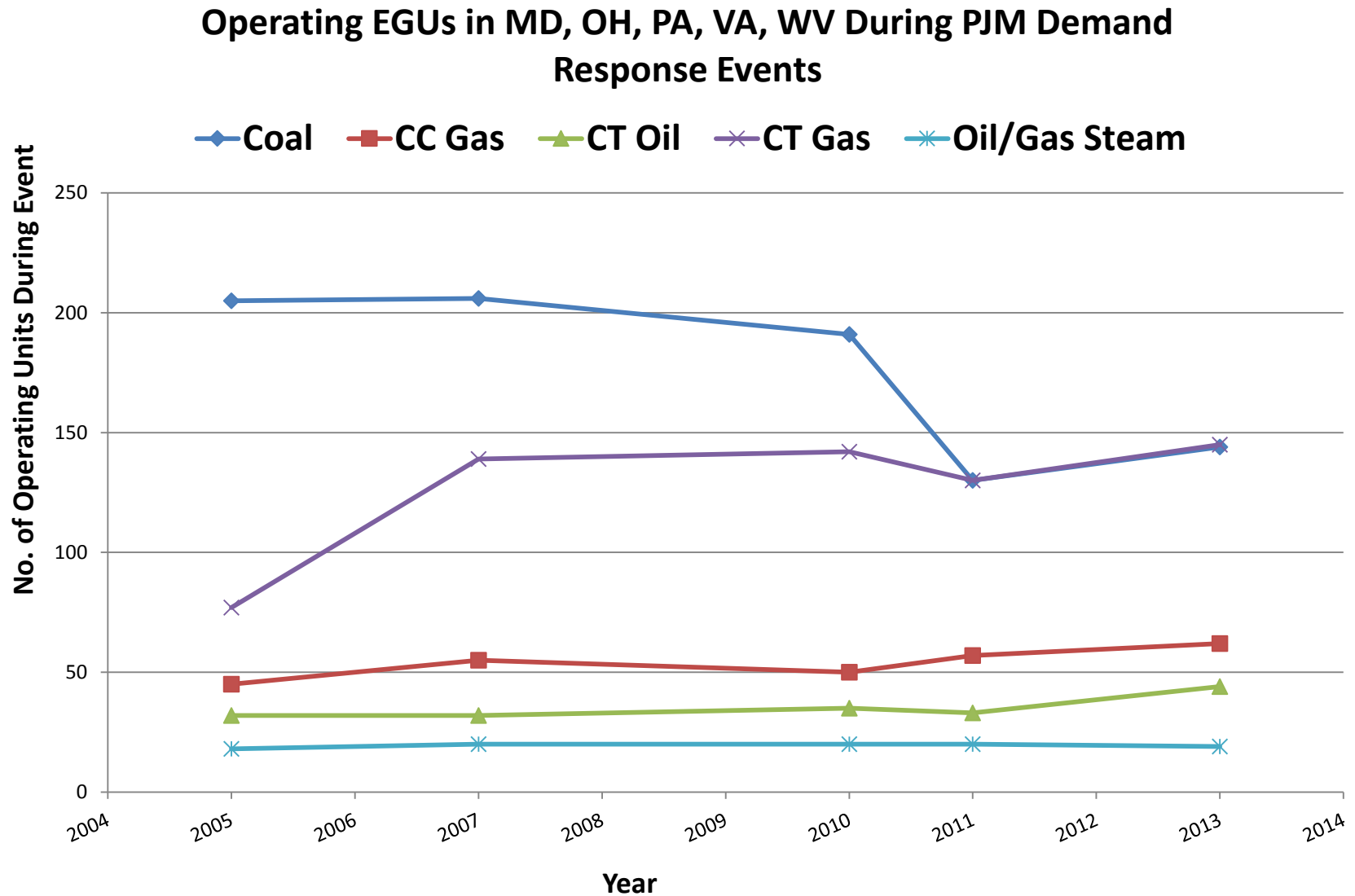
# Operating "Intermediate" EGUs in MD-OH-PA-VA-WV



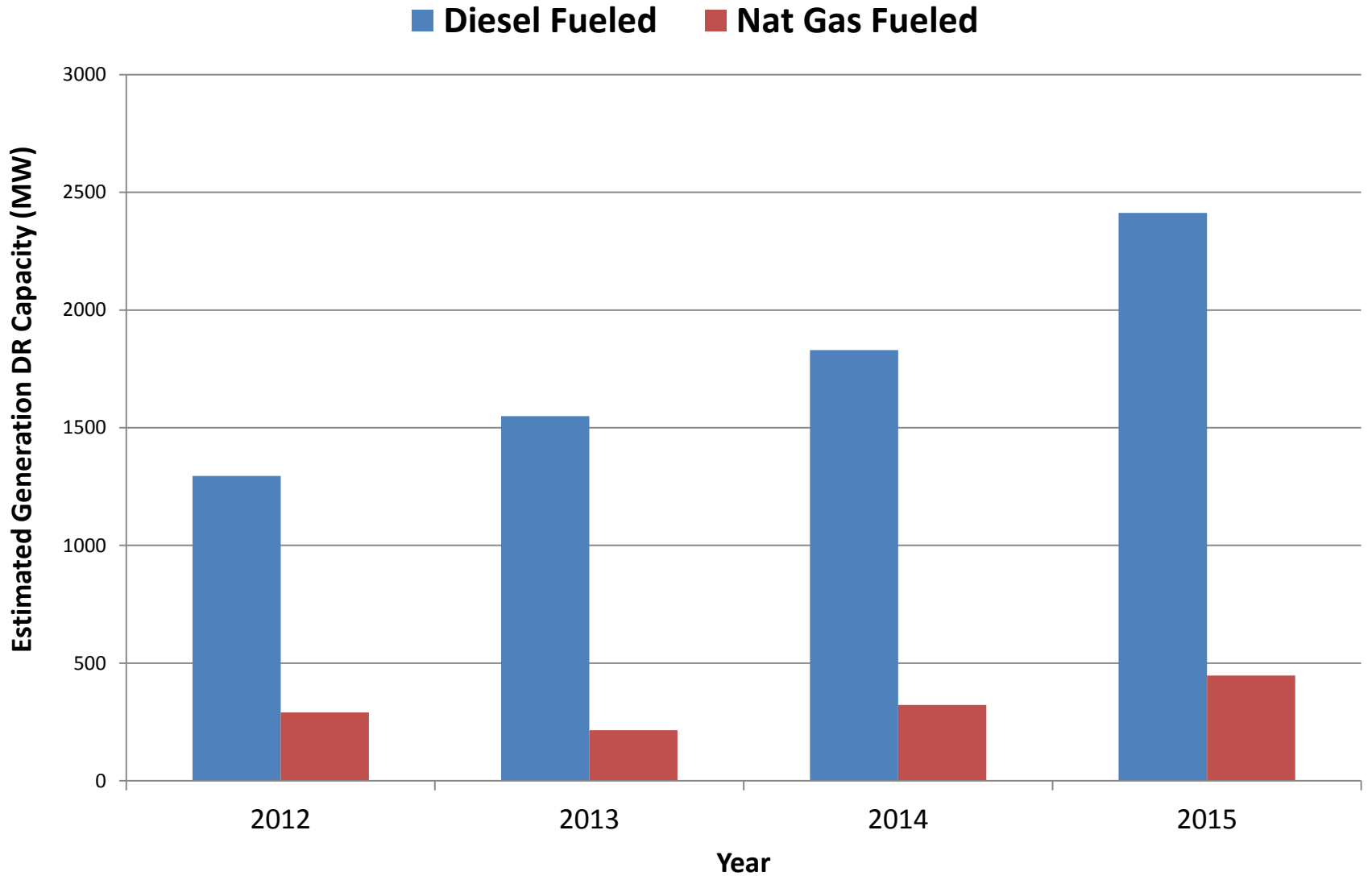
# Operating "Peaking" EGUs in MD-OH-PA-VA-WV



# Operating EGUs in MD-OH-PA-VA-WV During PJM DR Events



# Estimated PJM Demand Response Generation Resources



# High Electricity Demand Days (HEDD)

On HEDD more electricity generation than usual is required for reliability

- More generation leads to more emissions
- HEDD days typically occur on hot, humid days that are already conducive to high ozone
- Therefore the higher emissions often occur during critical periods



Some emissions are not reflected by the CAMD emission database and may not be reported through other typical mechanisms

- Emissions need to be added to the inventory or redistributed during HEDD periods to reflect actual emissions

# HEDD Workgroup Update

**Identified three separate but related groups of sources that contribute to emissions on HEDDs:**

1. Behind the Meter Units (BUGs)
  - Estimate total emissions for each ISO (ISO-NE, NY-ISO, PJM)
  - Apportion emissions to the county level
  - Assign emissions to model episode days
  - Apportion daily emissions to hours of the day
2. Smaller EGUs not in CAMD - Less than 25 MW
  - Annual emissions and locations known
  - In the modeling inventory
  - MDE working on improving operating profiles
3. Peaking Units EGUs in CAMD - Greater than 25 MW
  - Hourly emissions and locations known
  - In modeling inventory
  - Old EPA definition of peaking unit – operating < 10% over 3 years and < 20% annually

# Emissions Estimates for Behind the Meter Units (BUGs)

NO<sub>x</sub> Emissions in Tons per Day (or Tons per “Event”)

Region	Low Bound	High Bound
ISO-NE	8	32
NY-ISO	7	30
PJM	7	29



# Small EGU Units < 25 MW

## **SMOKE processing of small EGUs - is the model getting peak day emissions right?**

- Small EGUs <25MW that provide power to the grid, annual emissions for these units are known.
- Typically operate for limited time periods. Usually operate during high electricity demand periods (aka peak day) or when larger units are offline for maintenance. May also operate when necessary to ensure grid reliability.

## **Large units' operating profiles developed from hourly CEMS data, but what about the smaller units – those without CEMS?**

- Annual emissions are known and temporal profiles are used to distribute emissions to the hour

## **MDE developed more realistic temporal profiles for coal, oil and gas-fired EGUs <25 MW.**

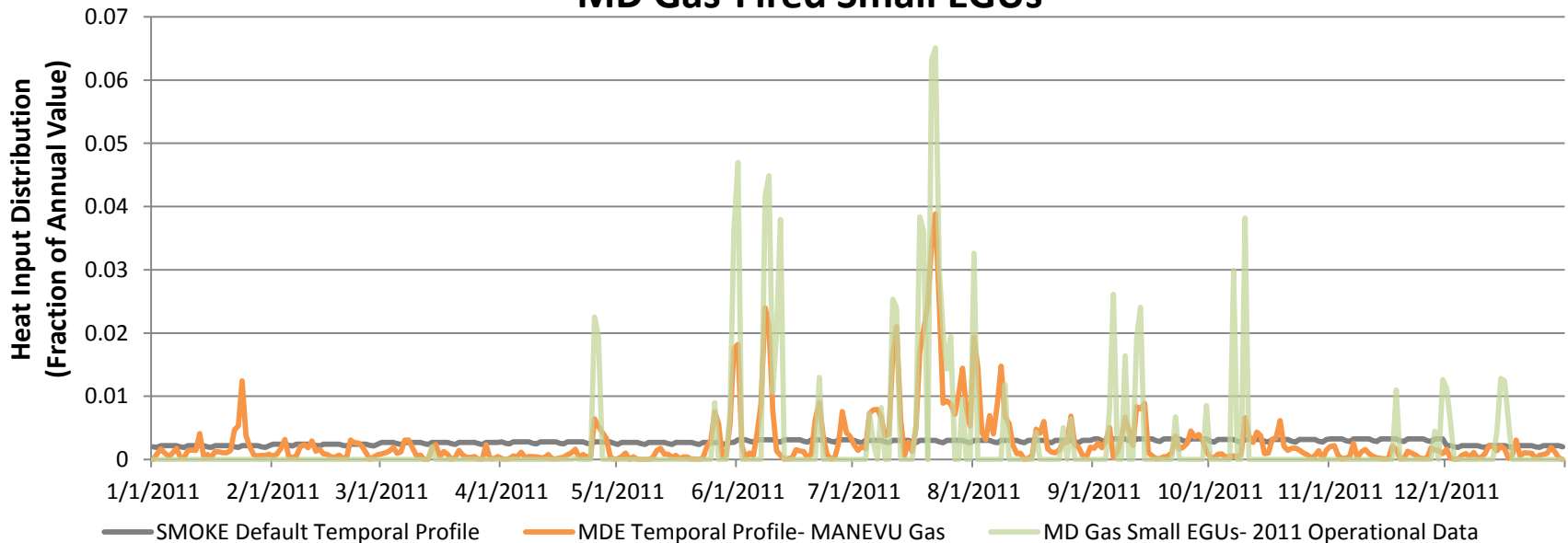
- From what we know, profiles for these units should show limited annual operation, but high peak day operation.



# Temporal Profiles for Small EGUs <25 MW

- Not adding any additional emissions to the inventory – simply changing the hourly distribution of annual emissions
- Default temporal profiles smear emissions fairly evenly throughout the year.
- MDE's new temporal profiles allocate emissions based on CAMD data from peaking units
  - MDE also collected 2011 operating data from MD gas-fired small EGUs. New temporal profile closely matches actual operating profile.

**Compare Temporal Profiles to 2011 Operating Profile  
MD Gas-Fired Small EGUs**

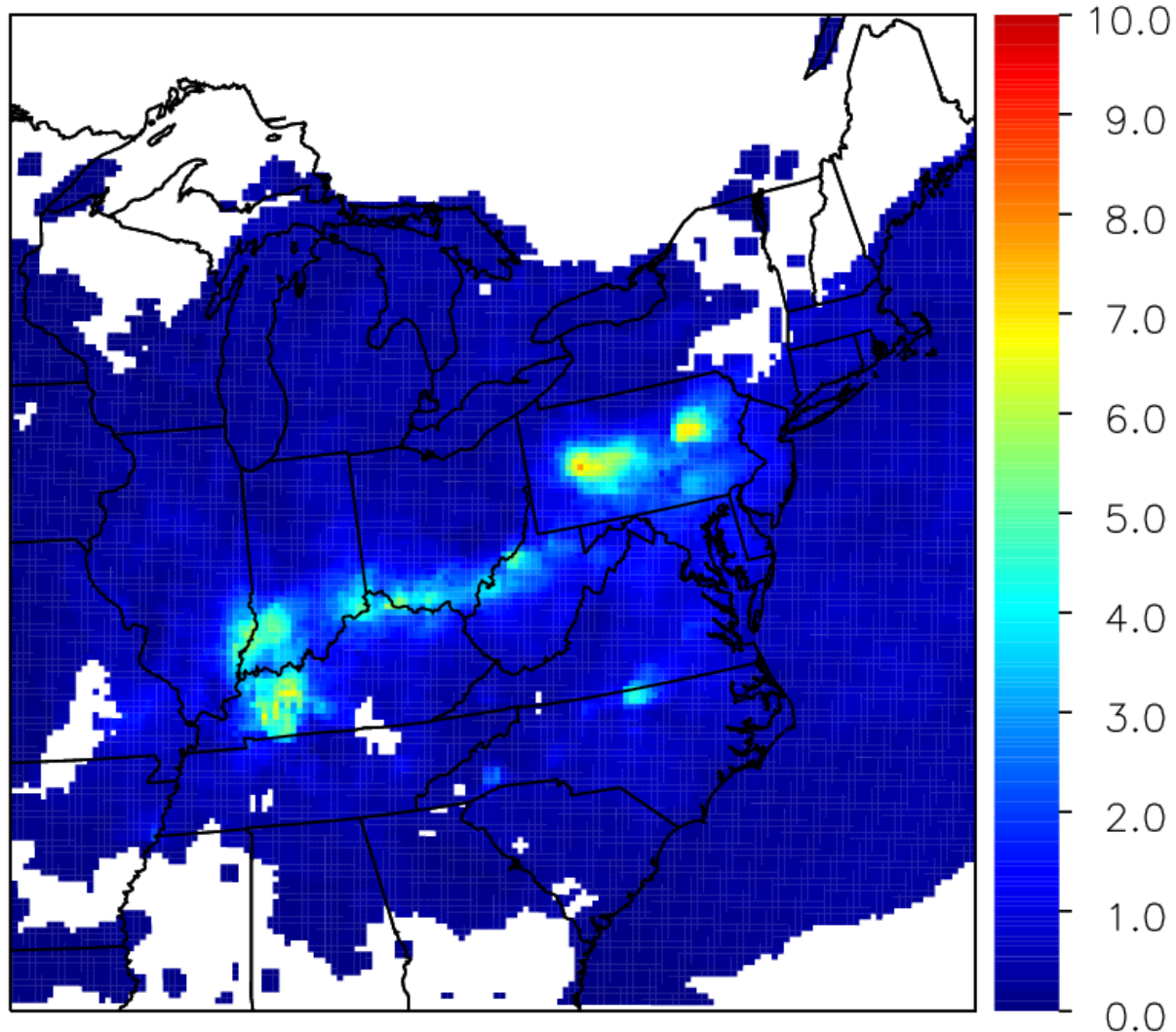


# Ozone Impact of Not Running Existing Controls

## Lost Benefit of 413 Tons per Day

Scenario 3A 2018 Ozone Season Benefit

Scen 3A – 2018 Base



Ozone Season NOx Tons

Reference	175,700
3A	112,400
<b>Difference</b>	<b>63,300</b>

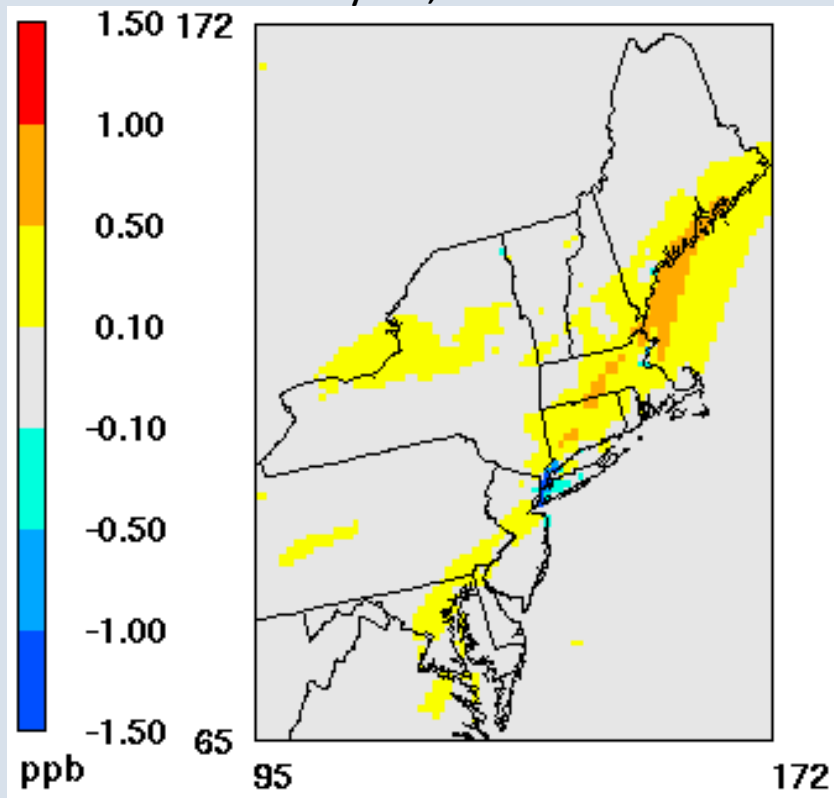
\*Note that the color scale is different from the 2011/2018 reference case

# Ozone Impact of Behind the Meter Units

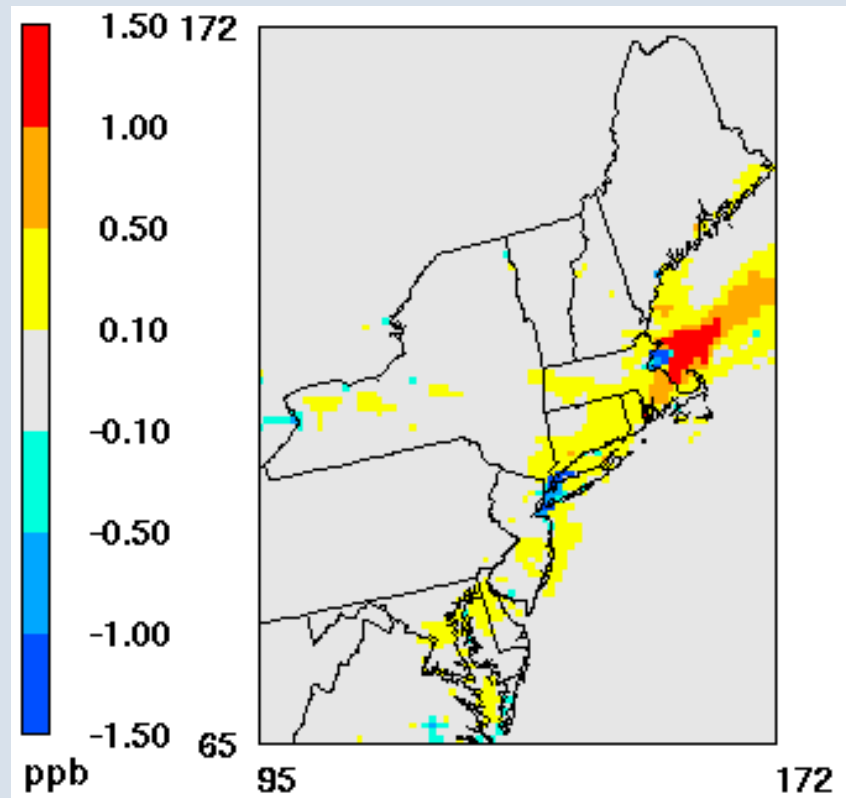
## Difference in Daily Maximum 8-hour Ozone

2011 Base w/ BUGs minus 2011 Base

July 21, 2011



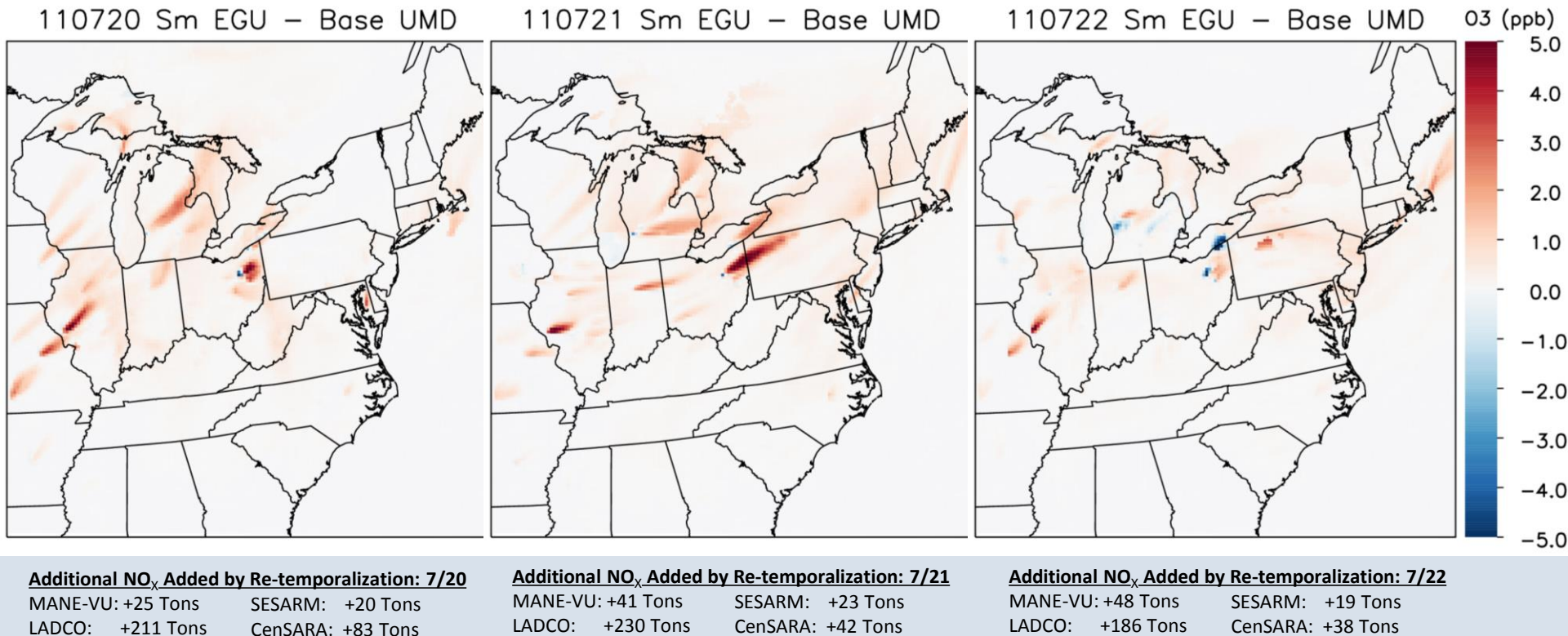
July 22, 2011



Thanks to NYSDEC for performing the SMOKE and CMAQ processing

# Ozone Impact of Small EGUs <25 MW

July 20 – 22, 2011 Event Period  
Preliminary Modeling Results



- Small EGU units <25 MW can have an impact of up to **5 ppb** in some areas on HEDDs.
- On non-HEDD days, impact of small EGU units is insignificant.

# Small EGU Status Update

Already completed on Alpha modeling platform:

- Selected list of small EGU units from 2011/2018 inventory (based on NAICS/SCC)
- Held state comment period to refine list of units
- Completed 2-week July CMAQ model runs using new temporal profiles for small EGU units

Next Steps:

- Requested additional state comments
- Will incorporate temporal profiles into Beta modeling platform

# CSAPR Update

**July 28, 2015:** U.S. Court of Appeals for the D.C. Circuit issued opinion on remand from the U.S. Supreme Court

- Held that the 2014 ozone-season NO<sub>x</sub> budgets for FL, MD, NJ, NY, NC, OH, PA, SC, TX, VA and WV are invalid
- Remanded to EPA without vacatur for reconsideration of those budgets

**December 3, 2015:** EPA proposed CSAPR update for 2008 Ozone NAAQS

**February 1, 2016:** OTC filed comment letter on CSAPR update

- Final rule must be published by June 2016
- EPA must fulfill statutory requirements under the CAA including Good Neighbor obligations
- Ensure emission reduction benefits by 2017

# ICI Boiler Workgroup Update

## Conclusions from the White Paper:

- 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
  - 11% for the Southeast states
- Percentage of annual ICI boiler NO<sub>x</sub> emissions compared to all sectors:

	NE, MW, & SE	CONUS
2011	6-7%	5%
2018	9-10%	7%

# ICI Boiler Workgroup Update (Cont'd.)

- Used EMF to evaluate how ICI Boiler Emissions changed from 2007 and 2011, and estimated how emissions will change in 2018;
- Whitepaper posted on OTC website for stakeholder comment, comment period closed October 12, 2015
  - No comments received
  - Finalize white paper
- ICI boilers warrant additional analysis based on their impact on total emissions
- Need to evaluate existing state limits, and whether new limits are warranted



# Consumer Products/AIM Update

2015 Annual Meeting: OTC asked EPA to update its AIM rule using the OTC Model Rule as a starting point<sup>1</sup>.

2013 Annual Meeting: OTC requested EPA to adopt the OTC Model Rules for AIM and Consumer Products as National Rules<sup>2</sup>.

<sup>1</sup><http://www.otcair.org/upload/Documents/Formal%20Actions/Statement%20to%20EPA%20on%20AIM012.pdf>

<sup>2</sup>[http://www.otcair.org/upload/Documents/Formal%20Actions/Statement\\_AIM.pdf](http://www.otcair.org/upload/Documents/Formal%20Actions/Statement_AIM.pdf)

# Consumer Products/AIM Update (Cont'd.)

While national rules are the preferred option to achieve the benefits of these Model Rules, OTC is working to establish a voluntary program which would include states, EPA, and industry.

OTC has reached out to industry stakeholders and discussed the voluntary program.

# Consumer Products/AIM Update (Cont'd.)

- Currently, States have limited mechanisms to claim SIP credit for consumer product and AIM emission reductions
- State by State rulemaking involves a large amount of resources and creates a patchwork of regulations (industry has indicated a preference for uniform regulations)

# Consumer Products/AIM Update (Cont'd.)

- OTC's Voluntary program proposes to allow states to claim credits, and creates uniform standards
- The goal is to create a voluntary program by which manufacturers certify that specific quantities of compliant products are being distributed in a particular state
- Compliant products would be accompanied by a labeling program for identification

# Consumer Products/AIM Update (Cont'd.)

- Identified the stakeholders and participants by August 1, 2015.
- Held one organizational call and one group call in August.
- Met as a group at the OTC's stakeholders meeting in September 2015.
- Developed an outline for OTC's November 2015 meeting.
- Next Step: Finalize a framework for presentation at the OTC's annual meeting in June 2016.

# Other SAS Committee Updates

## RACT Workgroup

- Compiling and evaluating each state's NO<sub>x</sub> and VOC limits for source categories
- Reviewing CTGs
- Discussing preliminary data

## Vapor Recovery

- DE and MD have proposed regulations for the Stage II program
- Continue to look at ways to improve Stage I



# Questions?

