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Transport Team Update

OTC Scenario 7 – "Optimistic" … A preliminary sensitivity run to get a general feel for what the Collaborative "Phase 1" analyses will tell us

OTC Committee Meeting
April 10, 2014

Topics

- Background
- Purpose of Scenario 7 – “Optimistic”
- Results/Caveats
- A “State Initiated Solution” to the ozone transport problem and the 75 ppb standard
- Other Happenings

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Background

- Many, many balls in the air
  - Supreme Court deliberations
  - “Expand the OTR” Petition under Section 176A of the Clean Air Act (CAA)
  - Challenges to EPA over large nonattainment areas (CAA Section 107)
  - Challenges to EPA over “Good Neighbor” SIPs
  - EPA’s Transport Rule Process
  - A collaborative effort between upwind and downwind states to address the ozone transport issue
- Remainder of presentation will focus on the collaborative effort

Background – The Collaborative

- On August 6, 2013- Approximately 30 states participated in a call to begin a technical collaboration on ozone transport in the East
- There was discussion … and general agreement … on beginning technical analyses of a scenario (called “Phase 1”) that would try and capture the progress that could be achieved if:
  - The EPA Tier 3 and Low Sulfur Fuel program is effectively implemented
  - The potential changes in the EGU sector from shutdowns and fuel switching driven by MATS, low cost natural gas and other factors were included
  - The potential changes in the ICI Boiler sector driven by Boiler MACT and low cost natural gas were also included
- There was also general agreement that any strategies beyond Phase 1 would require Commissioner level discussions

OTC "Optimistic" Scenario 7

- A rough, preliminary sensitivity run to try and get a general feel for how the "Phase 1" collaborative strategy will help reduce ozone
  - Built from the OTC 2007 Platform
- Will be updated … in many ways … as new data becomes available
  - 2011/2018 EPA information
  - Updated ERTAC projections
  - Input from the private sector
  - More
- Basic new controls included in Optimistic Scenario 7
  - Mobile
  - EGU
  - ICI Boiler

Reductions from Mobile Sources

- Adds additional mobile source NOx reductions in the 2018 time frame from EPA's recently finalized Tier 3 and Low Sulfur Fuel Rule
- Builds off of fairly significant NOx reductions from OTB mobile source measures including:
  - EPA Tier 2 standards
  - Reformulated gasoline and other fuels
  - I & M Programs
  - More
- The OTB measures continue to generate more reductions through 2018 as the fleet turns over

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Reductions from EGUs

- Based on overwhelming input from many states on the need to try and capture all of the changes in the EGU sector
- Significant changes:
  - Shutdowns
  - MATS compliance
  - Fuel conversions resulting from low cost natural gas
- What's included in "Optimistic" Scenario 7
  - Information from upwind states on projected EGU changes
  - PJM and other announced shutdowns
  - Other changes built into regional ERTAC projections like natural gas conversions

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Reductions from ICI Boilers

- Preliminary estimates generated working with CIBO
- Driven primarily by Boiler MACT and low cost natural gas
- Preliminary estimates may underestimate reductions according to more recent discussions with CIBO

	ICI Boiler Emission Reductions in the East	Change in Total Inventory
NOx	52%	2.3%
SO2	76%	13.8%
Direct PM	82%	3.5%

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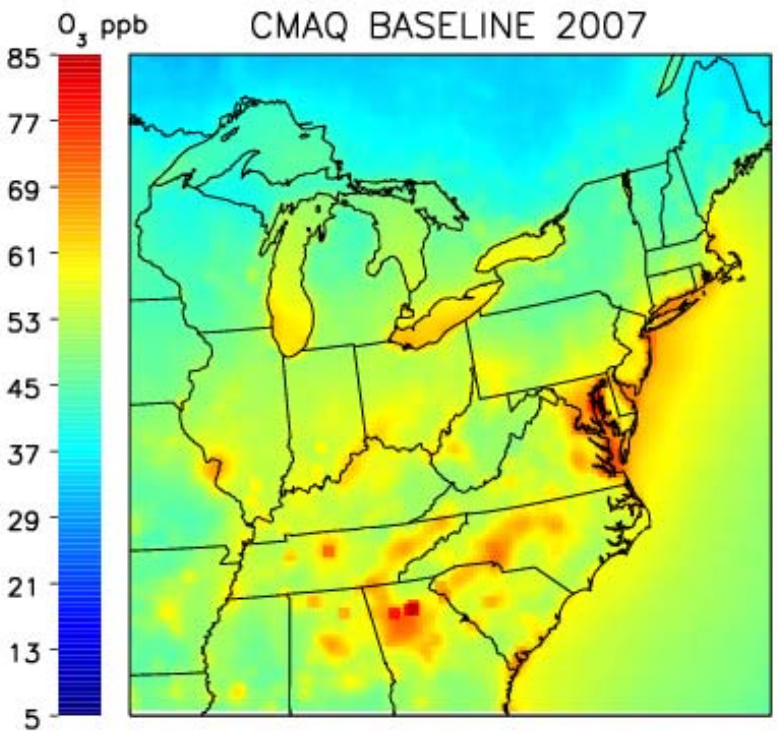
Model Set-Up and Performance

- No detail in this presentation
- Available, but not really that critical
- Scenario 7 – Optimistic … again is a preliminary sensitivity run only
- Basics
  - Built from OTC 2007 CMAQ Platform
  - Model performance is generally acceptable
  - Does include some recent ERTAC EGU projection work

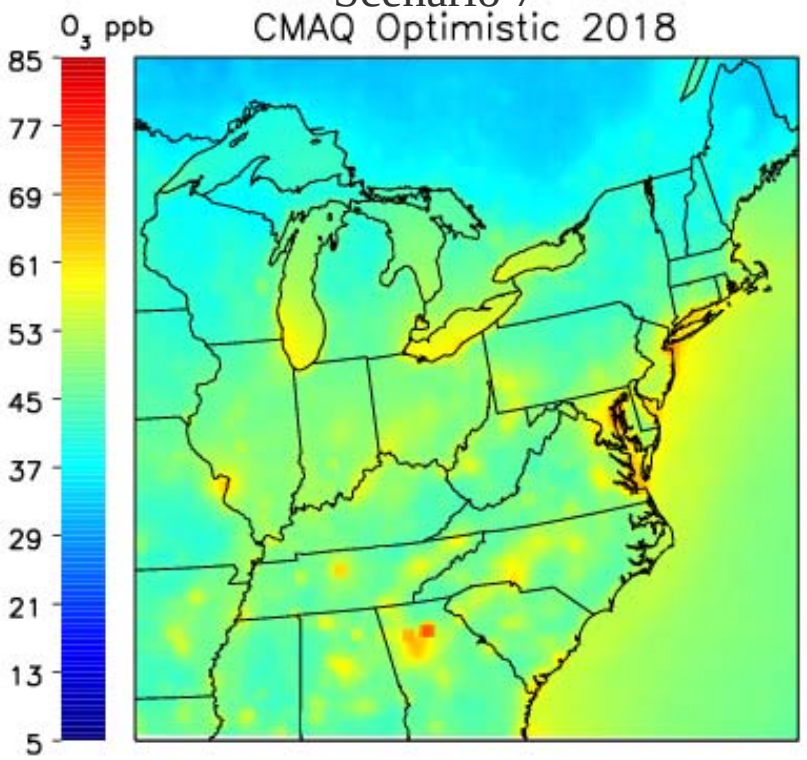
Concentrations – Before and After

Before Scenario 7



After Scenario 7

Scenario 7



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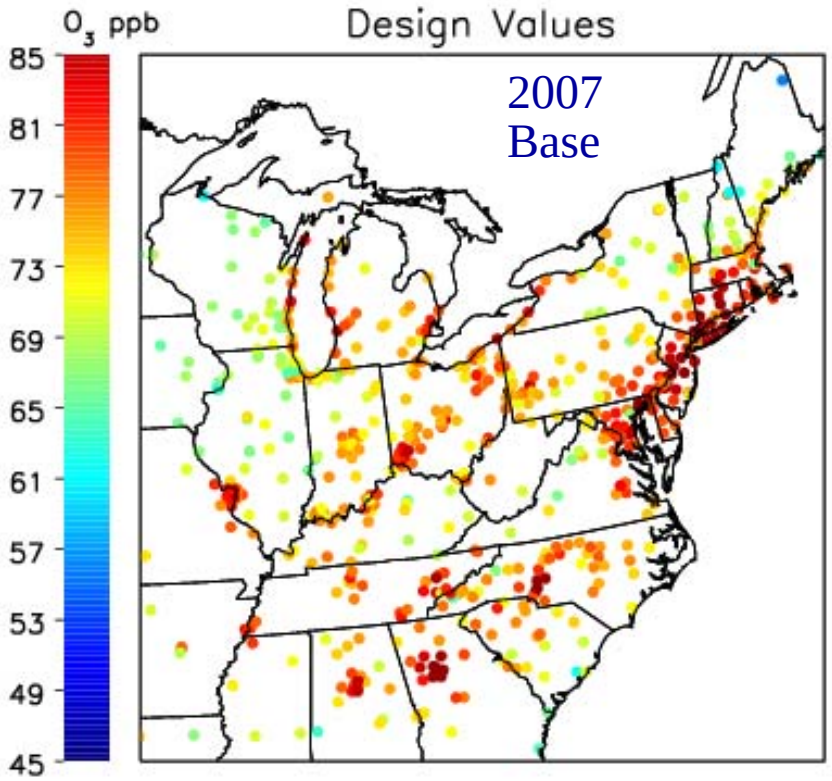
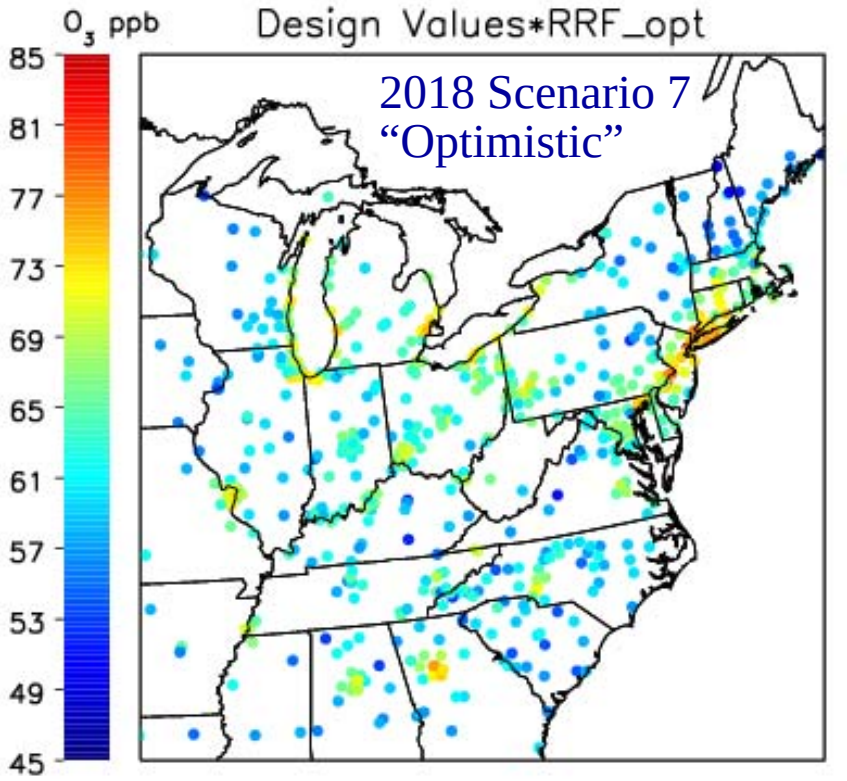
Modeled Design Values

Before Scenario 7



After Scenario 7



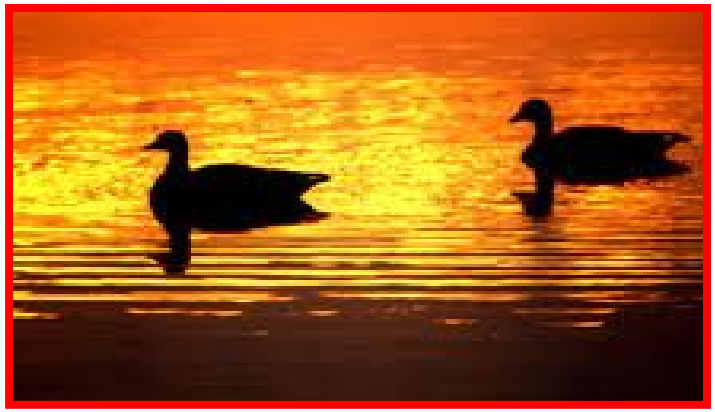
Maryland Design Values

… Before and after Optimistic Scenario 7

County	Design Value 2007	After 2018 Scenario 7 – Optimistic
Anne Arundel	85.7	68
Baltimore	77.3	65
Baltimore	83.3	71
Calvert	78	61
Carroll	82.3	66
Cecil	89	74
Charles	80.7	62
Frederick	80.3	65
Garrett	73.3	63
Harford	90.7	76
Harford	87.3	74
Kent	81.3	66
Montgomery	82.7	68
Prince George's	82	67
Prince George's	85.3	68
Washington	76.7	62
Baltimore (City)	67	57

Updated CMAQ Chemistry?

- For years, Maryland and the University of Maryland have been analyzing model performance aloft, where most transport takes place
  - Not always great
- In 2011, the Discover AQ field study in the Mid-Atlantic provided new unique data aloft
- U of M has analyzed aloft chemistry and found some problems with nitrogen chemistry
  - Fails to carry NOx reduction benefits downwind
- Working with ORD on new aloft chemistry concepts
  - Will show small, but important additional benefits from regional scale NOx strategies
  - Maybe an extra 1 or 2 ppb benefit in Maryland??



Scenario 7 Screening Modeling Results
High Values - OTR State

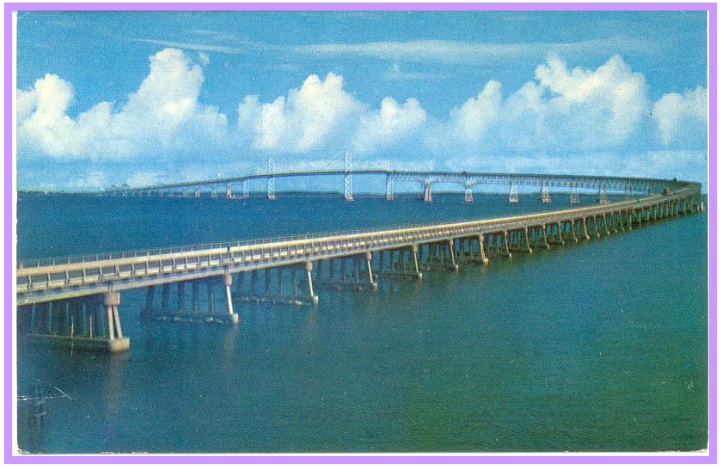
State	2018 Scenario 7 - Optimistic	State	2018 Scenario 7 - Optimistic
CT	76	NY	77
DE	69	PA	79
DC	70	RI	66
ME	65	VT	57
MD	76	VA (OTR)	70
MA	72		
NH	62		

Scenario 7 Screening Modeling Results
High Values – Other States

State	2018 Scenario 7 - Optimistic
Illinois Cook County	73
Kentucky Jefferson County	68
North Carolina Mecklenburg County	72
Georgia DeKalb County	77
Indiana Lake County	75

A State Driven Solution?

- Scenario 7 Optimistic tells us that the 2018 Scenario … we all agreed should show major progress … will do just that
- EPA's process is ongoing, but the collaborative modeling could provide a higher quality solution to the issue than the EPA modeling
  - EPA's effort is likely to be challenged
- In 2015 … some areas like Baltimore owe attainment SIPs and modeling.
- All states owe "Good Neighbor" SIPs
  - By 2011 … wait a second … that never happened
  - How about … at some point
- A state partnership proposal by Maryland …



How Do We Move Forward?

- Clearly continue the technical collaboration
  - Commissioner level discussions appear to be supporting the technical collaboration and the states working together to find a solution
- How do we capture what Scenario 7 appears to be telling us?
  - Would love to hear thoughts from others
- One idea from Maryland …
  - Upwind and downwind states submit a package of complementary SIPs in 2015
    - Attainment SIPs from states like Maryland
    - Good Neighbor SIPs from others
    - Supported by collaborative modeling and Maryland's SIP quality modeling
    - This is actually what the Clean Air Act requires
  - Could "trump" the EPA Transport Rule

Other Recent Happenings

- OTC 7B (still in the works) has better inputs than Scenario 7 Optimistic
  - We expect a similar message
- Rumors that preliminary work at SESARM and LADCO delivers a similar message … anyone know?
- Comments from upwind states … on 176A Petition
- Preliminary discussions between states on a collaborative solution
- Interesting discussions with Midwest Ozone Group over the potential for a state-driven collaborative solution

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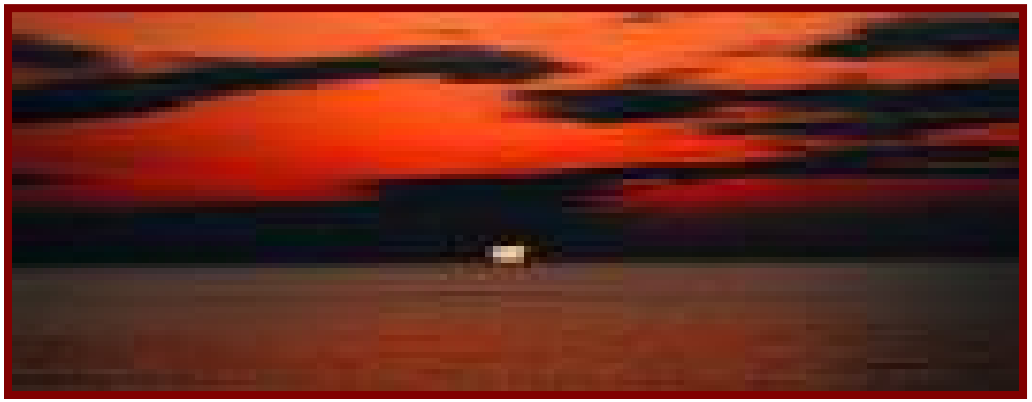
Thanks

Questions today? … feel free to ask

Questions later? … after you've had some time to mull this over … let me know what you think



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