



## **OTC/MANE-VU Committees Online Stakeholder Meeting**

Mobile Sources Committee  
Modeling Committee  
Stationary & Area Sources Committee  
Technical Support Committee



**Friday, September 21, 2018**

### **Attendees**

CT – Merrily Gere, Paula Gomez, Lakiesha Christopher, Raquel Herrera  
DC – Ali Catena, Joseph Jakuta  
DE – Gene Pettingill, Mark Prettyman, David Fees  
MA – Christine Kirby, Glenn Keith, Mark Wert, Azin Kavian  
MD – Tad Aburn, Michael Woodman  
ME – Tom Downs, Rich Greves  
NH – Jeff Underhill  
NJ – Judy Rand, Frank Steitz, Stella Oluwaseun-Apo, Tom McNevin, Kenneth Ratzman, Marcus Tutt, Shan He  
NY – Rob Sliwinski, Winston Hao, Eric Zalewsky, Jeongran Yun  
PA – Bryan Oshinski, Randy Bordner, Daniel Roble  
RI – Karen Slattery  
VT – Deirdra Ritzer  
Tribal Nations -  
EPA - Beth Murray, Daniel Birkett, George Bowker, Tim Leon-Guerrero, Linda Longo, Reema Loutan, Anthony Gardella, Kirk Wieber, Anne McWilliams, Melinda Beaver  
NPS - Pat Brewer  
MARAMA – Susan McCusker  
NESCAUM – Paul Miller  
OTC – Andy Bodnarik, Shyamala Rajan, David Foerter  
James Romanski - Yale University  
Jayme Graham - Allegheny County

### **Stakeholders**

Skipp Kropp - Steptoe & Johnson, for Midwest Ozone Group  
Jamie Song - MECA  
Gene Trisko - representing 5 labor unions  
Kathleen Stanton - American Cleaning Institute  
Joe Yost - Household & Commercial Products Association  
Will Ollison - American Petroleum Institute  
John Kinsman - Edison Electric Institute  
Cathy Waxman - National Grid  
Douglas Greenhaus - National Automobile Dealers Association  
Georgia Murray - Appalachian Mountain Club

Chris Huettig - KARNAK  
Sophia Hill - M.J. Bradley & Associates  
Stuart Parker - IWP News  
Amena H. Saiyid - Bloomberg Environment

## Andy Bodnarik Notes:

- **Welcome & Goals**
  - The purpose of this meeting is to update stakeholders on the activities of the OTC Mobile Sources Committee, the OTC Modeling Committee, the OTC Stationary and Area Sources Committee and the MANE-VU Technical Support Committee since the last meeting with stakeholders.
- **OTC Modeling and Inventory Update** - Jeff Underhill (New Hampshire DES)
  - So far there were 20 ozone exceedance events of the 8-hour ozone NAAQS during the 2018 ozone season
  - During the 2018 ozone season there seems to be an upward trend in maximum 8-hour ozone concentrations
  - A maximum 8-hour ozone value of 115 ppb was measured at one location in the OTR
  - 2018 ozone season data is the 1<sup>st</sup> of three years to be considered for whether or not 2015 Ozone NAAQS marginal non-attainment areas have met this NAAQS.
  - 2018 ozone season data will be used in calculating the design values for the 2015 Ozone NAAQS
  - 2018 will replace 2015 in the next design value calculations. 2015 and 2018 data show a lot of similarities
  - Data from 2020 through 2023 will be used to establish if attainment is achieved with the 2015 Ozone NAAQS for marginal and moderate ozone non-attainment areas
  - See slide 10 of Jeff's presentation for 8-hour ozone trends in the OTR
  - See slide 11 of Jeff's presentation for 2015 Ozone NAAQS Planning Timeline
  - See slide 13 of Jeff's presentation for comparison of OTC 2020 and 2023 CMAQ Modeling using the GAMMA inventory
    - Includes data on "problem children monitors in CT, MD & NY"
  - See slide 15 of Jeff's presentation for comparison of 2023 OTC/MARAMA GAMMA modeling with EPA 2023 "en" modeling
    - Overall OTC/MARAMA GAMMA modeling NOx emissions are about 2% higher than EPA "en" modeling
    - Differences are located mostly in the EGU and Non-EGU Point sources NOx files
  - See slide 16 of Jeff's Presentation for information on how emissions effect modeling results
    - Photochemical models process emissions & predict hourly and maximum daily 8-hour ozone concentrations
    - Modeled ozone concentrations are converted to future year design values (DVs) by applying a Relative Response Factor (RRF) calculated by modeled changes in emissions in combination with the base year design value
    - **Because the model considers relative differences, higher emissions may not necessarily mean higher predicted DVFs**
  - See slide 17 of Jeff's presentation "The Why Does it Matter?"
    - **Higher emissions may not necessarily mean higher predicted DVFs**
    - Location of the emissions matters because locations near the source of the emissions may see large differences in DVFs
    - Source contribution modeling results are also affected (e.g., if a sector's emissions are reduced relative to other sectors, then the importance of that sectors is also reduced

- The chemistry of the model is also changed (e.g., lower overall emissions may artificially shift the model past the “tipping point” leading to potentially inflated model responses to emissions changes)
  - See slides 21 – 23 for information from Susan McCusker on the 2016 Inventory Collaborative project
  - See slide 26 of the presentation for conclusions and next steps
    - Ozone design values in the OTR are no longer trending downward
    - Modeling indicates that:
      - Portions of the OTR will not attain the 2008 Ozone NAAQS by their attainment dates (2017 & 2020)
      - Portions of the OTT will not attain the 2015 Ozone NAAQS by their attainment dates (2020 & 2023)
      - CAMx modeling predicts OTR attainment of the 2008 Ozone NAAQS, but CMAQ modeling does not
    - The EPA/States Collaborative draft 2016 Alpha modeling platform is nearly ready for testing
    - Draft Beta emissions will be projected to future years (2023 & 2028)
    - Final version 1 (V!) will include inventory corrections and other improvements
    - OTC Modeling Technical Support Document expected to be completed in early October 2018
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- **OTC Mobile Source Committee Update** - Christine Kirby (Massachusetts DEP)
  - Current charge to the MSC (November 2017)
    - Goal : To prepare potential mobile source strategies for Fall 2018
    - Strategies include:
      - Develop an OTC Idling Toolkit of Education Materials
      - Good Neighbor SIP Strategies
        - Calculate emission reductions inside and outside of the OTR from the recommended mobile source GN SIP strategies
        - Develop recommendations for additional strategies for consideration
      - Report on EPA’s progress on critical federal strategies
      - Report on state progress on VW settlement, ZEVs, DERA, SmartWay, and EPA’s Ports Initiative
      - Additional Transportation Strategies
  - Idling Toolkit
    - Completed review of available resources (see Dropbox for materials)
    - Developing Idling Toolkit - Educational/Information Brochures
      - General brochure - text completed
      - School Bus brochure – text completed
      - Reefers/e-Tru (electric trailer refrigeration units) brochure being prepared
      - Motor Coach brochure being prepared
  - Good Neighbor SIP Strategies
    - Identified three mobile source NOx control strategies
      - Heavy Duty Diesel Inspection & Maintenance (I&M)

- Aftermarket Parts
    - Idling Reduction
  - Identified geographic area to focus on: states within the OTR plus CSPAR Update states
  - Starting to collect data on:
    - Total NOx emissions
    - Potential emission reductions
    - Existing control measures (on the books & on the way state and federal rules, voluntary measures)
    - Emission limits
    - Cost of implementation
    - Ease of implementation, etc.
  - GN SIP Calculations: Draft NOx Reductions (see slide 5 of the MSC presentation)
    - Aftermarket converters approximately 2% NOx reduction
    - Idling (Onroad) approximately 16% NOx reduction
    - Idling (Non road) approximately 13% NOx reduction
    - Idling ( Improved MD Only) %NOx reduction to be determined
  - OTC Efforts on Aftermarket Converters (see slide 6 of the MSC presentation)
    - 2011 - recommendation for updated policy in response to 2009 Resolution called for :
      - Mass based performance
      - 50, 000 mile warranty
      - Testing
      - Aging: allow RAT-A or dynamometer
    - June 2014 - Statement on completion of model rule for aftermarket converters ( <https://otcair.org/document.asp?fview=modelrules> )
    - June 2017 - Adopted state at Spring Meeting calling on EPA to update the federal aftermarket convertor policy (letters of support sent from MECA, WA, CO)
      - October 17, 2017 received response from EPA
    - June 2018 - Engagement with EPA OAR AA Bill Wehrum at OTC Caucus
    - Next Steps - Update from EPA on future action
  - OTC Model Rule/CARB Program (see slide 7 of MSC presentation)
  - Industry Voluntary Program (see slides 8 & 9 of MSC presentation)
  - OTC States” Updates on VW settlement BMPs (see slide 10 of MSC presentation for the list of state information on status of BMPs)
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- **OTC Stationary & Area Source Committee Update** - Francis Steitz (New Jersey DEP)
    - SAS Charges – workgroup progress & products

- Good Neighbor SIP strategies: control limits, cost effectiveness, emissions reduction benefits
- Uncontrolled & Poorly Controlled EGUs – input for Modeling completed
- NG Pipeline Compressor Prime Movers: data ready for EMF input for Modeling
  - Final emissions inventory for EMF Control Packets completed
  - EMF control packets under development
  - Cost effectiveness - control cost estimates developed based on data from Mojave Desert AQMD IC Engine NOx RACT analysis, PA GP-5 TSD and DE data
- Charge Addendum on High Electricity Demand Day (HEDD) - work in progress
  - unit inventory - completed
  - choice of 2017 HEDD episodic days - completed
  - control limits - limits proposed
- Products awaiting the Commission's final approval
  - Consumer Products Phase V Model Rule
  - NG Pipeline Compressor Prime Movers Model Rule
  - Whitepaper on strategies to reduce High Electricity Demand Day (HEDD) emissions
- SAS Charge Addendum – 3 Items
  - Perform following technical analysis of potential strategies for consideration and action by the OTC, to be completed & presented to the Air Directors by the 2018 Fall OTC Air Directors' Meeting:
    - Data from analyses conducted by CT, DE, MD, ME, & NJ on high emitting EGUs on HEDD
    - Data needed to perform episodic modeling of 2017 daily NOx emissions from ≥15 MW EGUs that report to CAMD & located within CSAPR-U/OTC states
    - Evaluate a novel cost effectiveness metric based on ratio of Daily Emissions Reduction (tons/day) to Annualized Cost (in Million \$)
  - SAS Charge Addendum - Item 1
    - Collected data from analyses conducted by CT, DE, MD, ME, & NJ on high emitting EGUs on HEDD
    - Collected data needed to perform episodic modeling of 2017 daily NOx emissions from ≥15 MW EGUs that report to CAMD & located within CSAPR-U/OTC states
  - SAS Charge Addendum - Item 2
    - Collected data needed for Episodic modeling
    - Reviewed data needed for Episodic Modeling - Conclusions
      - From 2017 emissions perspective, July 19 - 22, 2017 is a particularly good episode to model
      - Hourly data already available (saving a month's worth of effort)
      - Meteorology of this episode aligns with that of the previously modeled, July 19 - 22, 2011 episode, despite some differences
  - Episodic Modeling - recommendations & next steps:

- Model July 19 - 22 (with appropriate ramp-up days) using current 2011 modeling platform & Beta 2017 inventory
- Perform brute force (zero out) modeling on emissions from EGUs  $\geq 15$  MW that report to CAMD & located in OTC/CSAPR-U\*

\*HEDD Workgroup will finalize this list and provide to Modeling Committee

- SAS Charge Addendum Item #3
  - Currently evaluating a novel cost effectiveness metric based on ratio of Daily Emissions Reduction (tons/day) to Annualized Cost (in Million \$)
  - Traditional cost benefit analysis is based on Annual cost/annual emissions reduction
    - OK for annual NAAQS &/or baseload units
    - Not appropriate for short-term NAAQS (e.g. 8h O3) or peaking units
    - Inappropriately eliminates peaking units from consideration for controls, based on calculated low annual cost benefits
  - New cost effectiveness metric
    - DERACR = Daily Emission Reduction to Annual Cost Ratio
    - Daily emissions reduction (TPD) to Annualized Cost Ratio (TPD/millions)
      - Coal EGU boilers – 0.8 TPD/Million \$ annual cost
      - Simple Cycle Combustion Turbines – 7.5 TPD/Million \$ annual cost
    - Conclusion: An SCR on a gas or oil fired SC turbine can be almost 10x more cost effective than an SCR on a coal fired power plant, when comparing ratios of daily emission reductions to annual cost
- **MANE-VU Technical Support Committee – Rob Sliwinski (New York State DEC)**
  - Overview of:
    - Regional Haze SIPs -2<sup>nd</sup> Planning Period Schedule
    - Visibility Report -Monitoring Data
    - Emissions Inventory Trends Report
    - Consultation process /MANE-VU Ask
    - Air Quality Modeling
    - SIP Writing
  - See slide 3 of Rob’s presentation for details on the Regional Haze SIP 2<sup>nd</sup> Planning Period Schedule
  - Summary of TSC work
    - The “Ask” is final for the 2nd Planning Period
    - Both Intra-and Inter-RPO consultations are done and documentation finished
    - Inventory development for base case and control case modeling is completed and modeling is completed
    - Modeling TSD is currently under 21-day review period (ends Sept. 19, 2018)
    - States are in various stages of SIP writing
- **Stakeholder Comments**

- **Eugene Trisko (Labor Union Representative)**
  - Presentation titled: Comparison of emission trends, Clean PowerPlan and proposed ACE rule, 2005-2035
  - Comparison of CPP and ACE emission trends
    - EPA's RIA for the proposed Affordable Clean Energy (ACE) rule suggests that the rule will slightly increase emissions of criteria pollutants (SO<sub>2</sub>, NO<sub>x</sub>, etc.) and CO<sub>2</sub> in 2025 and later years relative to the Clean Power Plan.
    - The proposed ACE rule would require coal power plants to achieve energy efficiency improvements through a specific list of boiler and other equipment upgrades, determined by states on a unit-by-unit basis.
    - Analysis of longer term-emission trends from EPA's RIA (HRI 2% case) and CAMD database shows that there is no significant environmental performance difference between the two rules.
    - Both rules also meet the Obama Administration's 32% target for EGU reductions needed to meet the Paris Agreement.
    - Criteria emissions in perspective
      - Both rules achieve large reductions in SO<sub>2</sub> and NO<sub>x</sub> emissions from 2005 to 2035: an 88% reduction for ACE and an 89% reduction for CPP (combined SO<sub>2</sub> and NO<sub>x</sub>).
      - 2005-17 reductions reflect other EPA programs such as CAIR, CSAPR, MATS, plant retirements, and greater dependence on natural gas.
      - Both rules also achieve major criteria emission reductions from 2017 to 2035: combined emissions of SO<sub>2</sub>/NO<sub>x</sub> – the principal precursors of PM<sub>2.5</sub> -decline 31% with ACE and 34% with CPP. These trends signal steady improvements in air quality regardless of the rule in place.
    - Document provided: Copy of slides - Labor stakeholder comment OTC Webinar 092118.pdf
- **Will Ollison (American Petroleum Institute)**
  - O<sub>3</sub> Inlet Height Gradient
    - *Lowering monitor inlet heights where feasible to 2 meters, within the allowable 2-15 meter range, better represents population outdoor exposure and improves O<sub>3</sub> NAAQS compliance.*
    - *Substantial 2017 near-ground 10-2 meter ozone MDA8 gradients averaged about 5 ppb at Westport, CT over the 15 highest days (with an hourly value ≥ 70 ppb) and the 4<sup>th</sup> highest 6.2-2 meter MDA8 gradient was 4 ppb, where conventional FEMs (T400) and conventional wisdom hold unstable daytime conditions should prevent such gradients.*
  - O<sub>3</sub> Monitoring Recommendations
    - The 2017 4-5 ppb inlet height bias is especially notable given the O&M factors found likely to reduce Westport O<sub>3</sub> levels.



- Passivation of new PM filter O3 demand should become a routine installation task (e.g., a 10-minute 900 ppb O3 filter treatment with appropriate O3 outlet scrubbing).
    - Photometer cell and shelter temperatures (1-minute) should be periodically logged & checked for O3 impacts.
    - Photometer internal shelter inlet line heating/insulation continuity should be ensured.
    - Photometer inlets should be positioned to avoid HVAC exhaust plume impacts.
  - Other documents provided:
    - Draft NAAMC Poster for Portland OR August Meeting ARL 8\_7a\_18.pdf
    - EPA NACAA Abstract 5\_23\_17.pdf
- Amena H. Saiyid (Bloomberg Environment): question for frank: so what is OTR advocating. that utilities install controls at simple cycle units.
  -