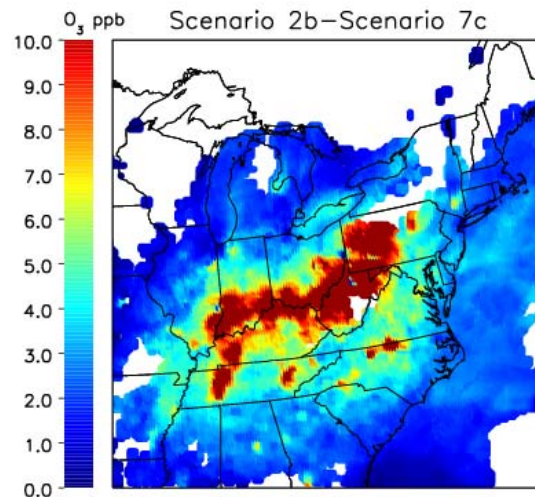


# A Preview: Key AQCCAC Actions in 2015



Tad Aburn, Air Director, MDE  
AQCCAC Meeting – March 30, 2015

# Topics

- Background
- The 2015 Maryland Attainment Plan for ozone
  - What does the modeling tell us about what we need for attainment?
- New control measures for 2015
- Schedule



# Background

## *Maryland's Attainment Problem*

- Only state East of the Mississippi designated as a “Moderate” nonattainment area by EPA
- Baltimore is the only nonattainment area in the East required to submit an “Attainment” SIP (State Implementation Plan) in 2015
  - This SIP must be supported by photochemical modeling and an “Attainment Demonstration”
- We believe we have enough modeling completed to have a clear picture of what Maryland needs in it’s plan to bring the State into attainment
  - This analysis also shows that most other areas in the East should also come close to attaining the 75 ppb standard



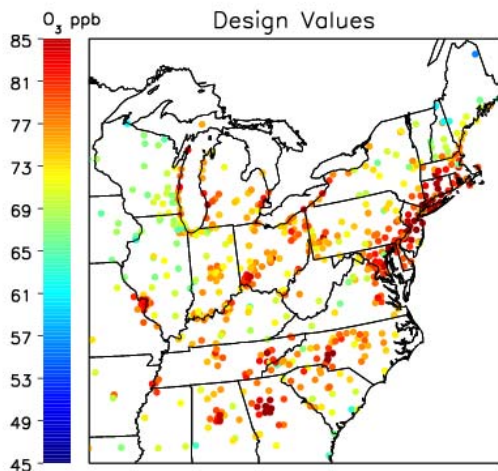
# Background – Collaboration

- On August 6, 2013- Approximately 30 Air Directors participated in a call to begin a technical collaboration on ozone transport in the East
  - Preliminary modeling conducted by Maryland, LADCO, SESARM and OTC
    - Showed that a collaborative solution for the 75 ppb ozone standard may be possible
- In April 2014, preliminary discussions between Commissioners began
- As a result of these discussions, the “State Collaborative on Ozone Transport” (SCOOT ) was established. First meeting in November 2014.
  - One of the goals of SCOOT is to explore the possibility of the states working together and submitting complementary Attainment and Good Neighbor SIPs
- The modeling conducted by Maryland and others has ... and will continue to be ... a major part of the SCOOT process

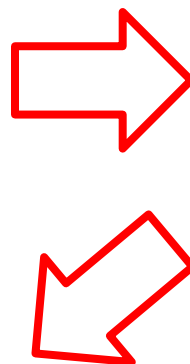
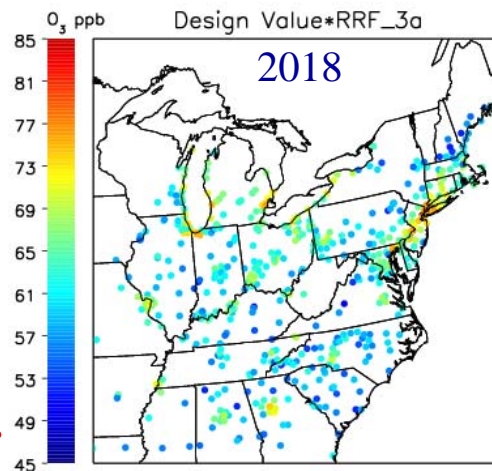


# Building the Maryland Plan

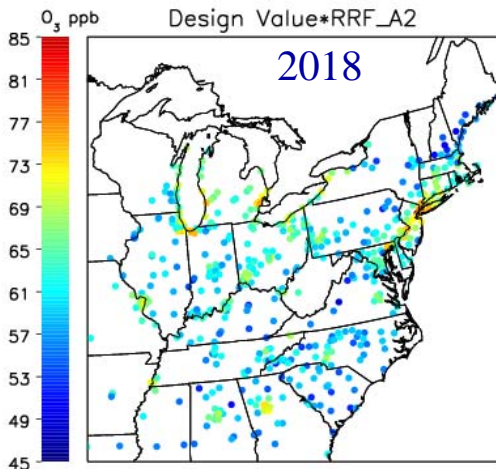
The 2007 or 2011 Base



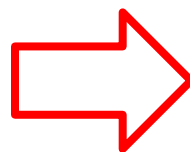
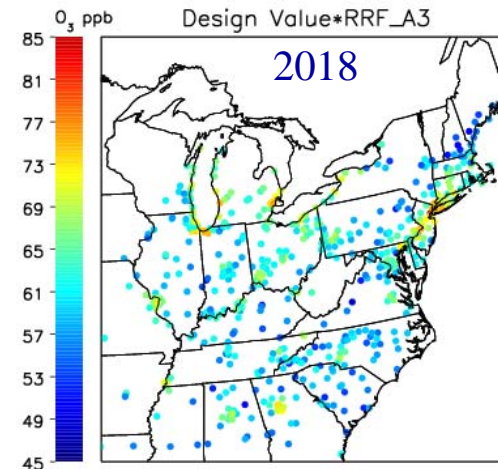
Add regional controls across the East (OTB/OTW, Tier 3, regional EGU controls)



Add the "OTR" controls along I-95 corridor



Add new controls just in MD



# Modeling the Maryland Plan

- Maryland has conducted preliminary modeling of the Plan and believes it will allow MD to come very close to meeting the 75 ppb ozone standard
  - Started with the OTC CMAQ 2007 platform – 2018 future year
  - Have evolved to the 2011 platform and now running both CMAQ and CAMX
    - Focus still on 2018 as the future year
  - There is still a significant amount of work that needs to get done to improve the 2011 platform ... but we have learned a lot

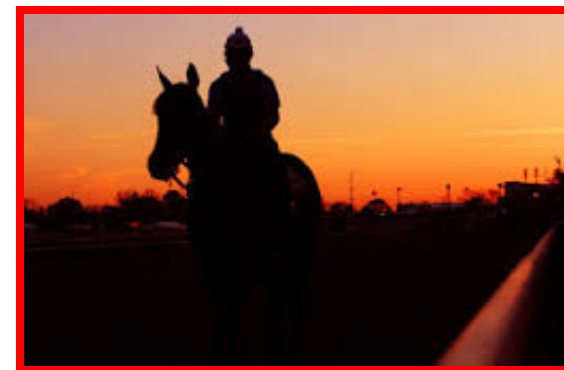


CMAQ = Community Multiscale Air Quality Model

CAMX = Comprehensive Air Quality Model with Extensions

# The Key Elements of Maryland's Plan

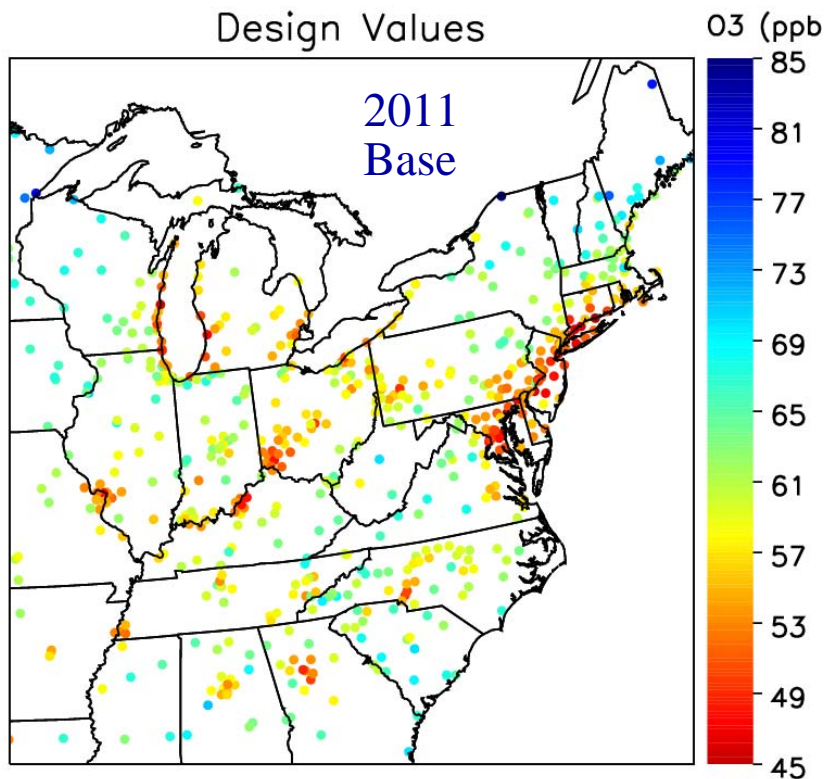
- Number 1 Need – The Tier 3 Mobile Source and Fuel Standards
  - The most important new program to reduce high ozone in Maryland
- Number 2 – Additional local reductions in Maryland
- Number 3 – Good Neighbor SIPs to address the contribution from more distant and close-by neighboring states
  - Analysis shows that if power plants in all upwind states simply run the controls that have already been purchased ... during the ozone season ... and planned retirements occur ... and
  - New OTC (Ozone Transport Commission) model programs are implemented in the OTC states ...
  - Then ... transport into Maryland for the current ozone standard will be adequately addressed



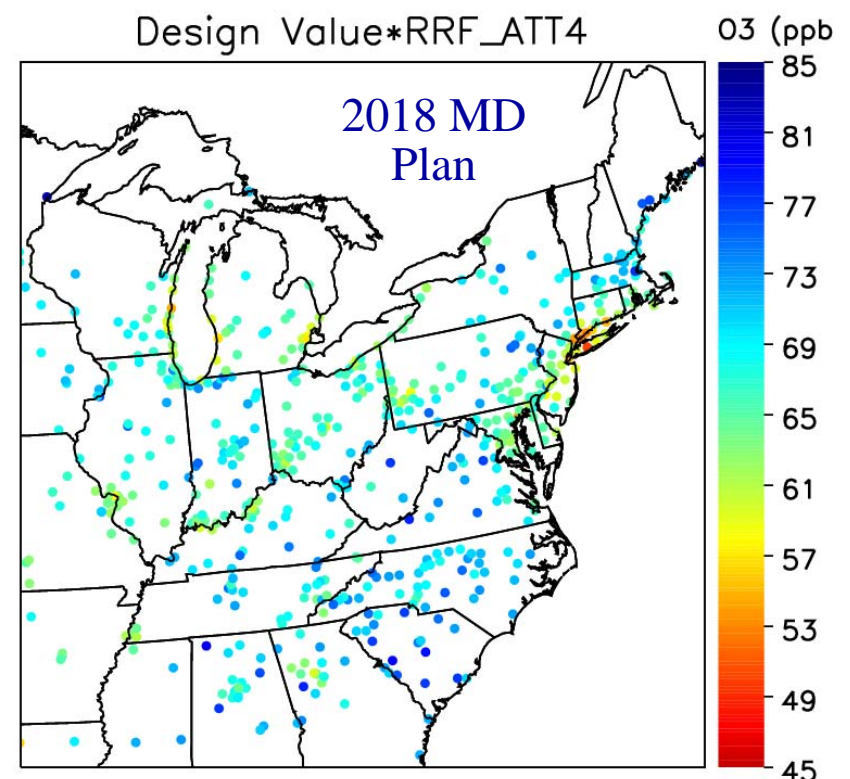
# The Bottom Line

## *Before and After the Maryland Plan*

### Before the MD Plan

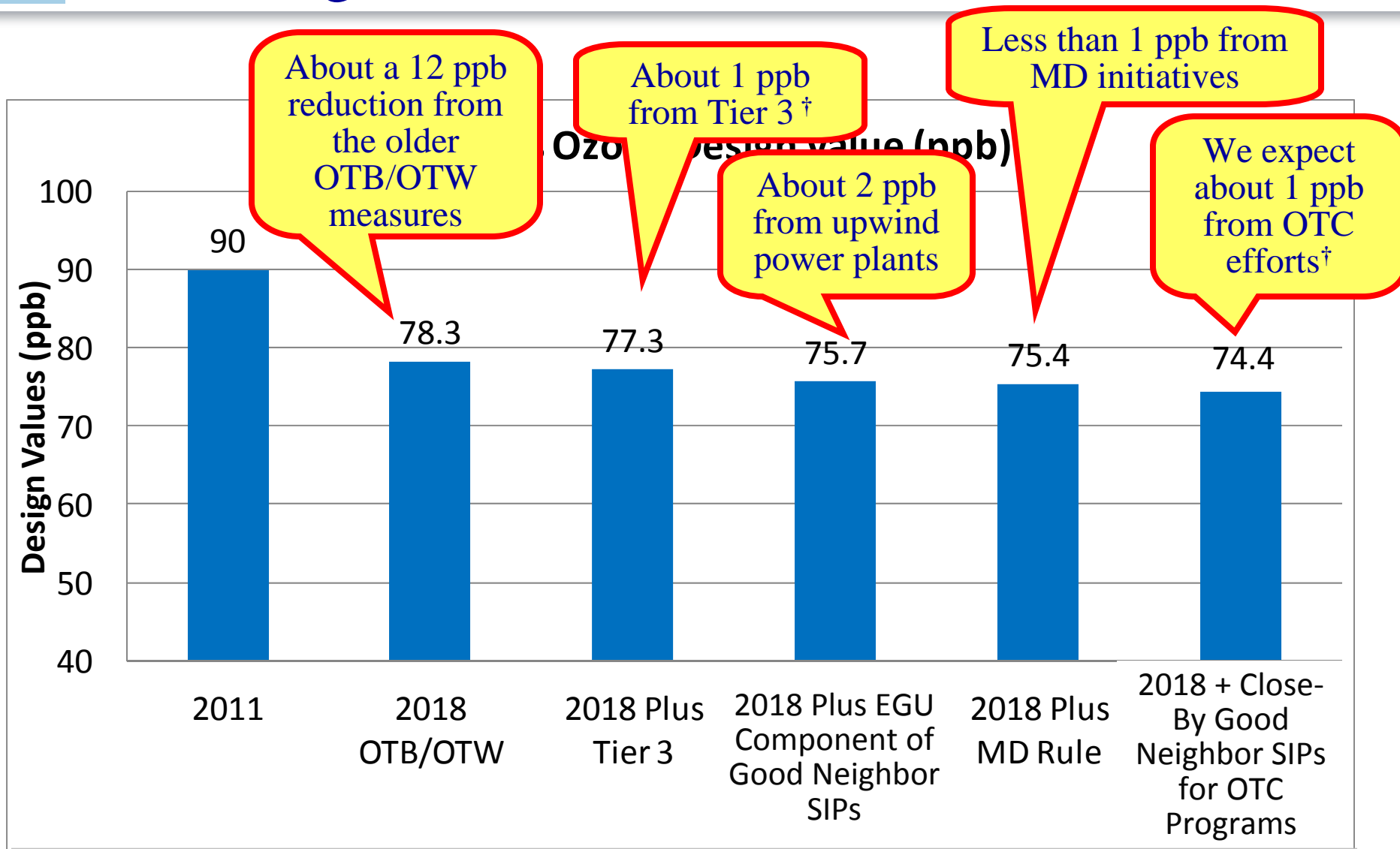


### After the MD Plan





# Modeling the MD Plan in 2018 - 2011 Platform



<sup>†</sup> This value is based on a very rough estimate from earlier modeling work.

# Maryland Monitors - 2011 Platform - CMAQ

County	DV 2011	2018 Future Baseline	2018 Future Baseline with Optimized EGUs	2018 Maryland Plan
Anne Arundel	83.0	70.2	69.1	67.7
Baltimore	79.0	68.4	67.0	65.7
Baltimore	80.7	70.4	69.4	68.1
Calvert	79.7	68.5	67.5	65.7
Carroll	76.3	67.2	65.6	64.3
Cecil	83.0	70.5	69.0	67.8
Charles	79.0	67.3	66.1	63.6
Frederick	76.3	66.9	65.3	63.8
Garrett	72.0	60.8	59.4	58.4
Harford	90.0	77.3	75.7	74.4
Harford	79.3	67.1	65.8	64.6
Kent	78.7	66.8	65.4	64.2
Montgomery	76.3	66.9	65.3	63.8
Prince George's	79.0	66.7	65.8	64.5
Prince George's	82.3	69.6	68.6	67.1
Washington	72.7	63.3	61.9	60.9

- All values in parts per billion (ppb)
- 2018 Future Baseline ... OTB/OTW with Tier 3
- 2018 with Optimized EGUs ... OTB/OTW, Tier 3 and EGUs running at best observed rates from the past
- 2018 MD Plan ... OTB/OTW, Tier 3, Optimized EGU Controls, new OTC controls and new MD controls

# The Baltimore Area - 2011 Platform - CMAQ

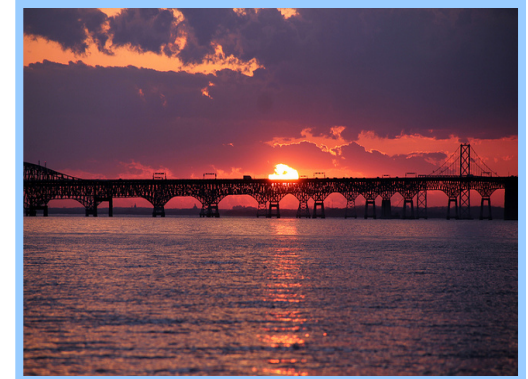
County	DV 2011	2018 Future Baseline	2018 Future Baseline with Optimized EGUs	2018 Maryland Plan
Anne Arundel	83.0	70.2	69.1	67.7
Baltimore	79.0	68.4	67.0	65.7
Baltimore	80.7	70.4	69.4	68.1
Carroll	76.3	67.2	65.6	64.3
Harford	90.0	77.3	75.7	74.4
Harford	79.3	67.1	65.8	64.6
Baltimore Area Average Exposure	81.3	70.1	68.8	67.5

- All values in parts per billion (ppb)
- 2018 Future Baseline ... OTB/OTW with Tier 3
- 2018 with Optimized EGUs ... OTB/OTW, Tier 3 and EGUs running at best observed rates from the past
- 2018 MD Plan ... OTB/OTW, Tier 3, Optimized EGU Controls, new OTC controls and new MD controls



# Where Do the OTB/OTW Reductions Come From?

- There are over 40 control programs in this piece of our modeling
  - Generally older control programs that continue to generate deeper reductions as they are phased in or as fleets turn over
- By far, the largest contributors to NO<sub>x</sub> reductions in the OTB/OTW category are mobile sources
  - Tier 2 Vehicle Standards
  - Federal fuel economy (CAFÉ) standards
  - Heavy Duty Diesel Standards
  - Marine Diesel Engine Standards
  - Emission Control Area (ECA) requirements
  - Many more ...
- VOC reductions from the OTB/OTW category come from programs like
  - Federal consumer product and paint regulations
  - Tier 2 Vehicle Standards
  - VOC RACT ... Many more ...



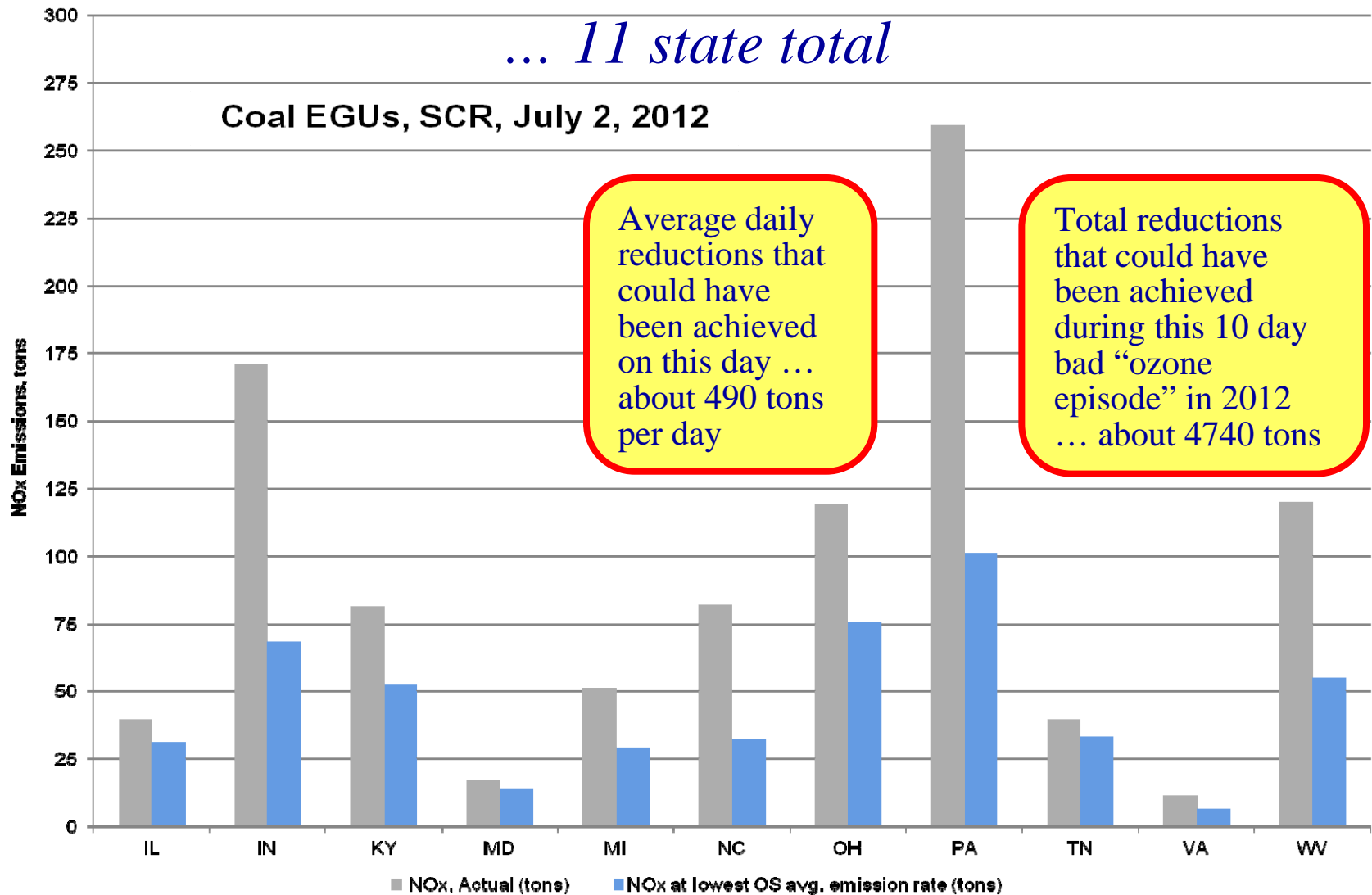
# New Reductions in Transport?

- The Plan includes three new ... significant ... common sense ... transport strategies
  1. The federal Tier 3 Vehicle and Fuel Standards may be the most significant new transport strategy
  2. New OTC model rules and initiatives
  3. “Good Neighbor Partnerships” that address coal-fired power plants in 10 states upwind of MD are also included
    - Focuses primarily on the large potential reductions from insuring that currently installed technologies are run well
    - Low cost ... common sense ... private sector interest in discussing potential solution



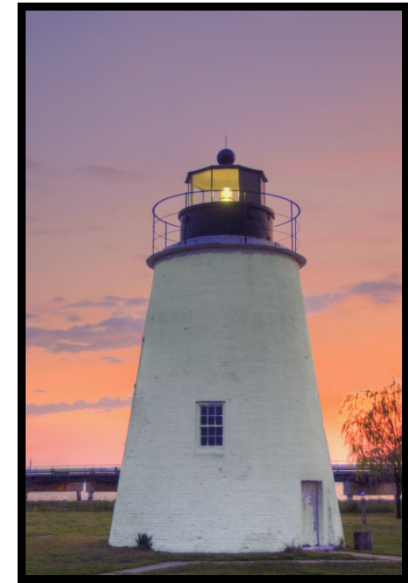
# Reductions Could be Very Large

*... 11 state total*



# What “Inside MD” Reductions are Included?

- New EGU regulation for NO<sub>x</sub>
  - Required for RACT and Attainment
- Maryland efforts on mobile sources
  - Electric vehicle initiatives
  - ZEV efforts
  - “Beyond Conformity” partnerships
- OTC Regional Initiatives



# What Inside the OTC Measures are Included?

- Mobile Source Initiatives
  - Aftermarket Catalyst effort
  - ZEV/CALEV state programs
  - Onroad and offroad idling
  - Heavy Duty I&M
  - Smartways
- NOx and VOC reductions
- New potential initiatives like Ports are not included

- Stationary and Area Source Efforts
  - Third Generation OTC/SAS Initiatives
    - Consumer products
    - Architectural and Industrial Maintenance (AIM) Coatings
    - Auto coatings
    - Ultra Low NOx burners
- NOx and VOC reductions





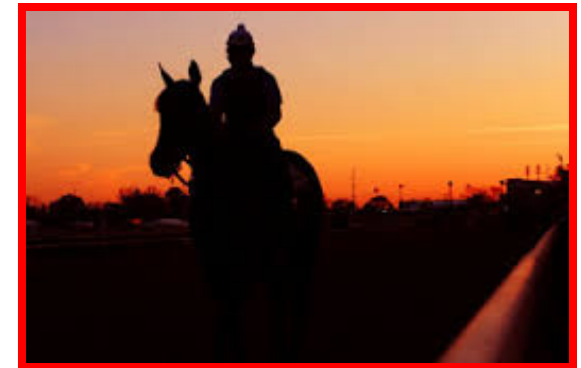
# Reductions from OTC Measures

<b>OTC Model Control Measures</b>	<b>Regional Reductions (tons per year)</b>	<b>Regional Reductions (tons per day)</b>
Aftermarket Catalysts	14,983 (NOx) 3,390 (VOC)	41 (NOx) 9 (VOC)
On-Road Idling	19,716 (NOx) 4,067 (VOC)	54 (NOx) 11 (VOC)
Nonroad Idling	16,892 (NOx) 2,460 (VOC)	46 (NOx) 7 (VOC)
Heavy Duty I & M	9,326 (NOx)	25 (NOx)
Enhanced SMARTWAY	2.5%	
Ultra Low NOx Burners	3,669 (NOx)	10 (NOx)
Consumer Products	9,729 (VOC)	26 (VOC)
AIM	26,506 (VOC)	72 (VOC)
Auto Coatings	7,711 (VOC)	21 (VOC)

- Just in the OTC states
- Thanks to OTC Stationary and Mobile Source Committees and MARAMA
- These emission reduction estimates are being updated as we speak

# AQCAC and the 2015 SIP

- Over the next 6 months, MDE will be bringing many of the actions needed for the 2015 SIP to AQCAC.
  - Some regulations requiring actions
  - Some non-regulatory issues as briefings
- Actions will involve strategies for mobile sources, stationary sources and area sources
  - NO<sub>x</sub> and VOC reduction strategies



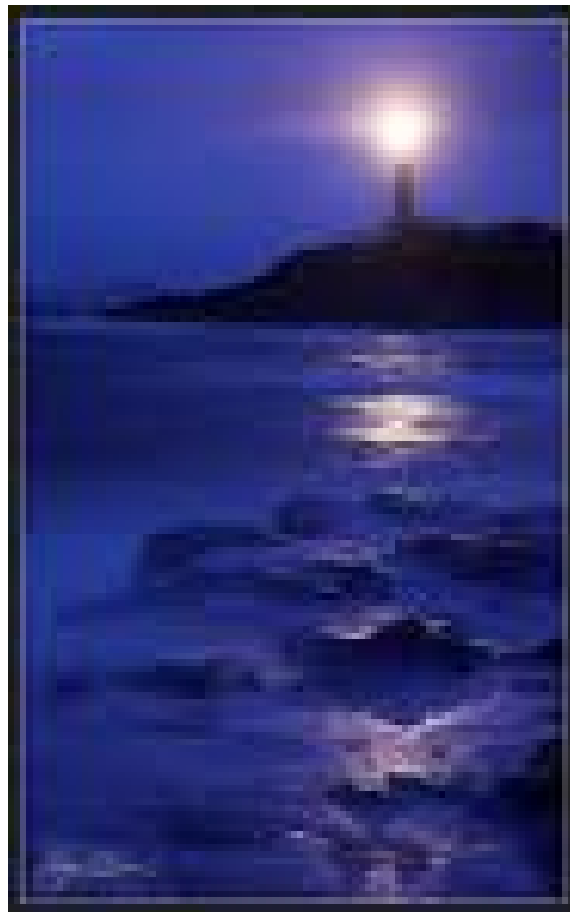
# Mobile Source Initiatives

- Almost all initiatives driven by a model rule or program from the OTC
  - Some involve a smaller number of states working in partnership
- The ZEV MOU
  - An 8-state commitment to coordinated action to ensure successful implementation of states' CALEV ZEV programs. ZEV Action Plan identifies 11 key actions to undertake. Provides both NO<sub>x</sub> and VOC reductions.
- Electric Vehicle Initiatives
  - State-level actions designed to complement the ZEV MOU. Includes incentives, infrastructure, etc.
- OTC Aftermarket Catalyst Rule
  - Requires sale of CARB certified aftermarket converters in lieu of the federal aftermarket converters. Provides NO<sub>x</sub> and VOC reductions.



# Mobile Source Initiatives (Continued)

- OTC On-Road and Off-Road Idling Initiative
  - Limits unnecessary idling resulting in emission reductions, fuel savings & wear and tear on vehicles/equipment. Both NO<sub>x</sub> & VOC reductions.
- OTC Enhanced SmartWays
  - Calls on EPA to encourage OTR goods movement companies to participate in SmartWays & to work with OTC states to collect data & develop methods to quantify additional NO<sub>x</sub> and VOC benefits from this increased participation.
- OTC Heavy Duty Inspection and Maintenance
  - Working with EPA to obtain credit for heavy-duty diesel IM programs in place in many OTR states. Both NO<sub>x</sub> and VOC reductions.
- “Beyond Conformity” Partnerships
  - MDE working in partnership with counties to produce 1 ton/day NO<sub>x</sub> reduction.
  - MDE providing modeling support through University of MD.



# Stationary and Area Source Initiatives

- Maryland NO<sub>x</sub> Regulation
  - In process
- OTC Third Generation Consumer Products Rule
  - Based on OTC Model Rule. Reduces VOCs from consumer products used in homes, automobiles, and in commercial and industrial establishments. VOC reduction of 4.5 tons/day in MD.
- OTC Third Generation Paint Rule
  - OTC Model Rule to replace 2001 Model Rule. Applies to paints and coatings sold and used in the State. VOC reduction of 2 tons/day in MD.



# Stationary and Area Source Initiatives (Continued)

- OTC Third Generation Autobody Rule
  - Based on OTC Model Rule that was developed using standards adopted in California in 2005. Reduces VOCs used in the refinishing of automobiles, truck bodies and trailers, etc. VOC reduction of 2.4 tons/day in MD
- OTC Ultra-Low NO<sub>x</sub> Burner Initiative
  - OTC Model Rule to reduce NO<sub>x</sub> emissions from natural gas-fired ICI boilers, steam generators, process heaters, and water heaters. 3669 TPY NO<sub>x</sub> reduction throughout OTR region



# Timing

- Attainment Plan and SIP to be submitted in 2015
- Next AQCAC – June 8, 2015
  - Aftermarket Catalyst Rule
  - Briefing on OTC Idling initiatives, SmartWays, and third generation VOC rules
- Remainder of 2015
  - Probably 1 or 2 SIP related actions per AQCAC meeting
- Buckle up

