

2009 Ozone Season

OTC Fall Meeting 2009

November 5th

Baltimore, MD



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COMMISSION

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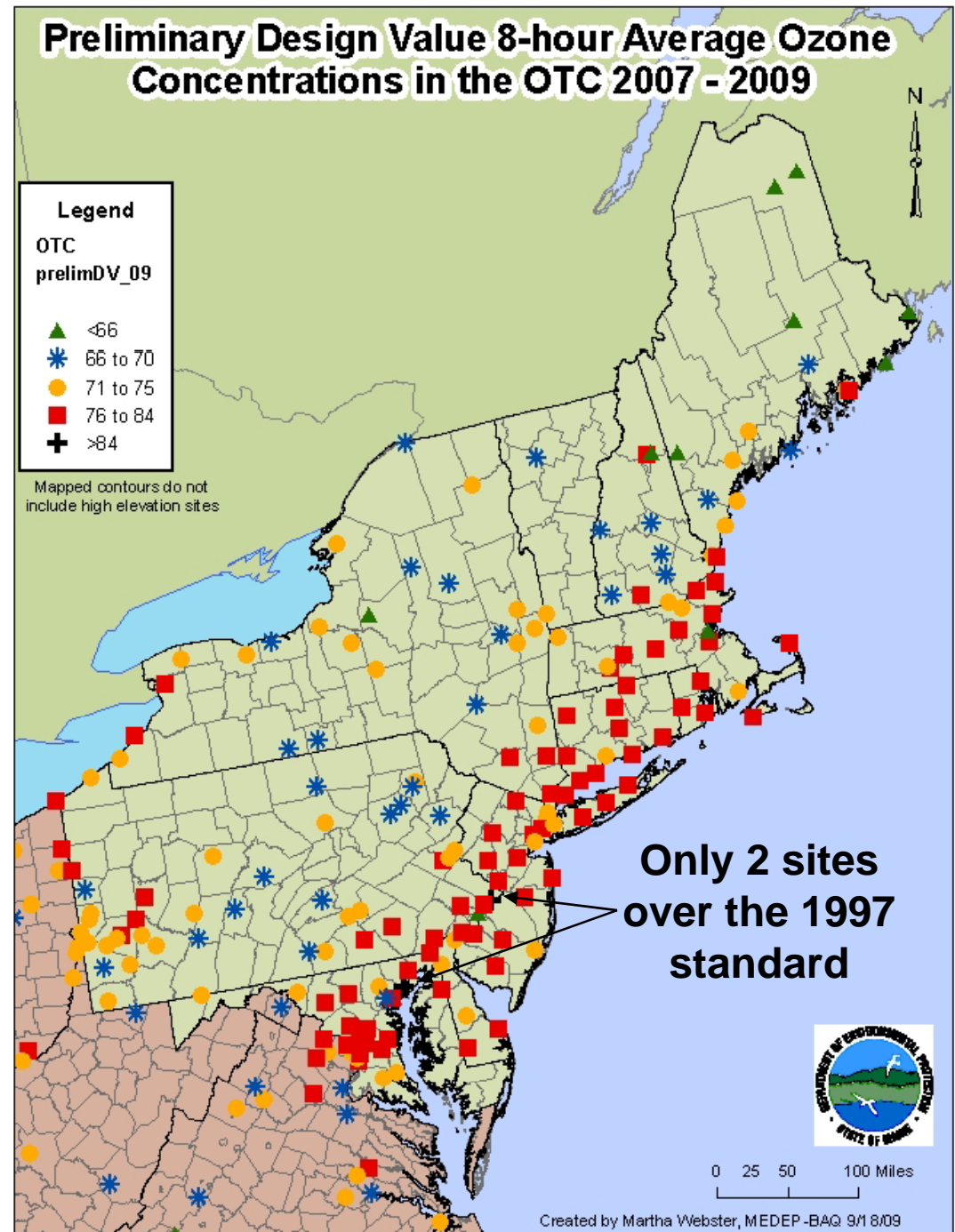
Current Design Values

Projected 2007-09 Design Value

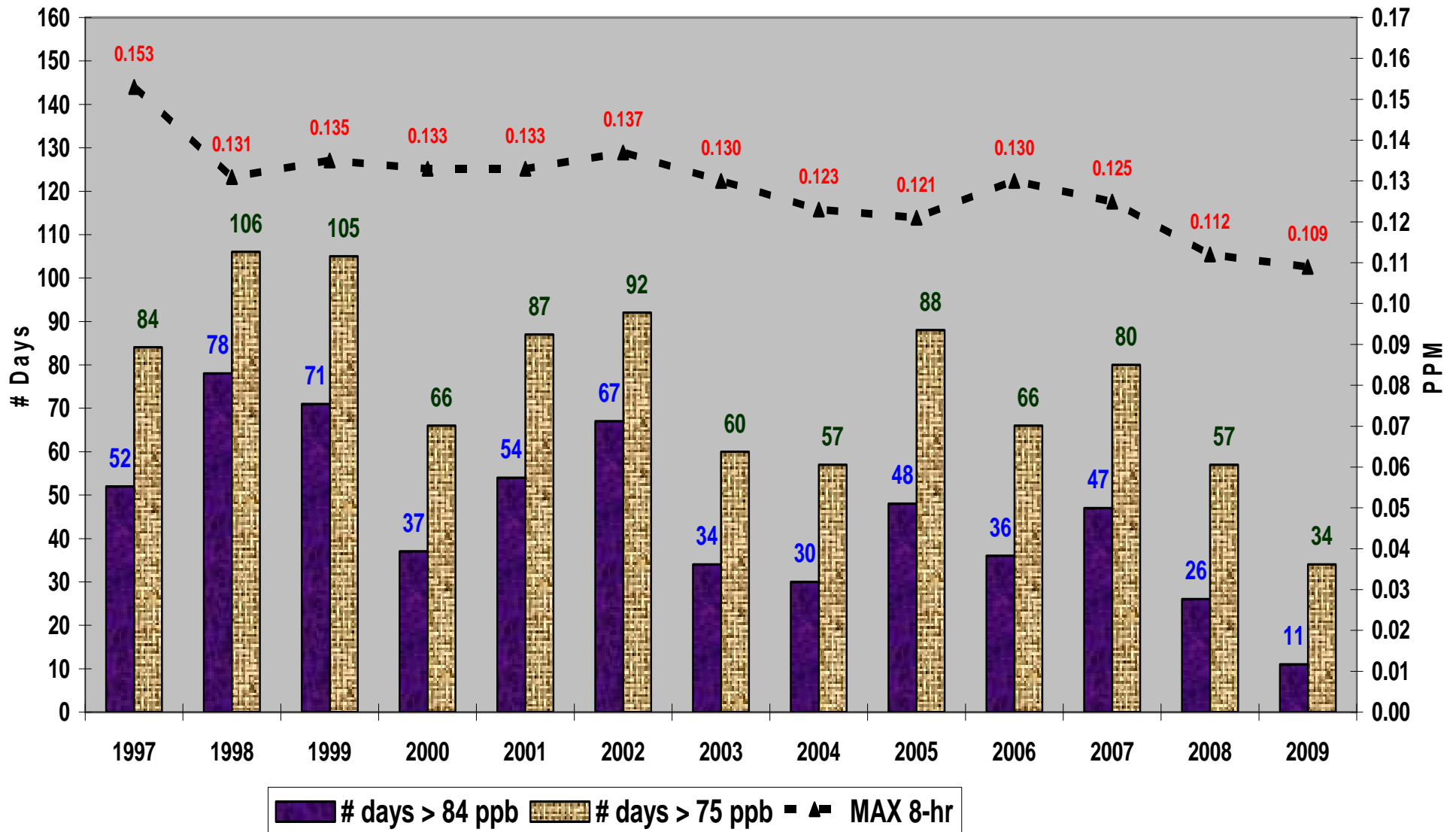
Note: Includes two years of cooler and wetter weather and a down economy.

2009 data not yet final

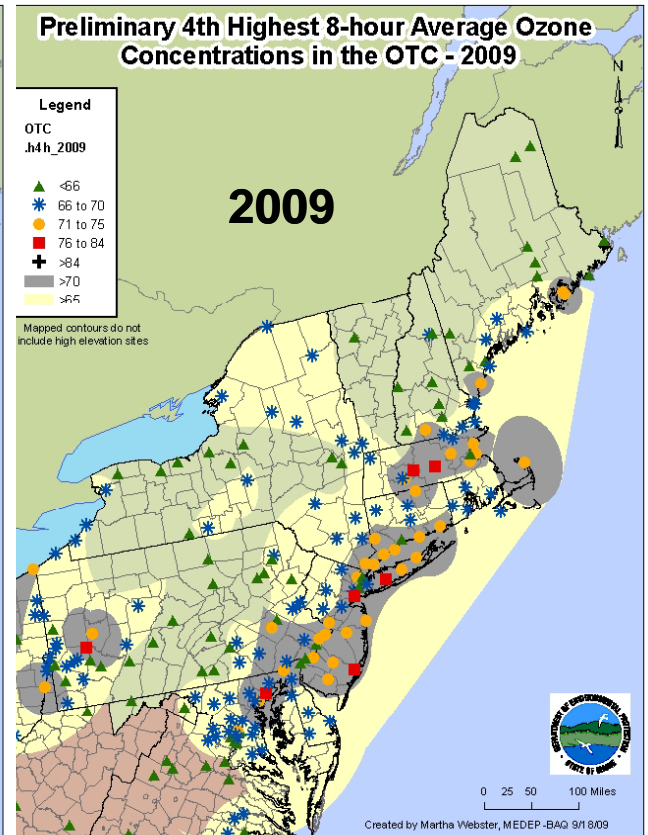
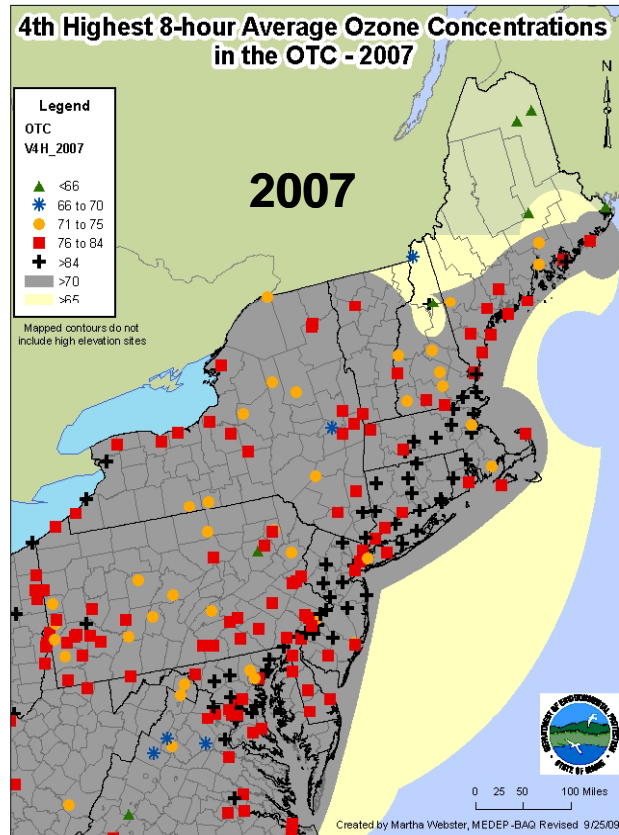
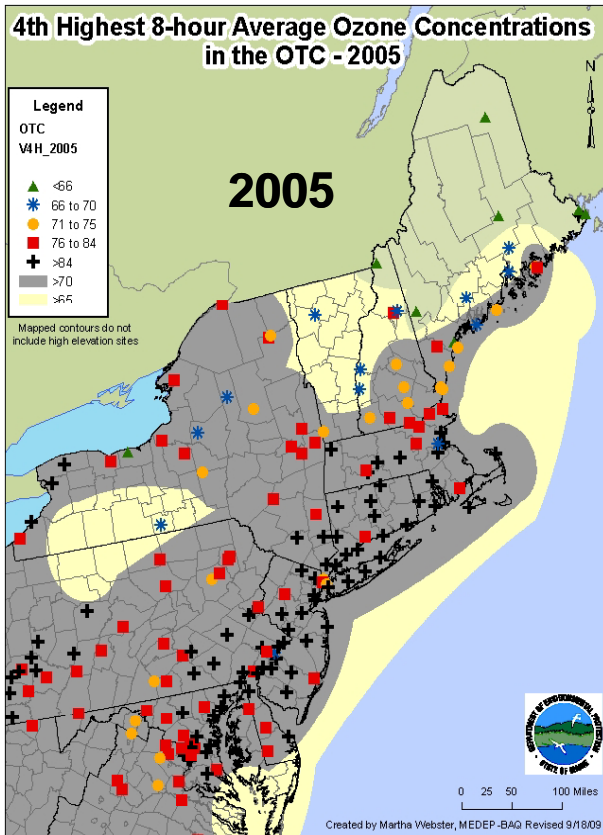
Note: Red (■) and Black (+) symbols represent monitors > 75ppb Ozone



OTR Ozone Day Trends 1997-2009*

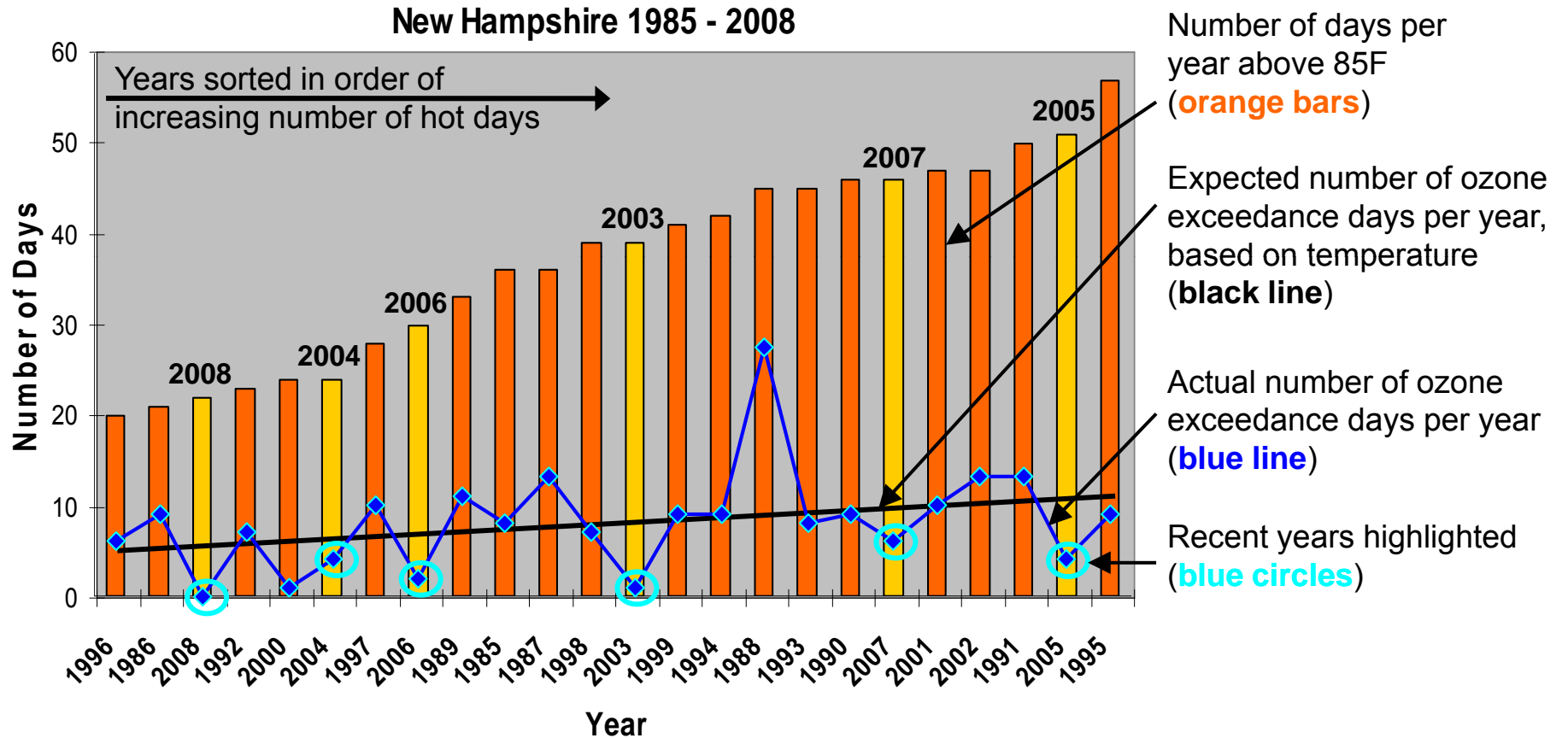


Comparison of 4th High Ozone Values



Note: Red (■) and Black (⊕) symbols represent monitors > 75ppb Ozone

Ozone Days vs High Temperature Days



The number of exceedances drop below the ozone trend line in recent years indicating that the recent decline in ozone levels is not solely due to a decrease in summer temperatures.

Emissions and Modeling Update

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Emission Inventory Update

- Stakeholder outreach
- A preview of point source trends
- Review of inventory data sources
- Next steps
- Key issues

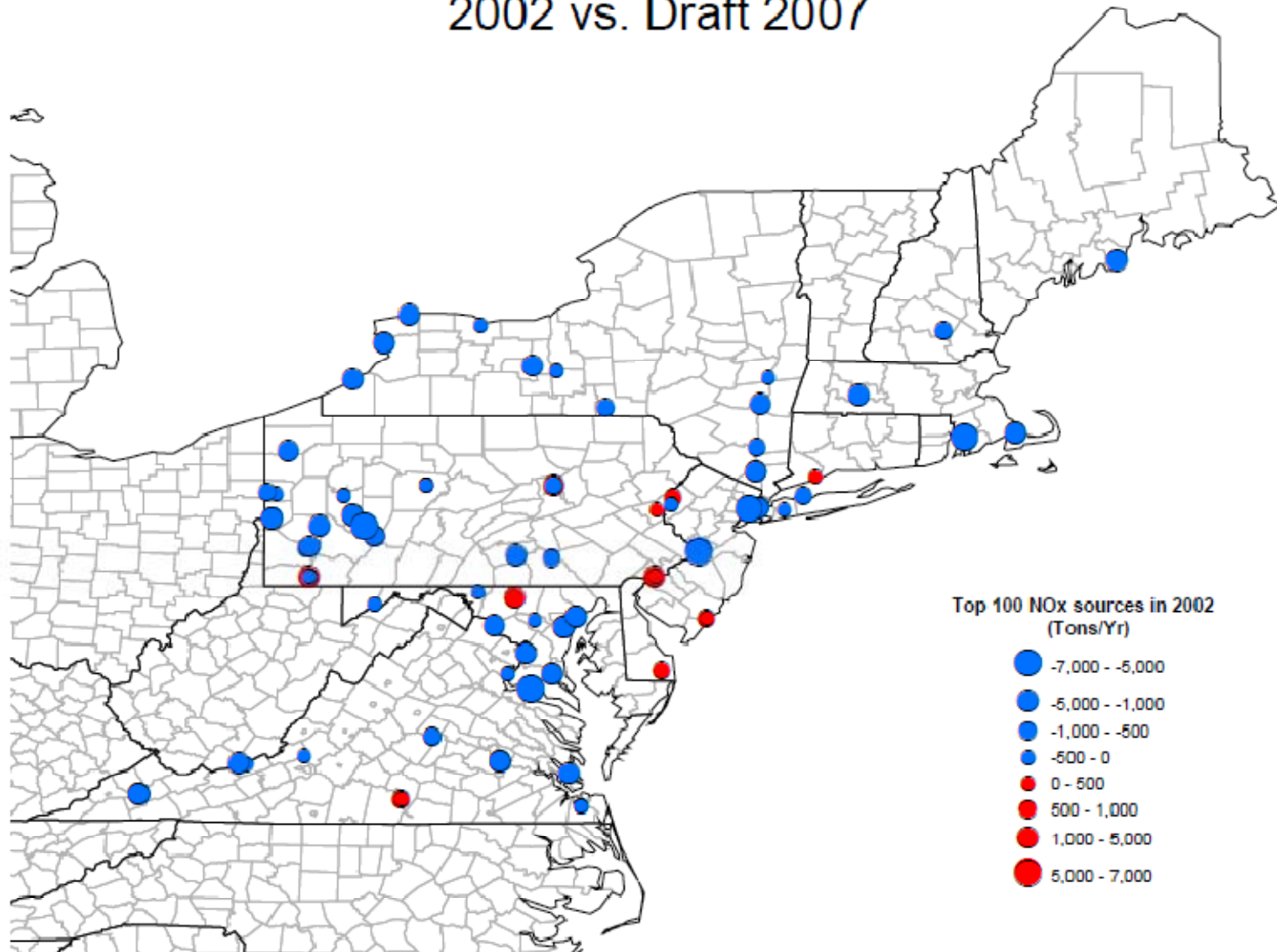
2007 Point Sources

External Review of Annual Data

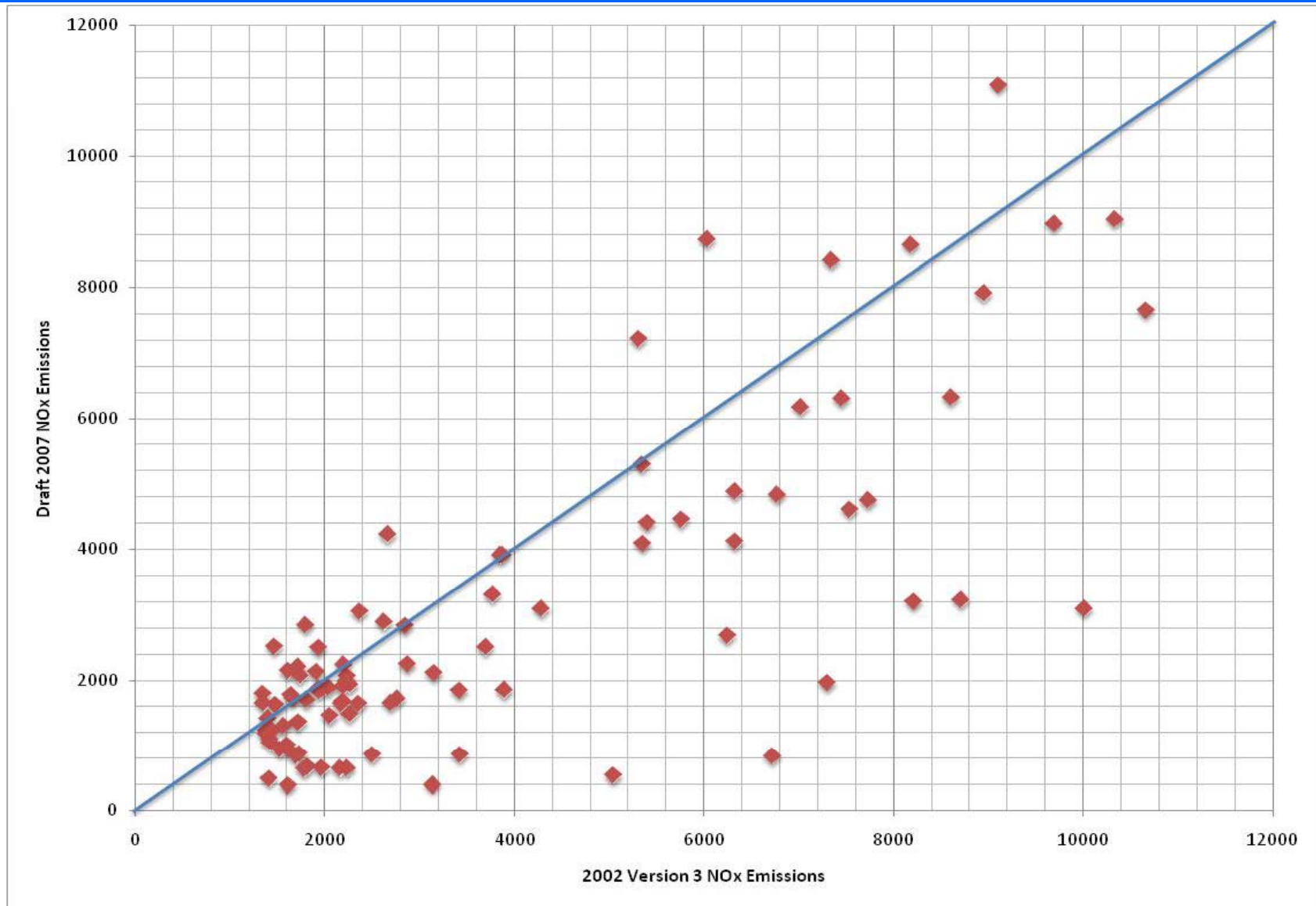
- **September 2-3, 2009**
Presentation at the OTC Committee Meeting
- **October 6, 2009**
Draft 2007 Point Source files posted by MARAMA for Stakeholder review.
- **October 21 at 10:00 A.M**
Conference call with states and stakeholders
- **Comments due by November 3, 2009**
- **November 2009**
Completion of 2007 point source inventory

Top 125 NOx Sources in OTR+ VA

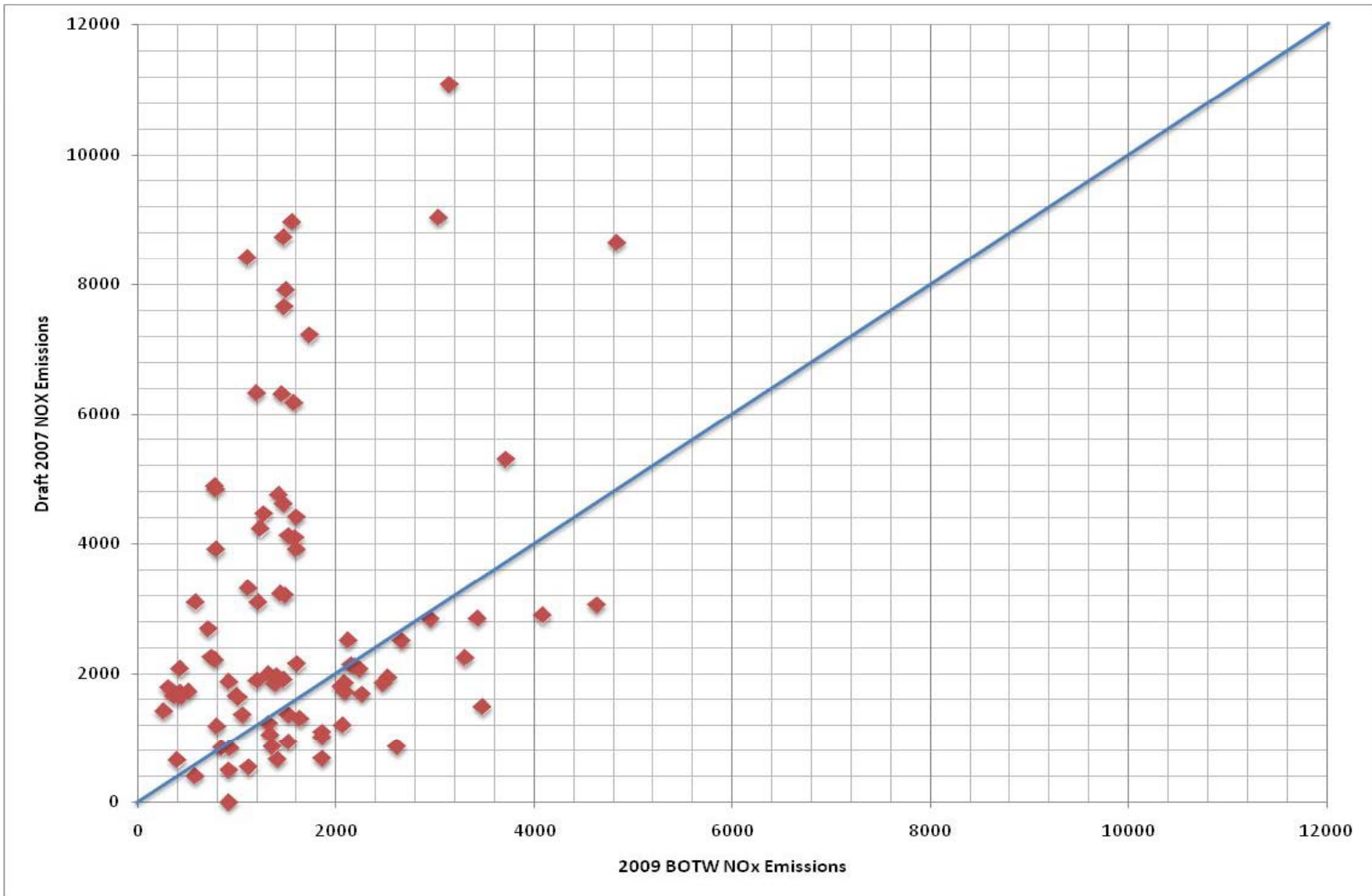
Change in Annual NOx Emissions from the Top NOx Sources
2002 vs. Draft 2007



Emission Changes in Top 125 NOx Sources Draft 2007 vs. 2002



Emission Changes in Top 125 NOx Sources Draft 2007 vs. 2009 BOTW



Area Source Improvements

- **Agriculture Ammonia**
 - Updated with 2007 Census of Agriculture.
- **Residential Wood Combustion**
 - EPA/PECHAN Microsoft Access Tool with 2007 population updates.
- **Wildfires**
 - EPA has offered a 2007 wildfire inventory
- **Agricultural Burning**
 - States to provide

Area Source Improvements

- **Other Area Sources**

- States are reviewing methods proposed nationally
- EPA 2008 draft inventory will be starting point

States will provide data to convert EPA's 2008 estimates to 2007.

Temporal Allocation – Point/Area

- Goal: reflect variability in emissions that affect air quality – seasonal, daily, hourly
- Will work with other regions, EPA, and contractor to develop methods focusing on
 - CEM data for EGUs
 - Seasonal ammonia emissions
 - Residential wood combustion
 - High Electric Demand Days

Onroad Mobile Source Data

- EPA requires use of new MOVES model
 - Until new model can be run, previous data will be used
- Options under review
 1. *States to provide input data for NESCAUM to run MOVES*
 2. *States to run MOVES and provide hourly emissions data for their counties*

Nonroad Mobile Source Data

- **Started with EPA 2007 run of the National Mobile Inventory Model (NMIM)**
 - States reviewed and modified the NMIM input data
 - Household and population data were updated.
- **MACTEC reran the NMIM model**
 - States are reviewing NMIM Output.
- **Marine, air, and rail categories**
 - States are reviewing marine data from EPA
 - RPOs updating rail data (ERTAC) – Class I RR data
 - States are reviewing airport data from EPA

Emission Inventory Next Steps

- **November 3, 2009** – Stakeholders comment on 2007 point source annual emissions & stack parameters
- **November '09** – Contractor finalizes 2007 Point Source Annual Modeling Inventory
- **December '09** – States provide area source data/factors
- **December '09** – EPA provides final MOVES model

Key Inventory Issues

- Timely availability of new MOVES model and associated guidance
- Timely availability of base case and future year estimates of emissions data from other regions
- EPA approval of alternative methods for forecasting EGU emissions
- Choice of future years for ozone planning

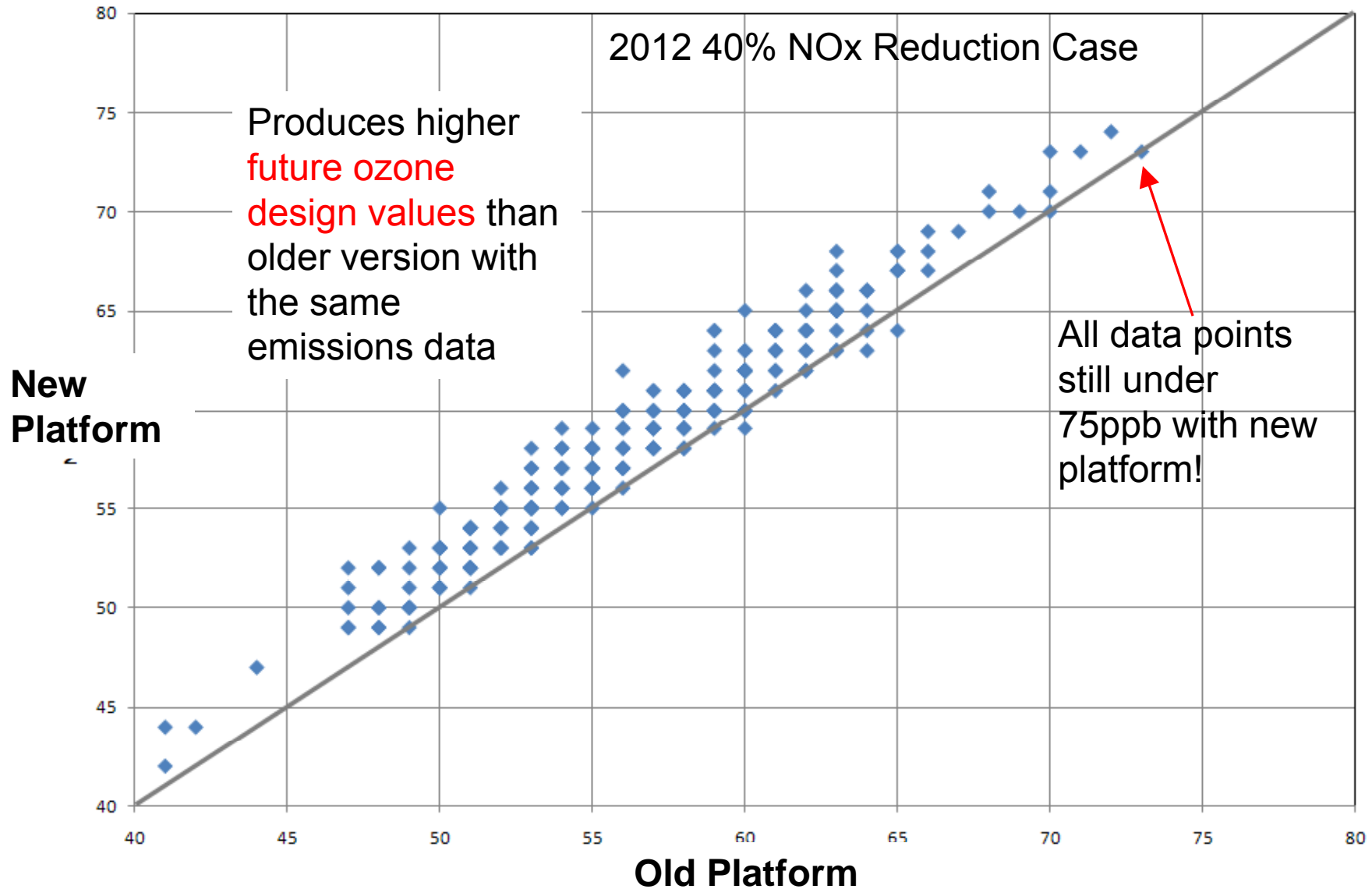
Modeling Update

- SIP Modeling Platform
- HEDD Screening

SIP Modeling Platform

- OTC Platform Upgrades:
 - Most recent version of CMAQ
 - Updated carbon bond chemistry
 - Updated BEIS emissions model for biogenic emissions
 - 2002 MM5 meteorology (upgraded processing)
 - 2005 emissions:
 - interpolated between 2002 and 2009 for all sectors except EGU
 - EGU Emissions obtained from LADCO and upgraded by NJDEP for MANE-VU States
 - Upgraded Emission Processing Model (SMOKE)
- Emissions for base year (2005) and future year 2012 (“NoCAIR” with 40% across the board NO_x reductions - except biogenics) used for platform comparisons

Upgrades to Modeling Platform



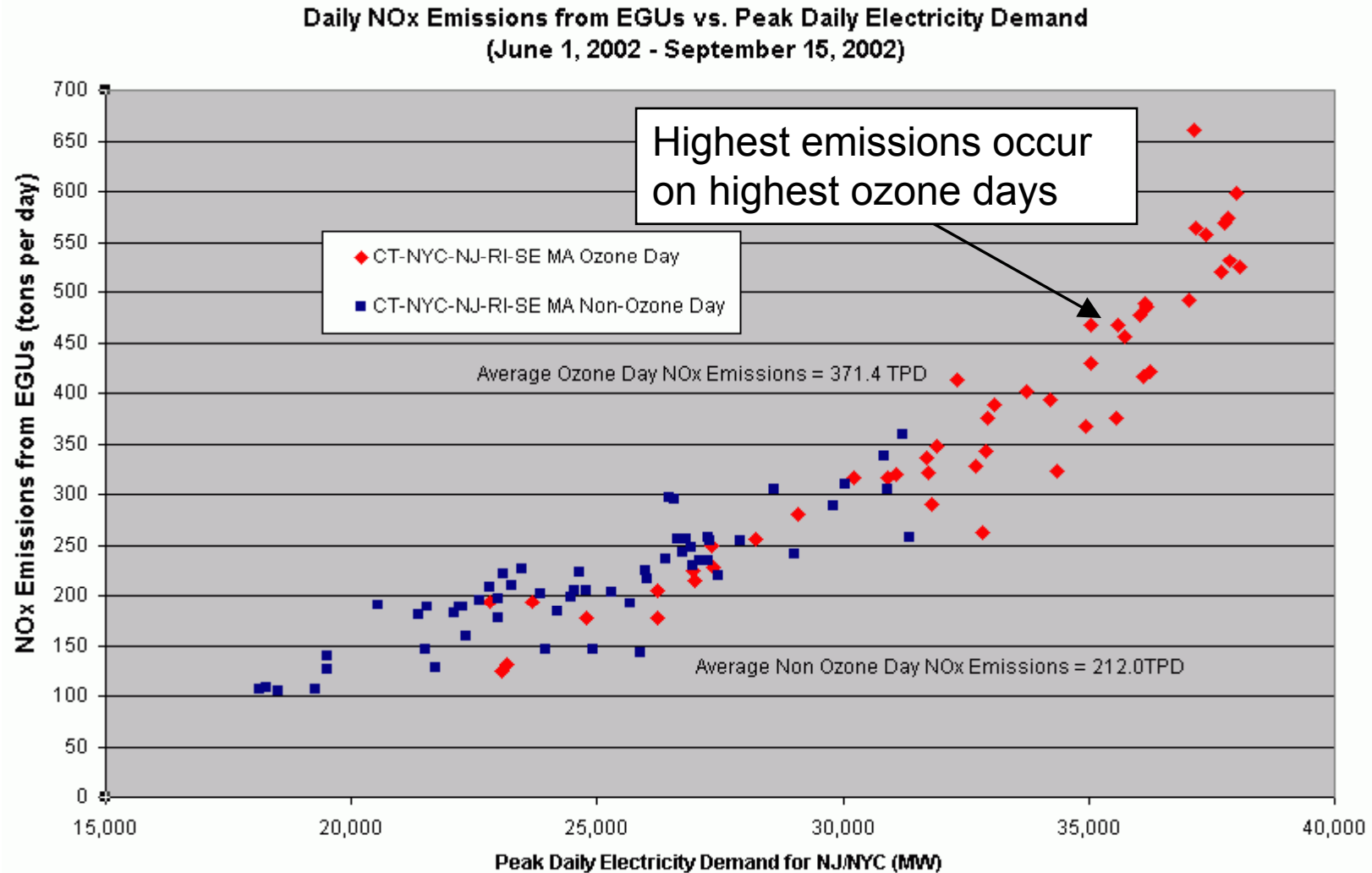
Additional Modeling Platform Upgrades

- Biogenic emissions based on MEGAN
 - Comparative analysis with BEIS
- New Emission Base year - 2007
- Temporalized 2007 EGU emissions from EPA/CAMD
- On road emissions using MOVES model
- Canadian emissions based on 2005/2006
- 2007 meteorology developed with WRF

HEDD Screening

- Purpose
- Status
- Next Steps

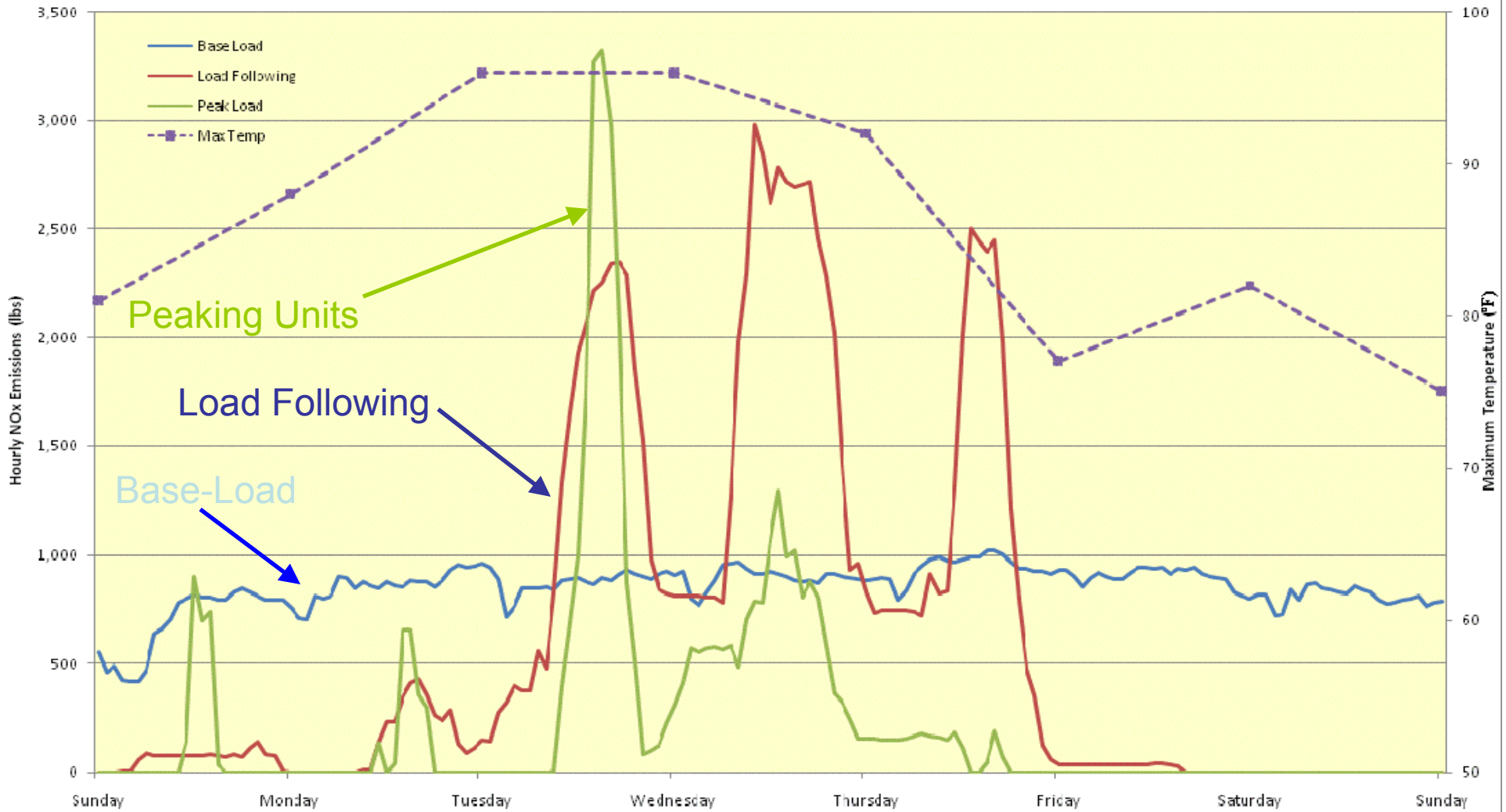
High Electricity Demand Units Tend to Operate on High Ozone Days



Load Following Boilers and Peaking Units Often Have High NOx Emission Rates

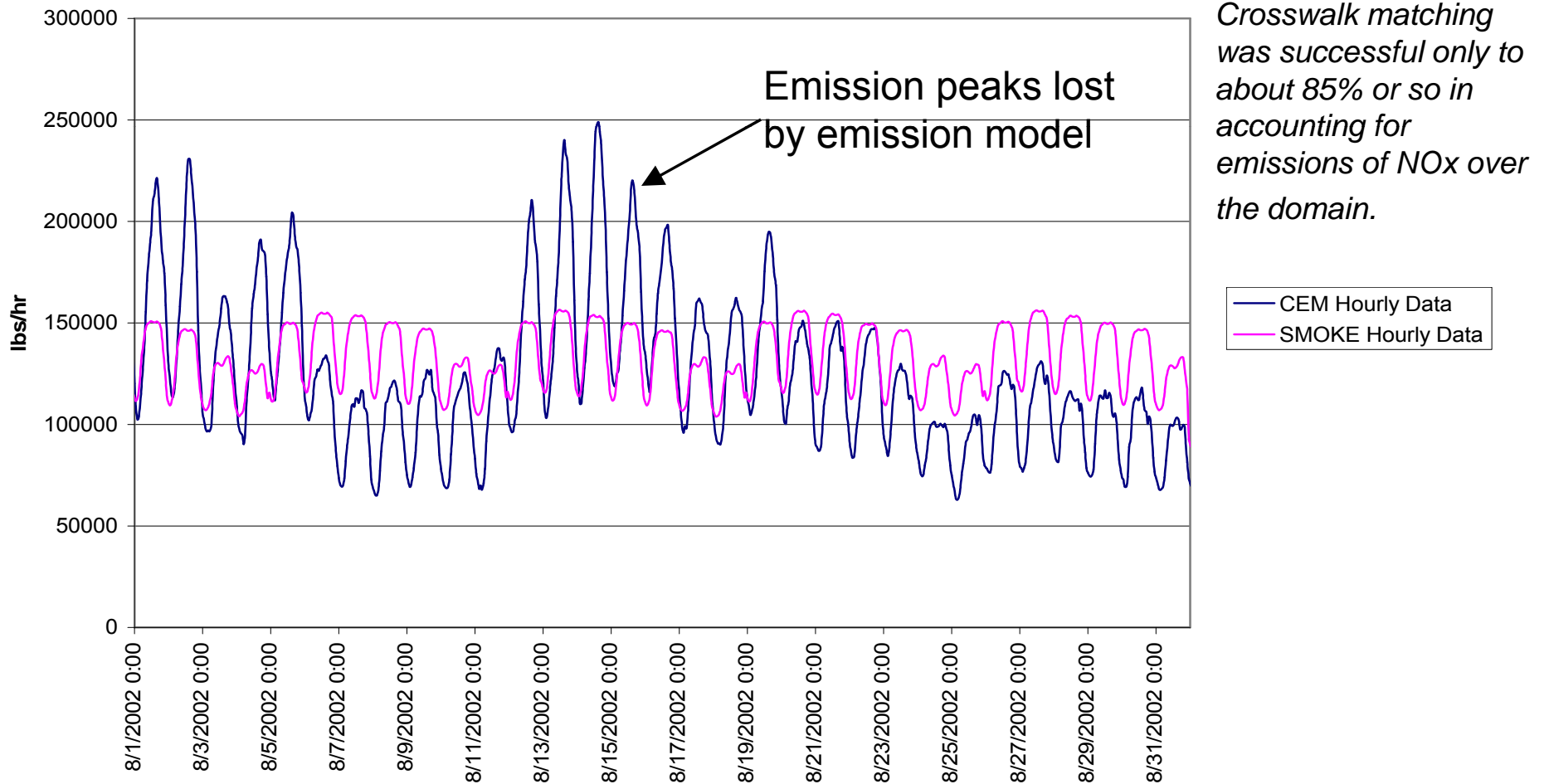
Pounds NOx per hour

Connecticut EGU's June 24 - 30, 2007
SUM of UNIT TYPES: NOx Emissions



Default Emissions Modeling Techniques Miss Important Fluctuations

August 2002 Hourly NOx Emissions in the MANE-VU Region from CEM Data and SMOKE-Processed Point Source Files (Adjusted to Remove the Effect of non-CEM-matched Point Sources)



HEDD Work To-Date

- Determine data needs for temporal modeling of HEDD units
- Research modeling process for handling HEDD
- Propose methodology for assessing importance of HEDD sources on air quality
- Draft Work Plan available for comment

HEDD Screening Modeling

Phase 1 - NJDEP will perform HEDD screening with 2005 emissions and meteorology

- complete in early 2010
 - Test procedures
 - Provide early results

Phase 2 – SIP Quality HEDD Screening Modeling

- conducted in early 2010
 - Work done with SIP Quality Modeling Platform
 - Episode Focus Days: June 27 and August 3, 2007 (15 to 20 episodic days)

HEDD Screening Modeling

Four Recommended HEDD Simulations:

1. 2007 base case using NEW hourly data process
2. 2007 base using emission model default profiles
3. 2007 New process with all identified HEDD units turned off
4. 2007 New process with displaced HEDD capacity redistributed

Next Steps

- Finalize 2007 Base Emissions Inventory
- Secure Upwind and Boundary Emissions
- Complete Model Platform Upgrades
- BEIS/MEGAN Analysis
- Additional Sensitivity Analyses
- Screening of Control Measures
- HEDD Screening Runs
- Model Performance Evaluation
- Stakeholder Meeting in Spring 2010

Questions

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