MARYLAND

Department of the Environment

Meeting the New Ozone Standard

What Will It Take?

AQCAC Meeting - May 13, 2013

MDE

Topics Covered

- The new 75 parts per billion (ppb) standard for ground level ozone
  - Background
  - Maryland status
- What the science tells us
- Efforts to address ozone transport
- Maryland efforts to adopt new local pollution control programs

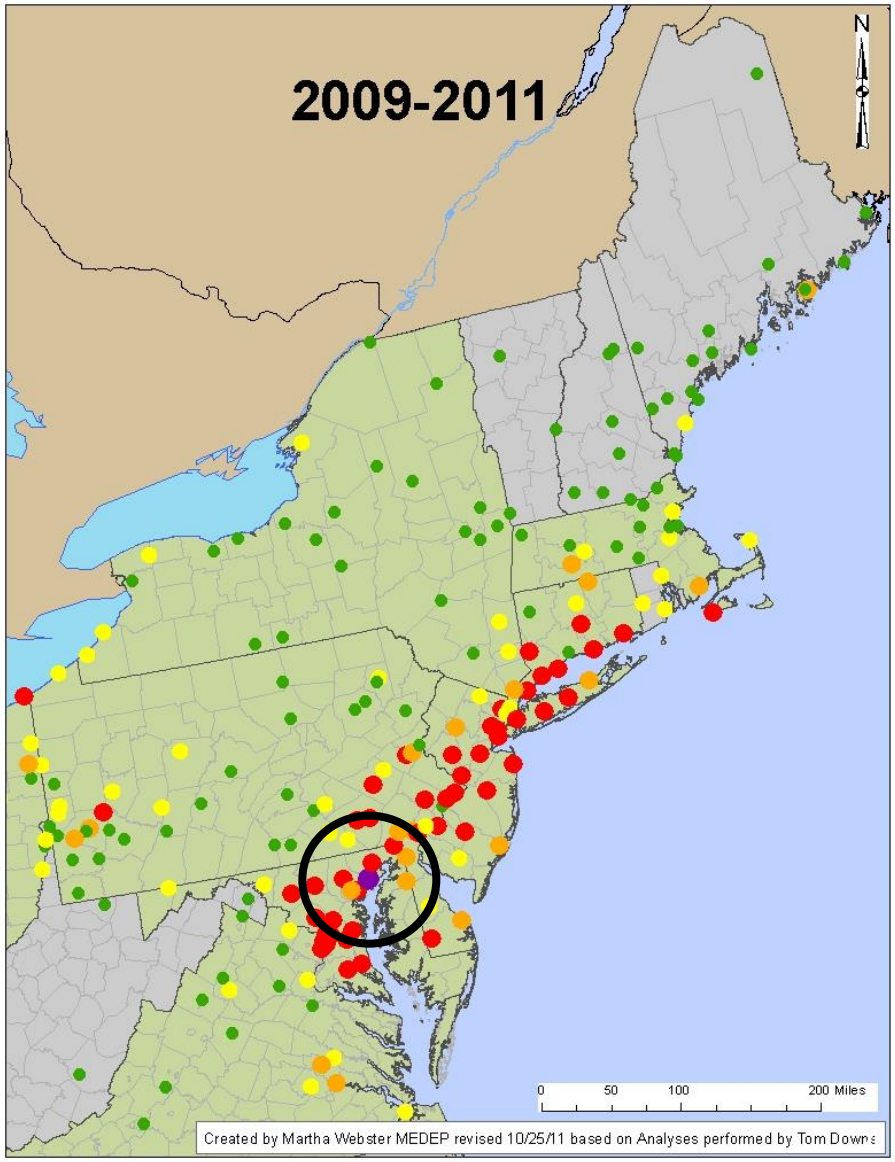
The New Standard - Background

- Finalized by EPA in 2008
  - 75 ppb as an 8-hour standard
- Delayed in 2010
  - EPA announced plans to adopt an even more stringent standard (in the 60 to 70 ppb range)
    - This range was consistent with EPA's science advisors
- 2011 - Decision to not move ahead with more stringent standard announced
- June 2012 – EPA designates 3 areas in Maryland as "nonattainment"
  - Other areas across the Country also designated nonattainment

Baltimore – The Last Purple Dot

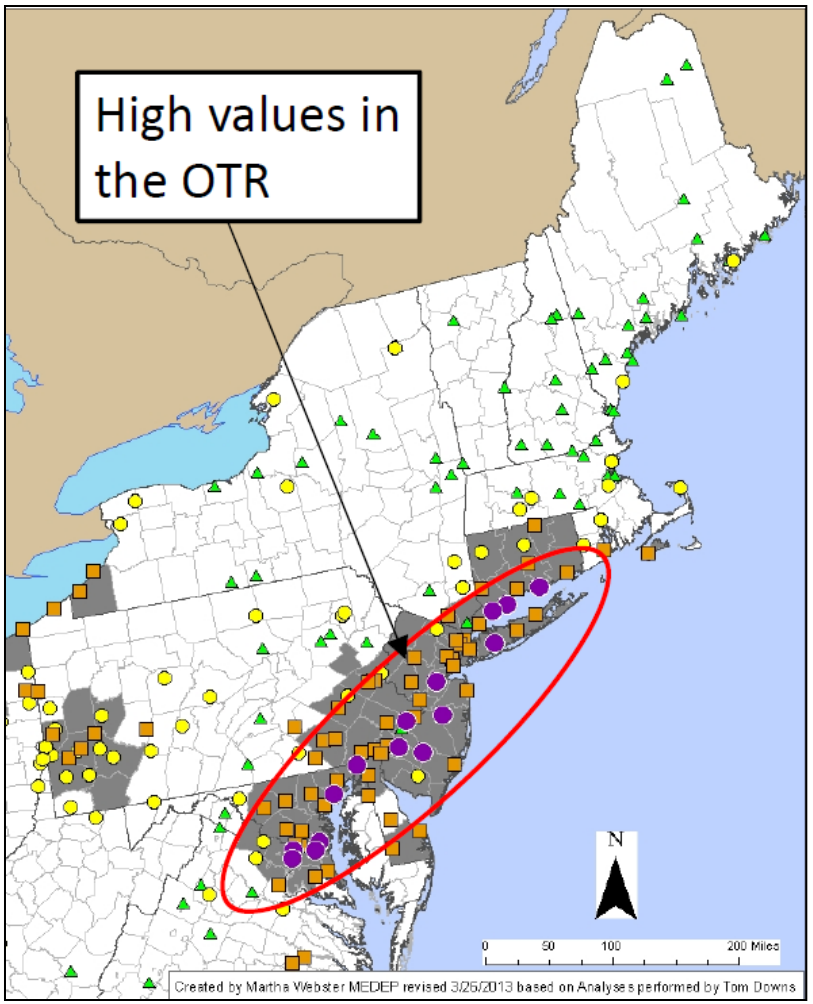
- Only area in the East designated as a “Moderate” nonattainment area
  - 2015 SIP & 2018 attainment
  - Rest of the East is “Marginal”
    - 2013-2015 attainment
    - No requirements to do anything
- Still not meeting old 85 ppb standard

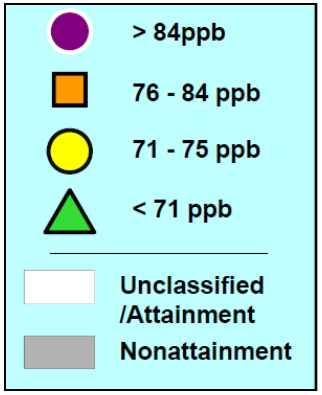
<71
71-73
74-75
76-85 (mar)
>85 (mod)
Parts per Billion (ppb)



Using 2012 Ozone Data

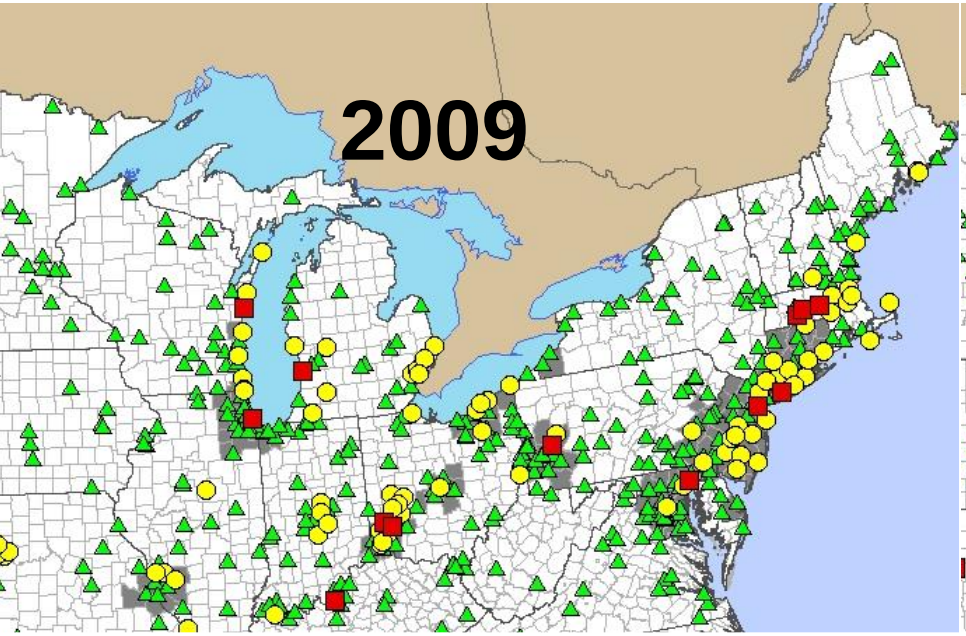
- 2009 was a very cool, “ozone friendly” year
- If 2010 to 2012 data is used
  - There are many more purple dots
- Unfortunately, EPA does not plan to update designations
- So … we’re still the last purple dot

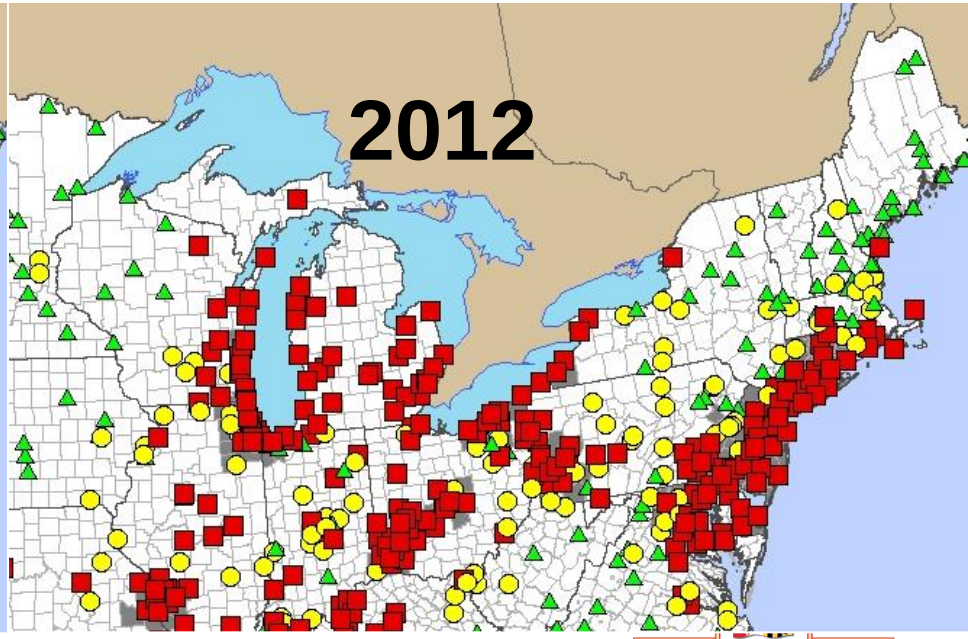




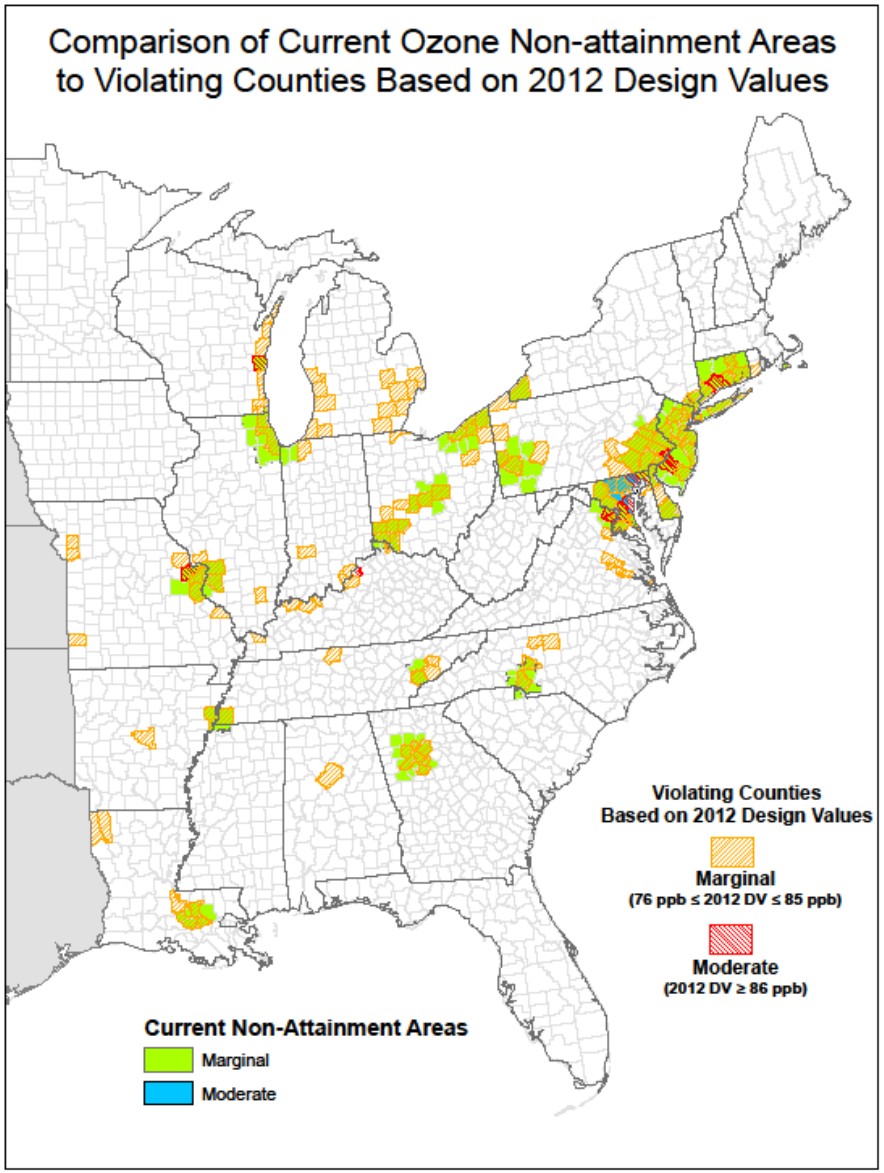
2012 – How Much Worse?

- 2009 was a very cool, very clean – much cleaner than average
- 2012 was sort of at the opposite end of the spectrum
  - Worse than average
- Dramatic differences between 2009 and 2012
  - Each dot is a monitor





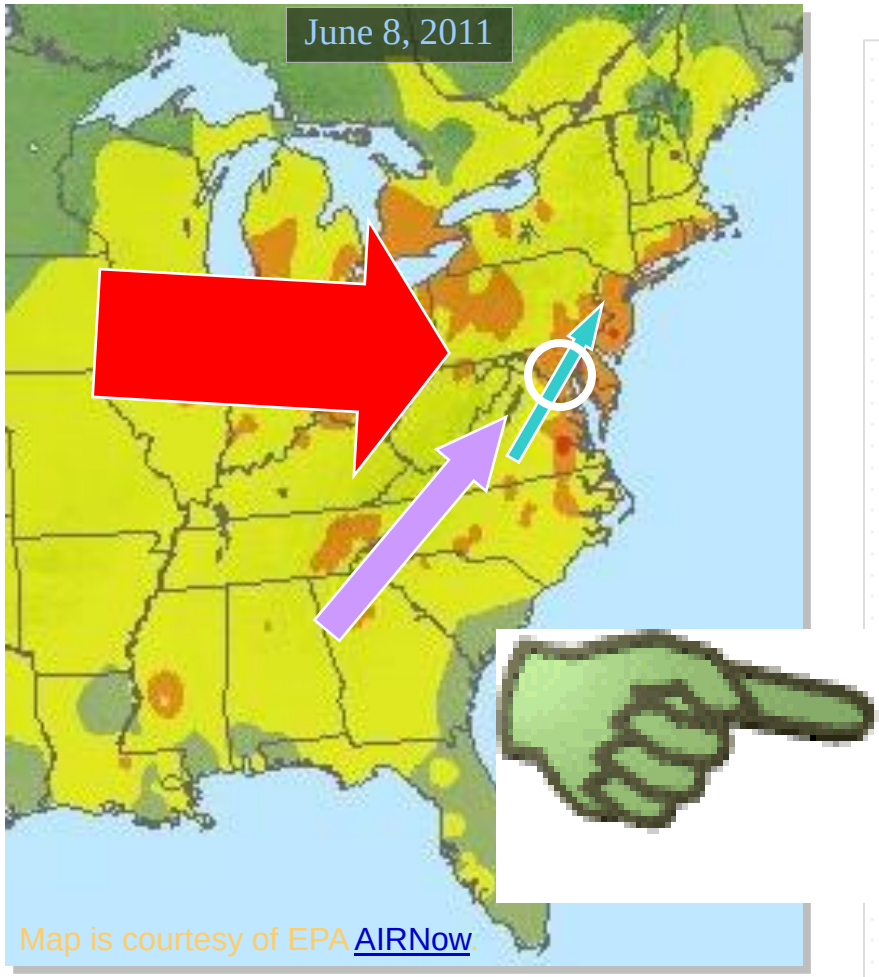
What Else Would 2012 Change?



- Many areas that are attainment should be designated nonattainment
- Many areas designated as “Marginal” should be designated as “Moderate”

A Little Glimpse at the Science

Where Does Our Ozone Come From?

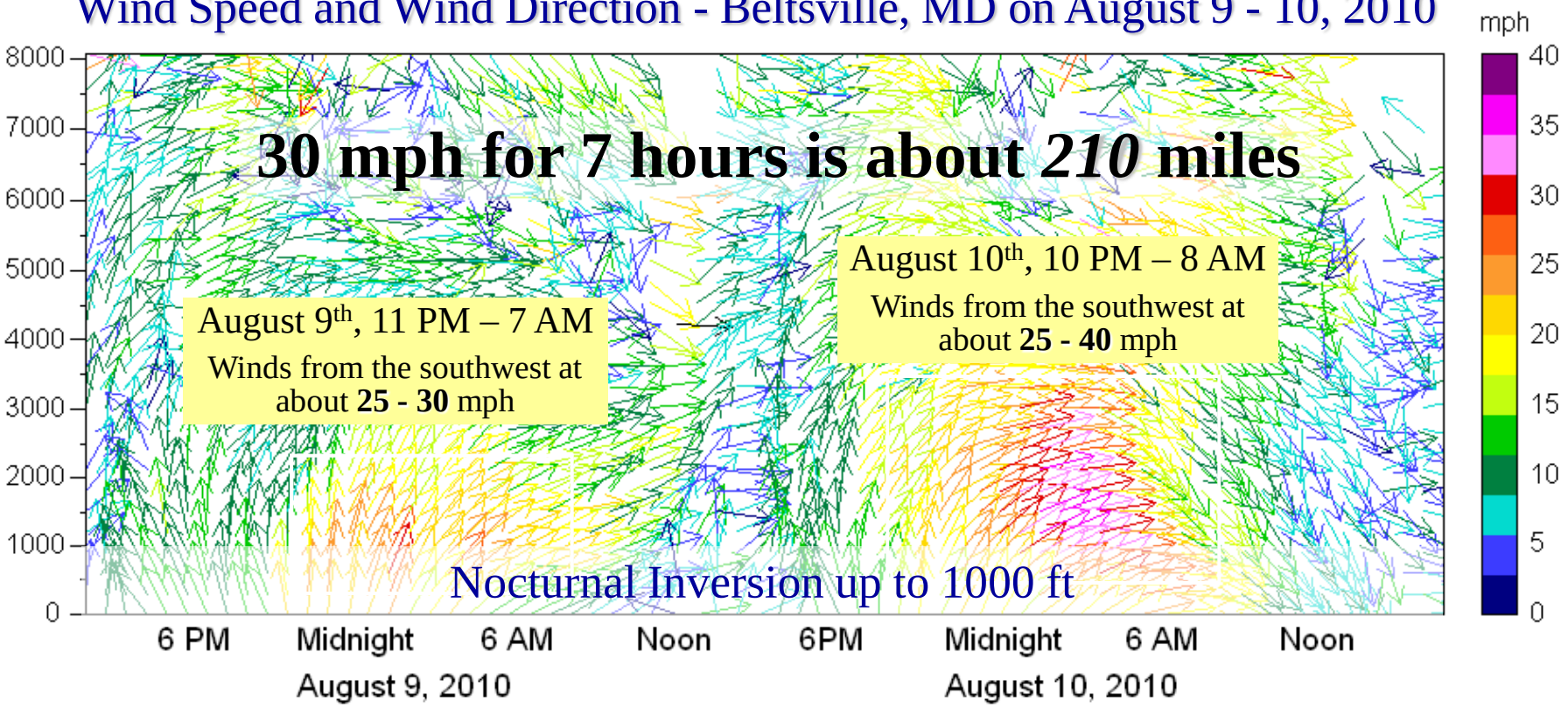


There are Four Distinct Parts

- 20 plus year “science partnership” with UMCP, UMBC, HU, PSU, EPA and others
- Local emissions in Cities (nonattainment areas)
  - Reducing local emissions is always important
- Three distinct types of transport
  - Short range - City to city
    - “Ground level” transport
    - Washington to Baltimore, Baltimore to Philadelphia, etc.
  - Westerly, Long range (up-over-and-down)
    - “Aloft” transport - 100s of miles
    - Generally from W or NW
  - Southerly, Nocturnal Low Level Jet (NLLJ)
    - “Aloft” transport at night !!!
    - 100s of miles
    - SW to NE – a “jet” of air funneled between the Atlantic Ocean and the Appalachian Mountains

Measuring the NLLJ

Wind Speed and Wind Direction - Beltsville, MD on August 9 - 10, 2010

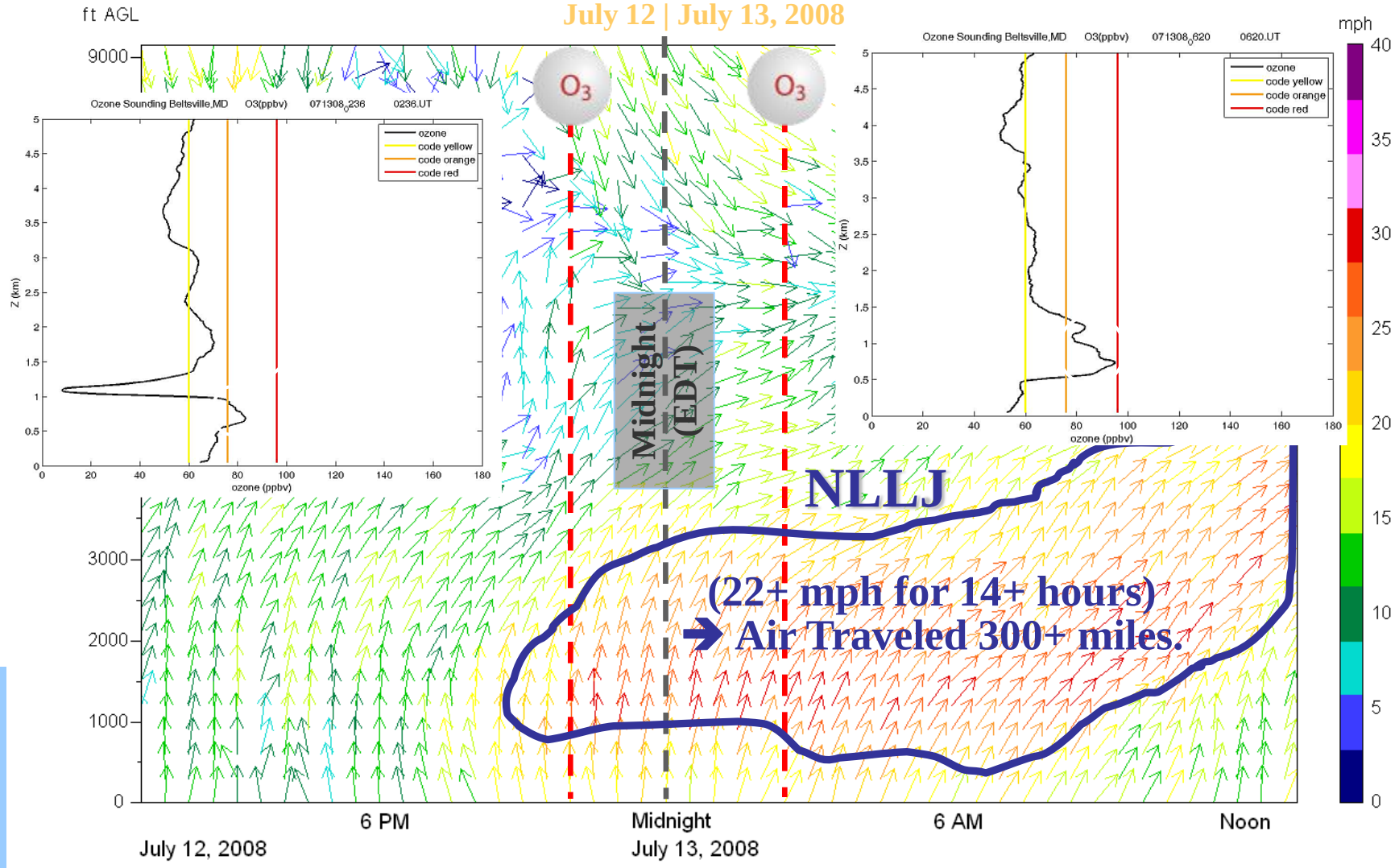


What does this graph tell us?

- Wind direction
- Wind speed
- From the ground up

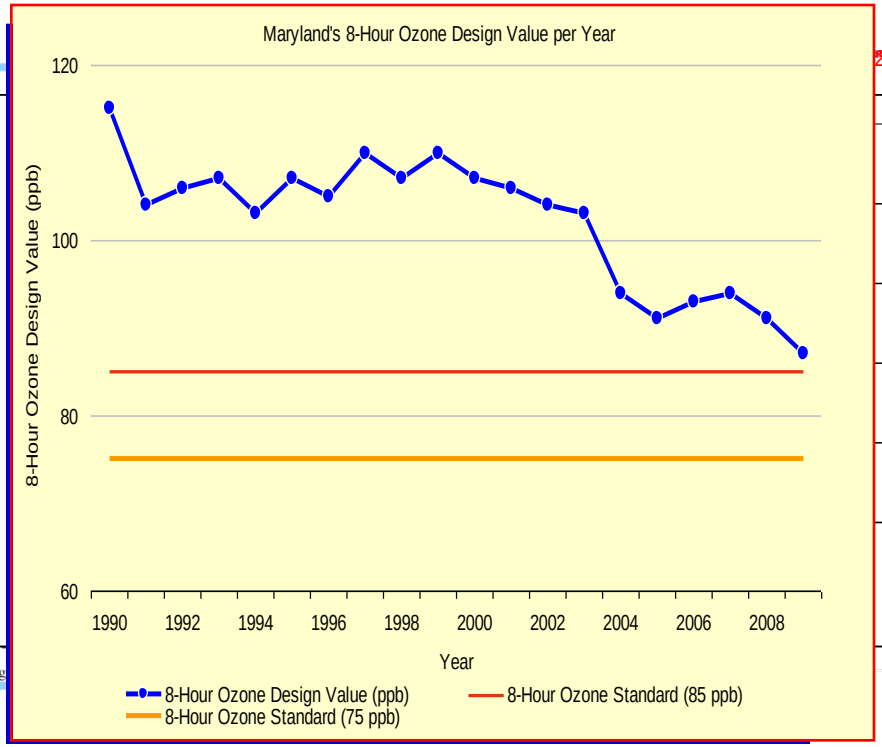
Measuring Ozone Transport in the NLLJ

Howard University launched 4 ozonesondes on July 12-13, 2008. The 10:30 PM (Saturday, July 12th) and 2:30 AM (Sunday, July 13th) occurred during a NLLJ event, as captured by MDE's Wind Profiler.



Will Regional Controls Work?

Ground Level Ozone Drops Dramatically in the Same Time Frame

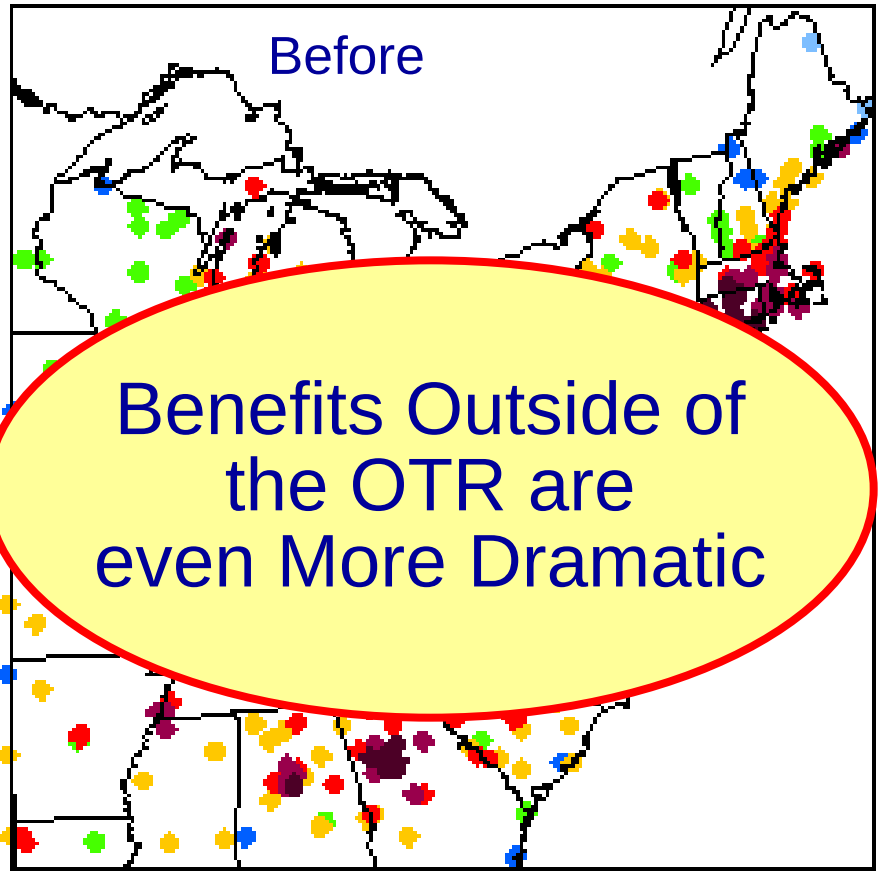


- Case study – 2004 NOx SIP Call
- The classic ozone transport story
  - Incoming ozone levels (as high as 80 ppb) collect in an elevated reservoir over night
  - Real world programs like the NOx SIP call have shown that
    - Adding regional controls
    - Results in regional NOx emission reductions …
    - Which lead to reduced ozone in the elevated reservoir …
    - Which lead to lower ozone at ground level and public health protection!

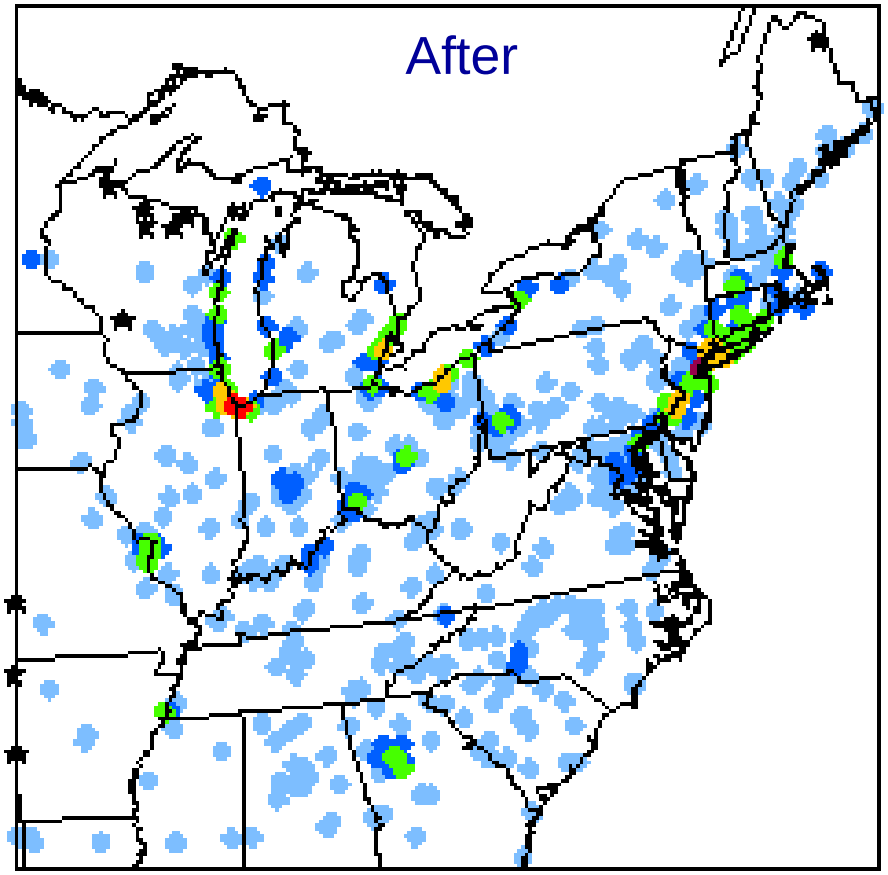
The Path Forward

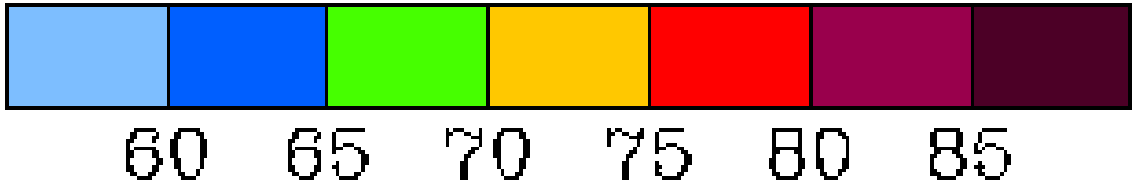
- We understand the science of ozone better than ever
- We've implemented programs that have worked in the real world
- We need a two-part strategy
  - Local (inside the OTR) controls are still critical
    - Can help reduce about 1/3 of the ozone problem in most OTC cities
  - National/super-regional controls are now essential to reduce transport
    - Incoming ozone is already measured at levels above the 75 ppb standard
    - Regional contribution represents approximately 2/3 (or more) of the ozone problem in most OTC cities

Will This Strategy Get Us to 75 ppb?



Benefits Outside of the OTR are even More Dramatic





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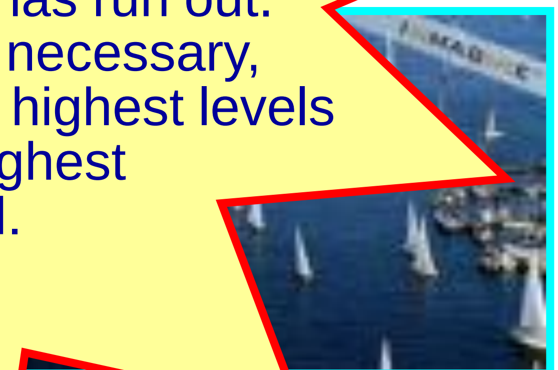
“Those of us in the Northeast
have a simple message for our friends upwind:
it is time for you to act. While we have
invested heavily in cleaning up our power plants
for too long, many states have failed to do the same.
This failure threatens the health of our citizens, damages
sensitive ecosystems, and distorts economic activity,”
said Connecticut Gov. Dan Malloy (D)
in an address at the meeting.

“Let me be clear about this -- our patience has run out.
The time to curb these emissions is now. If necessary,
the Northeast states will press this case at the highest levels
of our federal government and the highest
courts in our nation,” Malloy said.

ECOS Meeting - June 7, 2012



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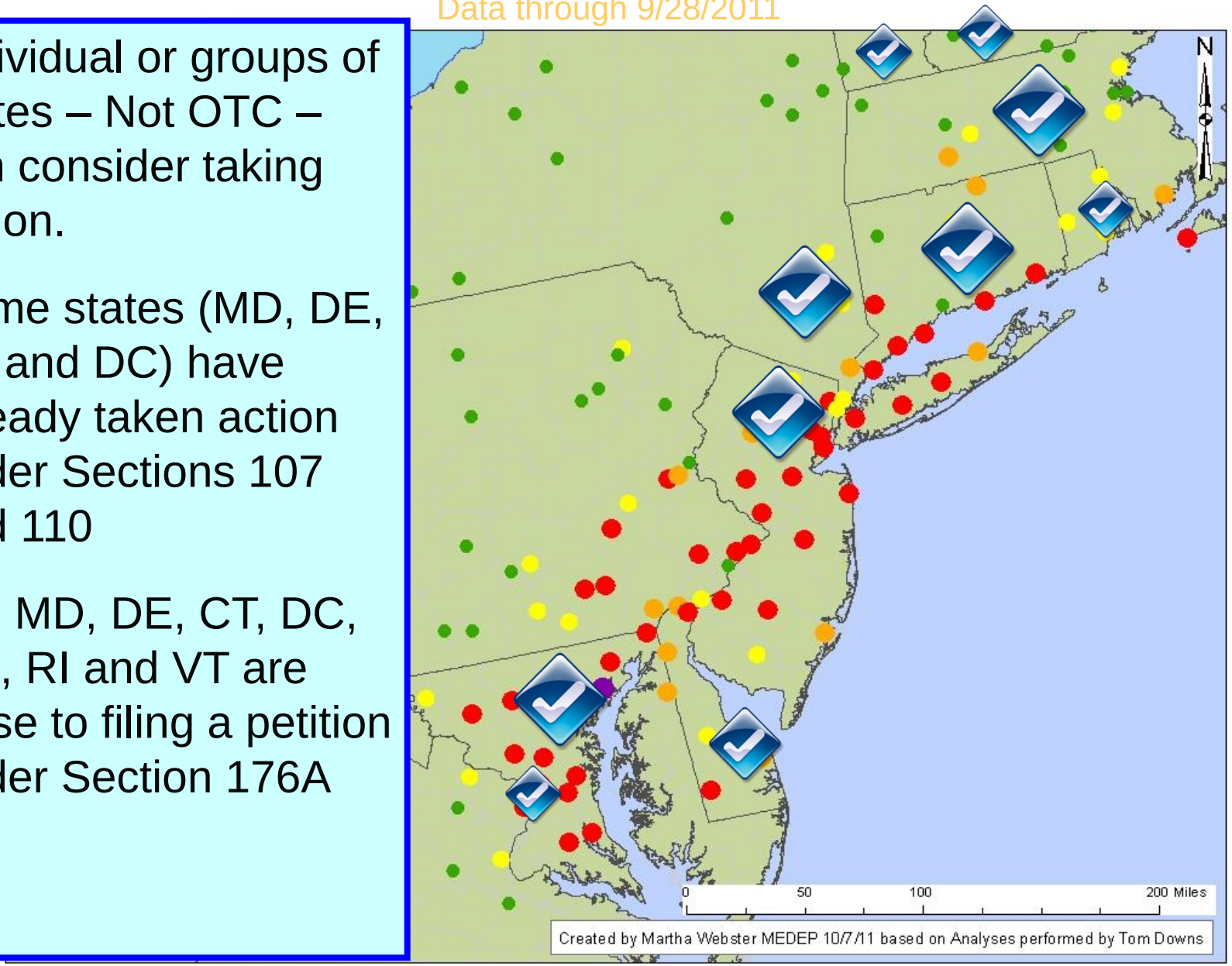
Working on Transport

- Individual or groups of states – Not OTC – can consider taking action.
- Some states (MD, DE, CT and DC) have already taken action under Sections 107 and 110
- NY, MD, DE, CT, DC, MA, RI and VT are close to filing a petition under Section 176A



Other Transport Activities

- EPA's Proposed Tier 3 and Low Sulfur Fuel Regulation
  - The most important control program left to reduce ground level ozone
    - Will dramatically reduce mobile source NOx emissions by 2018
- The Cross-State Air Pollution Rule
  - Focused on power plants
  - Rejected/Vacated by DC Circuit Court
    - EPA filed petition for certiorari in the U.S. Supreme Court
- EPA Meetings on Transport
  - EPA will develop a rule establishing "good neighbor" responsibilities for upwind states
  - Will leave "remedy" or "solution" to the states

Pushing Local Controls

- Maryland continues to push new local controls
  - Lessons learned from the $2.6 Billion Healthy Air Act
    - Moving forward with strengthening regulations
  - Tougher controls on distributed generation sources, incinerators, cement kilns, and more
  - Multiple new area source control efforts (many through OTC Committees)
- Mobile sources reductions & conformity regulation effort
  - Our science tells us that the #1 local emissions to target for reductions is NOx from mobile sources

Reducing Mobile Source Emissions in MD

- Maryland Clean Cars program
  - Last update just approved by AQCAC
- EPA's Tier 3 and Low Sulfur Fuel program
  - Critical to Maryland
  - Largest NOx emission reducing program left
  - Support from many – including Maryland
- Maryland's Long Range Planning Targets for Transportation Planning Regulation
  - Briefed AQCAC several times already
  - Designed to further reduce NOx emissions from local (Baltimore and Washington) mobile sources
  - Still controversial
- Electric Vehicle Initiatives

Stationary (Smokestack) Sources

- Power Plants
  - Have seen huge NOx, SO2 and mercury reductions from the Healthy Air Act
  - That said, were working to address several issues that need to be addressed
    - Short-term emissions
    - Control equipment efficacy

- Distributed generation sources
  - Focus on making sure that behind the meter units that run as part of demand response programs are clean – bad timing

- Cement kilns
- Waste-to-Energy Facilities
- More …

New Regional Control Efforts

- MDE works with 13 other states that are part of the Ozone Transport Commission (OTC) to evaluate and develop model rules or model programs for priority categories
- Current efforts include:
  - Consumer Products
  - Architectural and Industrial Maintenance Coatings
  - Solvent Degreasing
  - Demand Response
  - Asphalt Paving
  - Ports
  - Idling
  - More …

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Questions?

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