OTC Fall Meeting
November 5, 2015
Hilton Hotel
Baltimore, Maryland

Stationary/ Area Source Committee Update

OZONE TRANSPORT COMMISSION

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 NOx 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 NOx and VOC;
  - Evaluate real world achievable NOx emission rates across load ranges to adjust long and short term expectations for emission reductions.
  - Develop individual state EGU NOx 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 NOx and VOC emissions and identify a range of emissions rates that the respective state has determined to be RACT.

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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

- 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

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*** available on the OTC website at www.otcair.org**

Top 25 NOx Emitters- 2015 OS

State	Facility Name	Facility ID	Unit ID	BOR*	Year	Avg. NOx Rate (lb/MMBtu)	NO_x (tons)
IN	Rockport	6166	MB1			0.208	3,976
IN	Rockport	6166	MB2			0.207	3,677
LA	Ninemile Point	1403	5			0.319	3,008
WV	Harrison Power Station	3944	3	0.066	2005	0.342	2,965
AR	White Bluff	6009	1			0.276	2,898
WV	Harrison Power Station	3944	2	0.066	2005	0.364	2,855
LA	Ninemile Point	1403	4			0.343	2,717
PA	Homer City	3122	1	0.067	2006	0.351	2,624
OH	Avon Lake Power Plant	2836	12			0.396	2,617
NC	Marshall	2727	4			0.272	2,460
PA	Bruce Mansfield	6094	1	0.076	2004	0.242	2,409
AR	White Bluff	6009	2			0.286	2,398
PA	Conemaugh	3118	1			0.227	2,353
PA	Montour, LLC	3149	1	0.044	2003	0.309	2,246
PA	Montour, LLC	3149	2	0.047	2003	0.336	2,203
PA	Keystone	3136	1	0.042	2003	0.232	2,198
WV	Harrison Power Station	3944	1	0.063	2005	0.318	2,155
PA	Homer City	3122	3	0.087	2005	0.282	2,131
PA	Brunner Island, LLC	3140	3			0.325	2,111
PA	Conemaugh	3118	2			0.200	2,012
WV	Mountaineer (1301)	6264	1	0.039	2007	0.108	1,979
AR	Flint Creek Power Plant	6138	1			0.264	1,970
IN	IPL - Petersburg Generating Station	994	4			0.264	1,946
PA	Keystone	3136	2	0.043	2008	0.243	1,907
AR	Independence	6641	1			0.239	1,771

*Pink highlight indicates units with SCR installed
*BOR = Best Observed Rate

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It's Cheaper to Buy Allowance than to run Controls

Unit	Sargent and Lundy method (per short ton)	CSAPR Allowance (per short ton)*
Unit 1 (153MW)	$439- $1,985	Annual: $143 Seasonal: $255
Unit 2 (403MW)	$440- $2,118	Annual: $143 Seasonal: $255
Unit 3 (958MW)	$439- $1,755	Annual: $143 Seasonal: $255

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* Air Daily: Issue 22-190, October 2, 2015

Scenario 3A

Reduce NOx at all coal-fired SCR and SNCR units (in the 176A petition states, plus MD and PA) to the lowest ozone season average emission rates as seen in CAMD data (2005-2012).

- The lowest ozone season average emission rate was selected for all units with SCR and SNCR.
- If the unit installed a SCR or SNCR after 2005, the data collection period was narrowed to one year after the installation to 2012. Note that if the control was installed in 2012, the 2012 rate was used.
- If a unit was identified in ERTAC or IPM as installing a control in a future year, the emission rate identified as indicative of that control running in 2018 was selected. Note that if a unit was identified as either running or adding a control in 2018, but has performed at a lower rate than the 2018 rate, then the lower rate was used.
- A reduction percentage was calculated by dividing the 2018 ozone season emission rate in IPM 5.13 by the identified best ozone season average emission rate.
- Applying that reduction percentage to the 2018 ozone season emission rate will reduce the 2018 ozone season emission rate to the units lowest demonstrated average ozone season emission rate. This scenario, named 3A, represents the best rates and mass achievable in ozone season based on demonstrated performance from units with SCR and SNCR installed.

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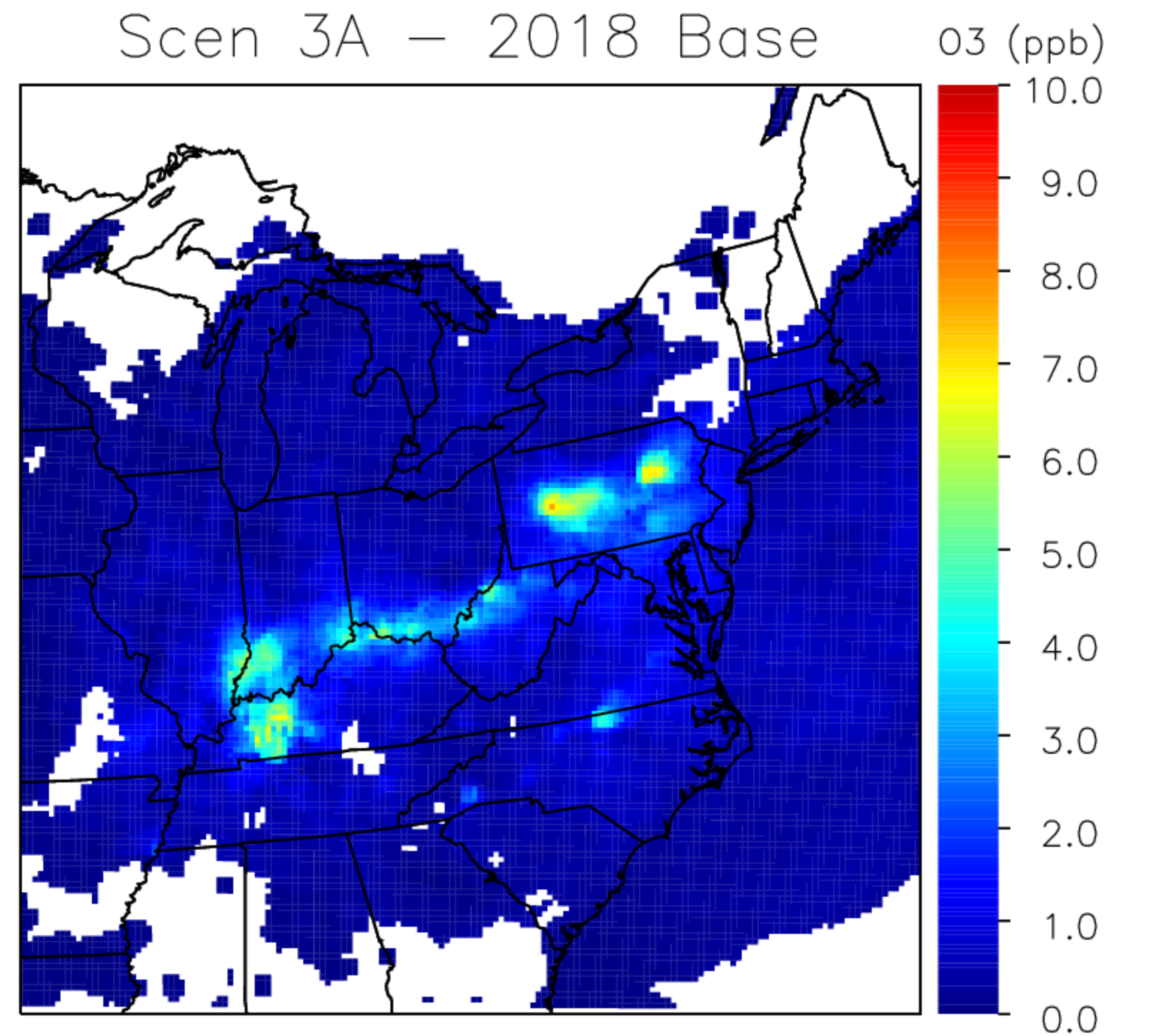
Loss Benefit of 413 Tons per Day

Scenario 3A 2018 Ozone Season Benefit



-Reference Case 2018 Ozone Season NOx Mass: 175,684 Tons

-Scenario 3A 2018 Ozone Season NOx Mass: 112,364.17 Tons

-Ozone Season Benefit: 63,320 Tons. This is equivalent to 413 tons per day

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

ICI Boiler Workgroup

- Using EMF evaluate how ICI Boiler Emissions changed from 2007 and 2011, and estimate how emissions will change in 2018;
- Preliminary results released at the Stakeholder Meeting on September 10;
- Evaluating existing state limits, and whether new limits would be appropriate

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Distributed and Emergency Generator Inventory

Identified two separate but related groups of sources that contribute to emissions on HEDD days

- Behind the meter units
  - Emission and locations may not be known and may not be in the inventory
  - HEDD Workgroup looking at units that participate in the PJM, ISO-NE, and NY-ISO region
  - HEDD Workgroup looking at adding emissions to times of day that these units run- typically late afternoon to early evening
- Smaller EGUs not in CAMD database- Less than 25 MW
  - Annual emissions and location known and in the modeling inventory
  - MDE working on improving operating profiles

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Distributed and Emergency Generator Inventory

- Workgroup developing bounding emissions for sensitivity run. Questions to be answered are:
    1. What quantity of emissions should be added to the model run to represent HEDD units?
    2. Where in the modeling domain should these emissions be added?
    3. During what time periods should these emissions be added?

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Behind the Meter Inventory

- Sub workgroup looking at behind the meter units
    - 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
- Expect initial results at the April stakeholder meeting

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Small EGU Units < 25 MW

There has been interest in how SMOKE processes small electric generating units and whether or not the model is getting peak day emissions right.

- Looking at small EGUs <25MW that provide power to the grid. The annual emissions for these units are known. This project does not address behind-the-meter generators.
- These small units typically operate for limited periods of time. They usually operate during high electricity demand periods (aka peak day) or when larger units are offline for maintenance. They may also operate at times where it is necessary to ensure grid reliability.

Large units operating profiles are developed from CEMS data, so we know their profiles are reasonable but what about the smaller units – those without CEMS?

MDE's goal is to develop a temporal profile for coal, oil and gas-fired electric generating units < 25 MW at EGU facilities.

- Based on what we know about their typical operational patterns, profiles for these units should show limited annual operation, but high peak day operation.

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Small EGU Units < 25 MW

Step 1: Selected units and identified temporal profiles assigned by SMOKE.

Step 2: Identified the 2011/2018 temporal profiles for peaking EGUs >25MW (by region and fuel type).

Step 3: Applied the temporal profiles for large peaking EGUs (identified in step 2) to small EGUs <25MW (identified in step 1).

- Compared the daily NOx mass allocated by current SMOKE profiles for small EGUs vs. the MDE-developed profiles.
- Currently incorporating temporalization into a CMAQ sensitivity run to determine impact on ozone.

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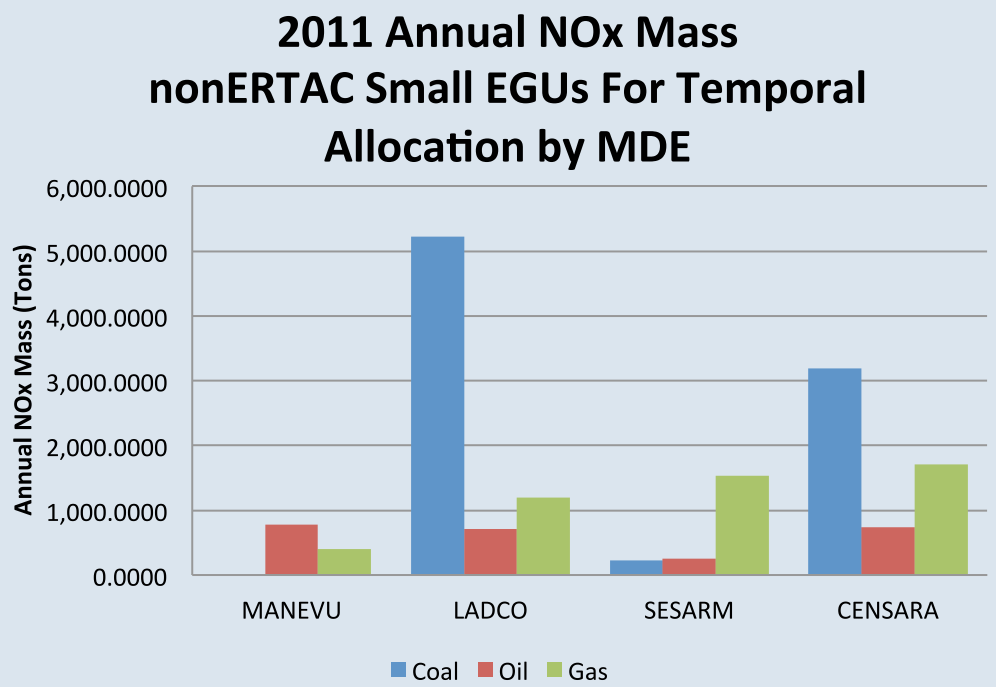
How Many Units & How Much Mass?

Region	Number of Units	Fuel	2011 Annual NOx Mass (Tons)
MANEVU+VA	544	Coal	N/A
		Oil	726.02
		Gas	307.80
MANEVU+VA Total			1,069.82
LADCO	864	Coal	5,216.64
		Oil	715.61
		Gas	1,188.16
LADCO Total			7,120.41
SESARM	359	Coal	225.00
		Oil	243.62
		Gas	1,534.41
SESARM Total			2,003.03
CENSARA	658	Coal	3,049.59
		Oil	670.62
		Gas	1,394.89
CENSARA Total			5,115.10
Total	2,425	Coal	8,491.23
		Oil	2,355.87
		Gas	4,425.26
Grand Total NOx Mass			**15,272.36***

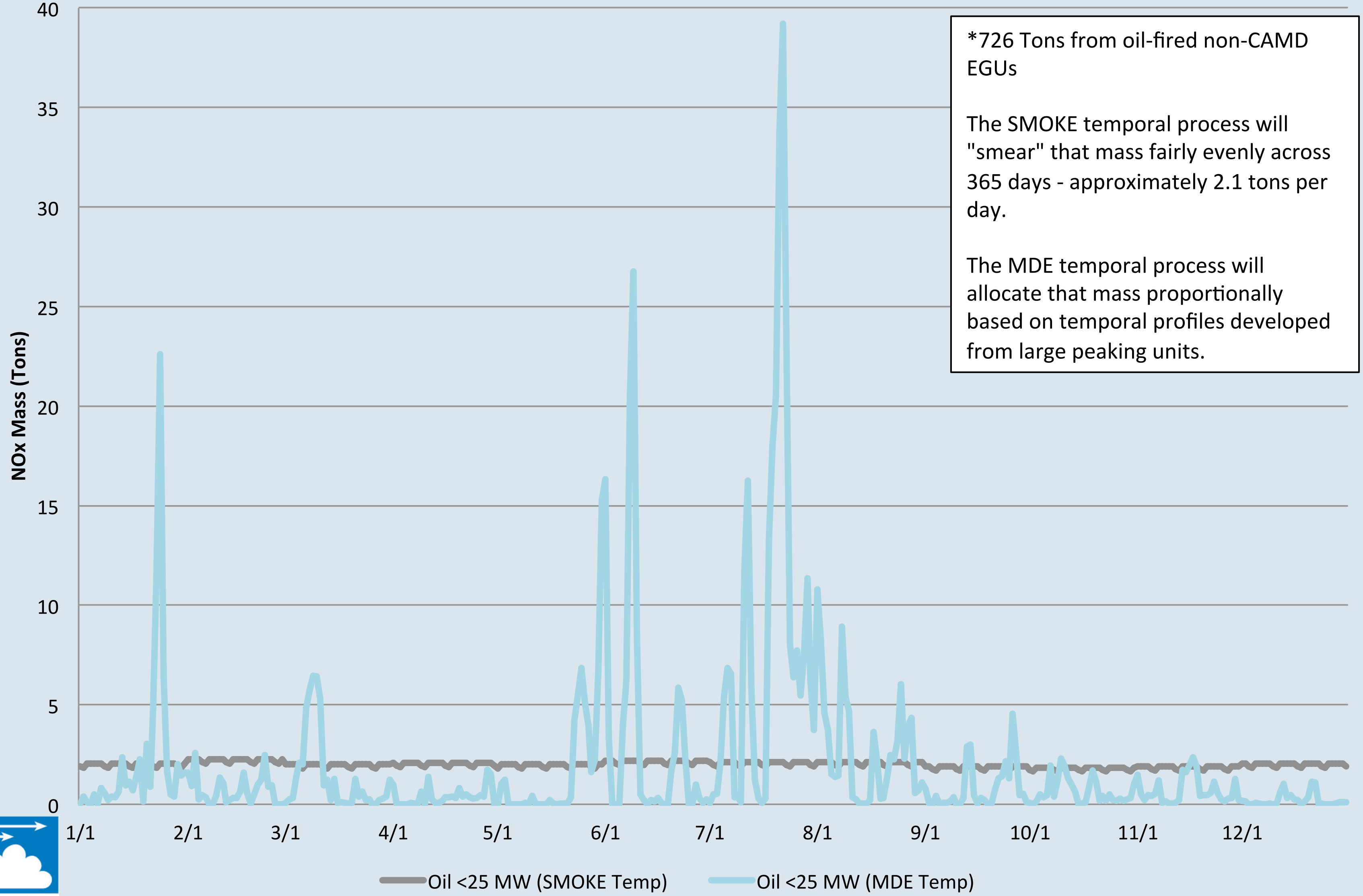


The proportion of emission attributed to fuel types varies by region. For example, in SESARM, emissions from small gas-fired units have the largest impact and emissions from coal and oil-fired units are nearly equal. Conversely, in MANEVU+VA emissions from oil-fired units have the largest impact and emissions from gas-fired units have a lesser impact.

15,272 Tons of NOx is not a significant amount of mass to be concerned about. The top 3 NOx emitters in 2011 could easily emit more NOx than all of the 2,438 units identified in this analysis. But *where* that NOx mass is allocated temporally is very important.

*This NOx mass is preliminary. Subject to change as states provide feedback on list of units.

MANEVU+VA Oil Non-CAMD EGUs
2011 Daily NOx Emissions



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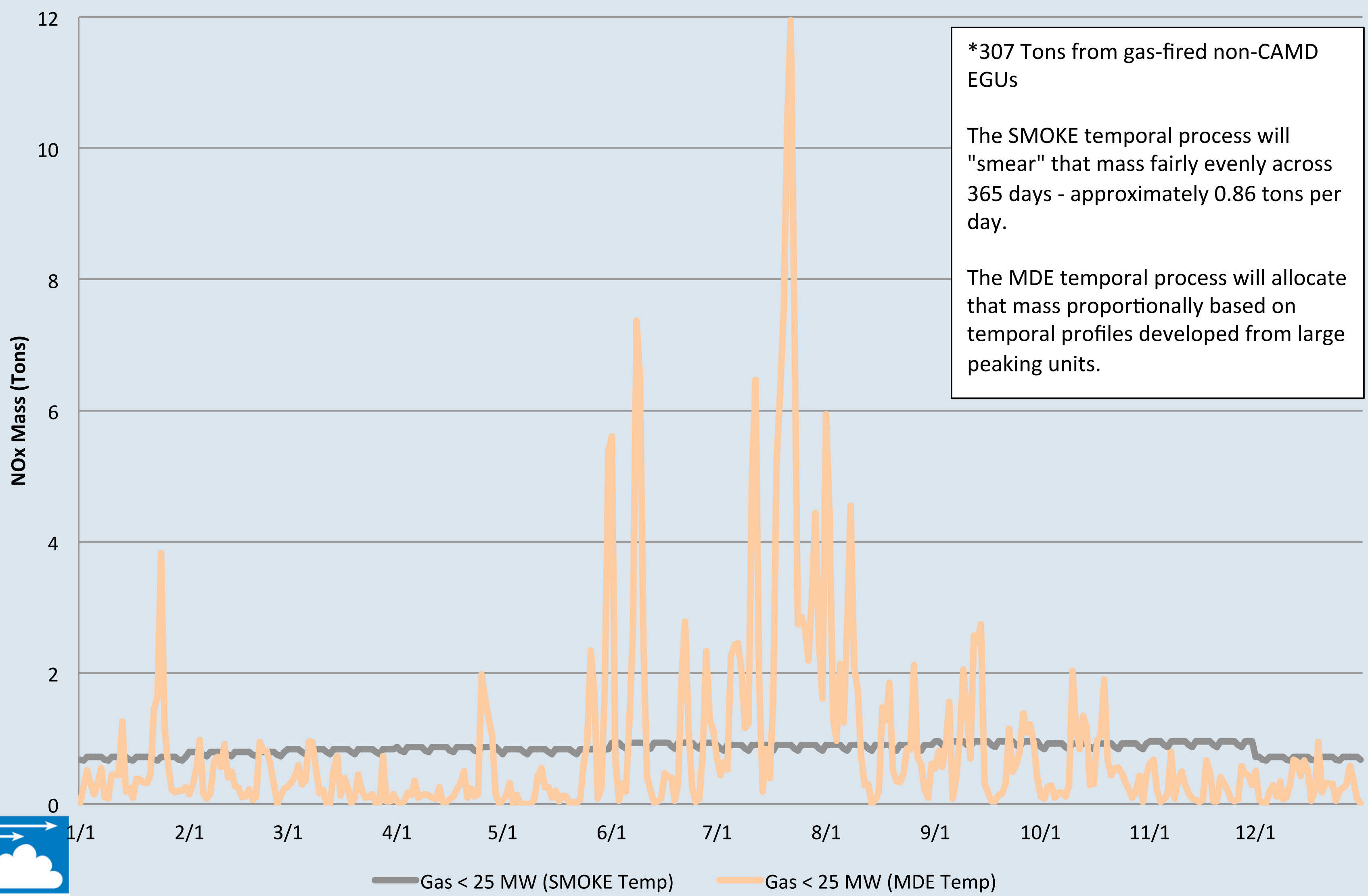
MANEVU+VA Gas Non-CAMD EGUs
2011 Daily NOx Emissions



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Consumer Products/ AIM

- At the 2015 Annual Meeting, OTC asked EPA to update its AIM rule using the OTC Model Rule as a starting point
  - http://www.otcair.org/upload/Documents/Formal%20Actions/Statement%20to%20EPA%20on%20AIM012.pdf
- At the 2013 Annual Meeting, OTC requested EPA to adopt the OTC Model Rules for AIM and Consumer Products as National Rules.
  - http://www.otcair.org/upload/Documents/Formal%20Actions/Statement_AIM.pdf

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Voluntary Program

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

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Other SAS Committee Updates

RACT Workgroup

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

Vapor Recovery

- Delaware and Maryland have proposed regulation for the Stage II program
- Continue to look at ways to improve Stage I

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Questions?

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