



PM2.5 Maintenance Plan
**Mobile Budgets &
Margin of Safety**

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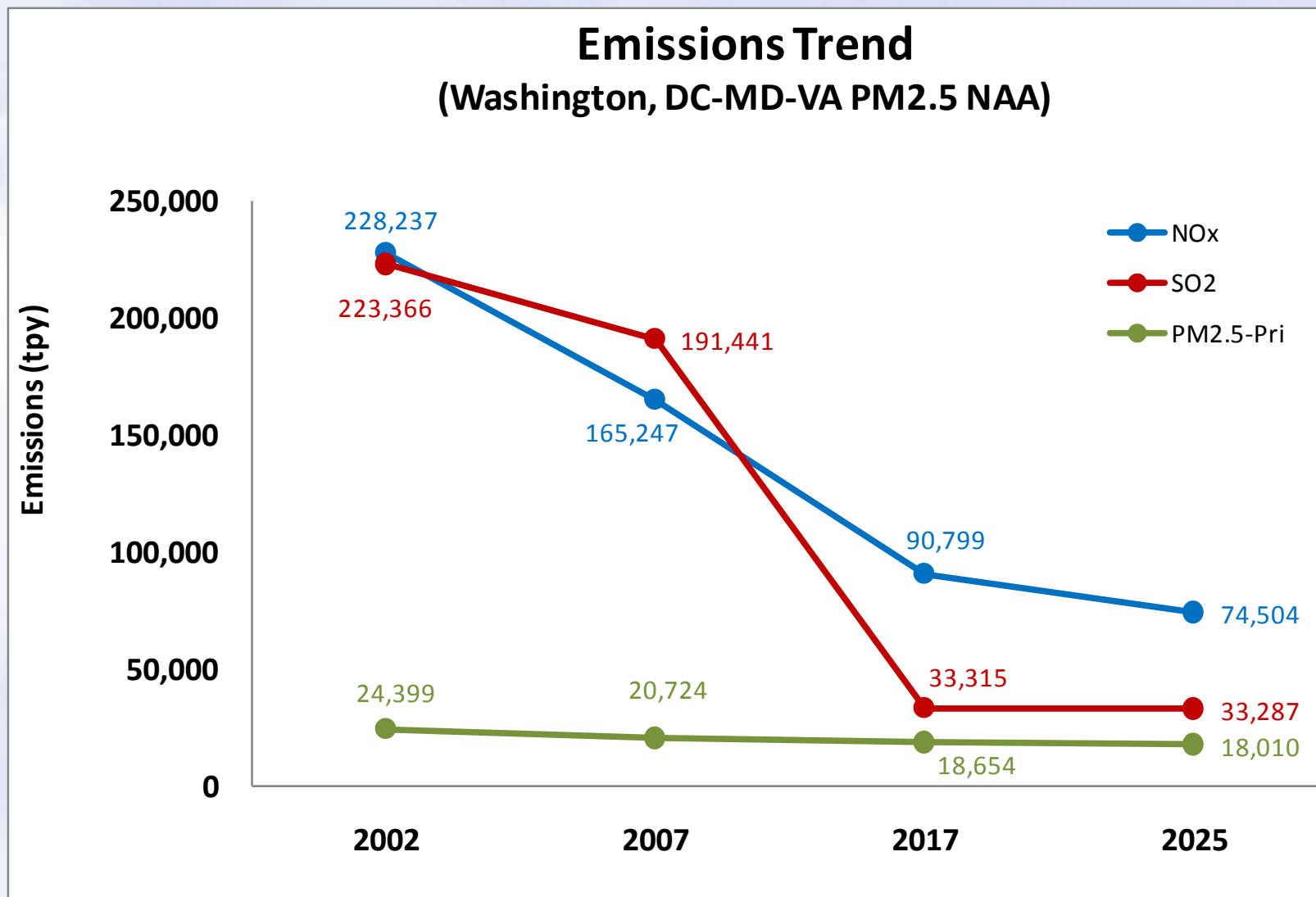
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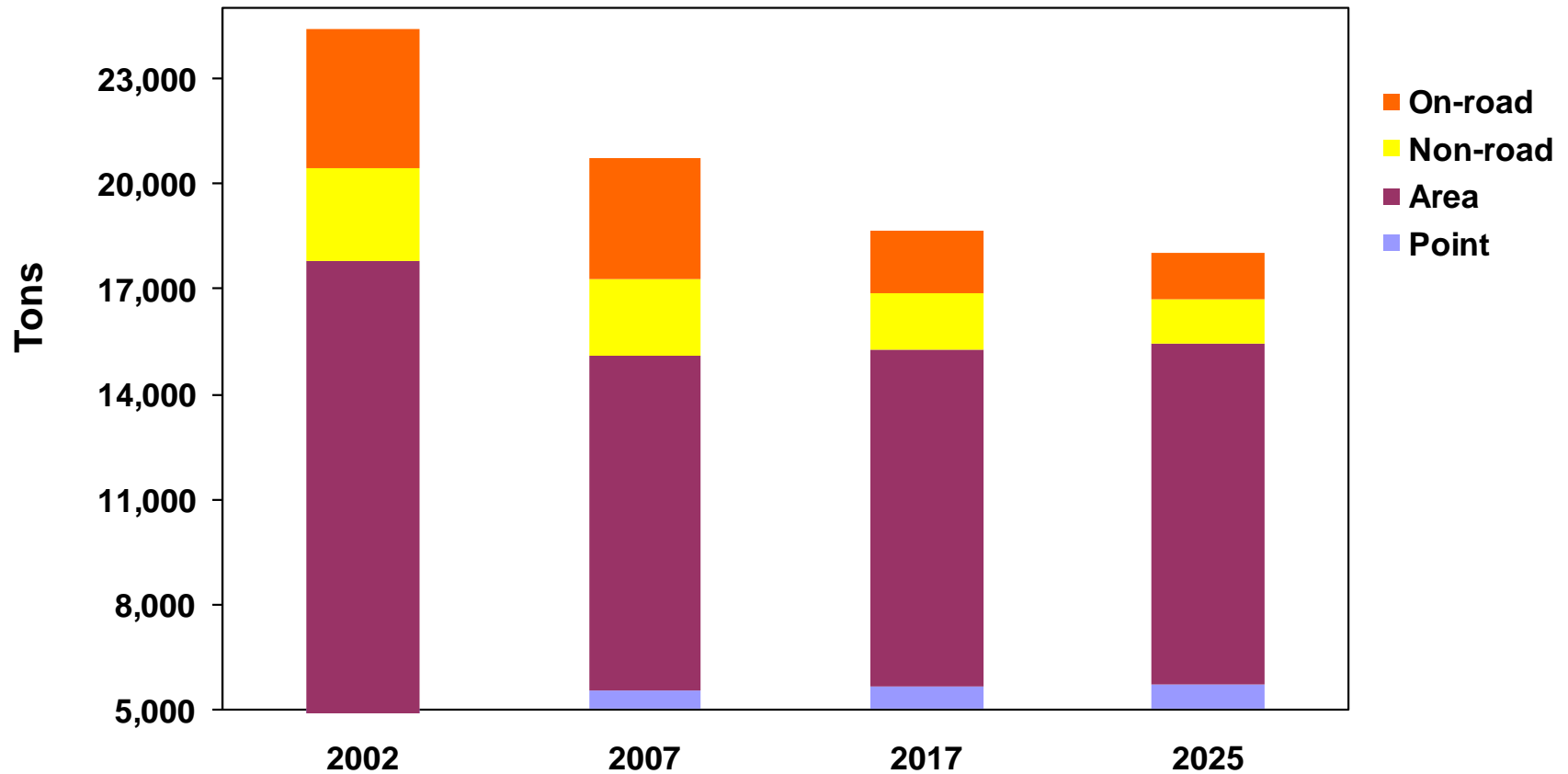
Redesignation Request & Maintenance Plan Timeframe



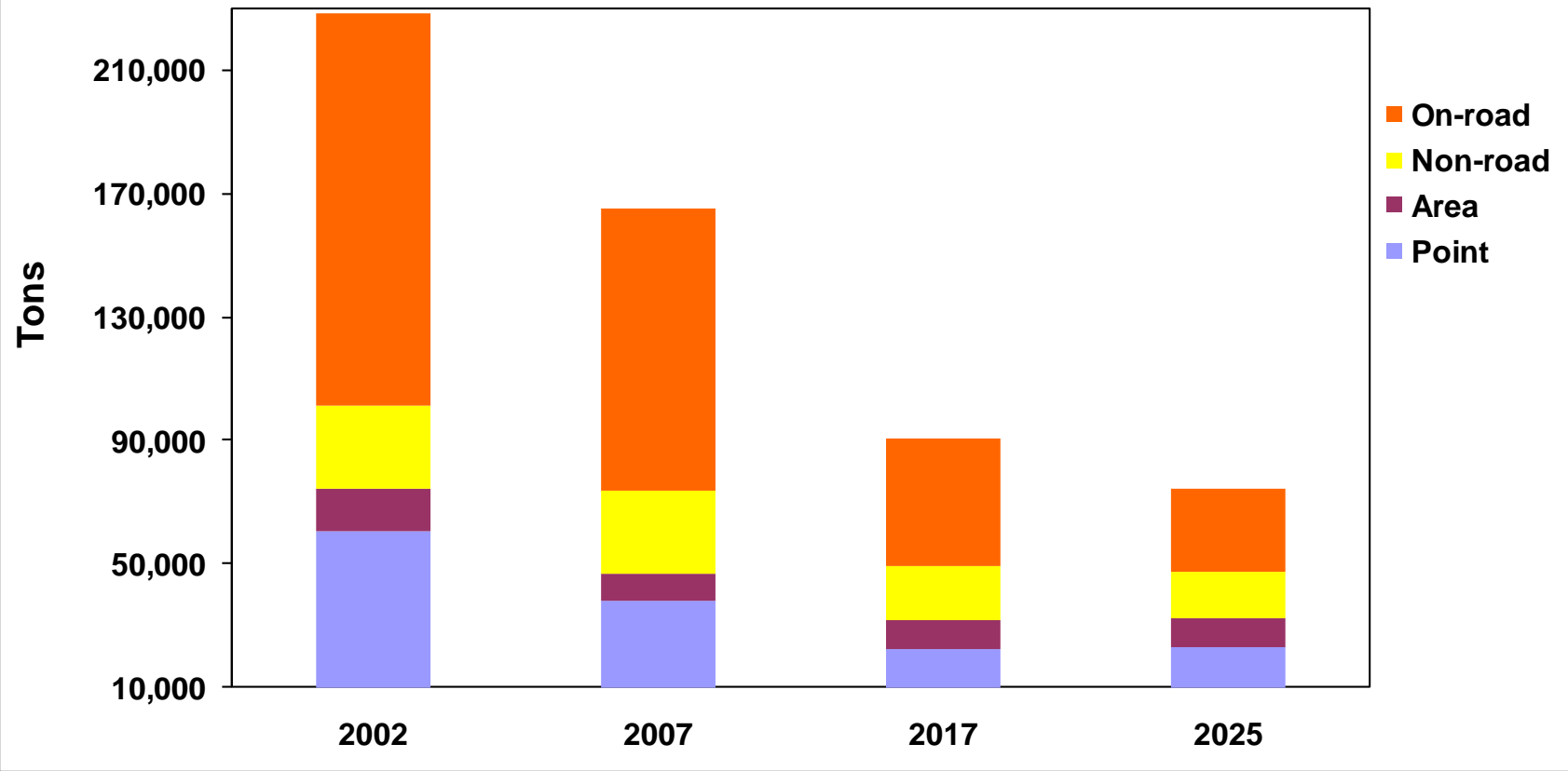
Projected Emissions Trends (NOx, SO2, PM2.5) 2007-2025



PM2.5-Pri Emission Trend Washington, DC-MD-VA Annual PM2.5 Non-Attainment Area

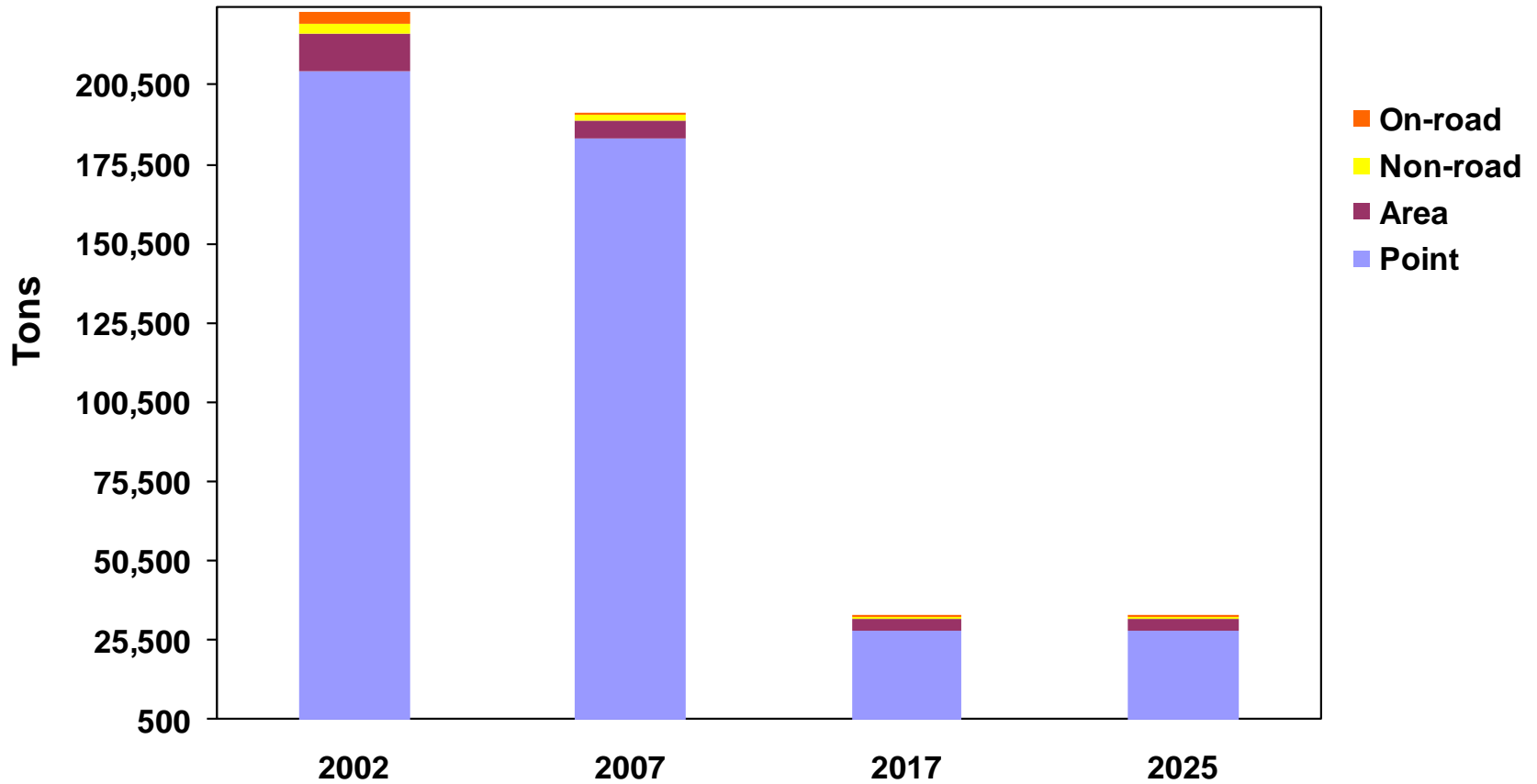


NOx Emission Trend Washington, DC-MD-VA Annual PM2.5 Non-Attainment Area



SO2 Emission Trend

Washington, DC-MD-VA Annual PM2.5 Non-Attainment Area



PM2.5 R/MP - Where We Are?

- **NO_x, SO₂, & PM_{2.5}-Primary (Pri-) emissions**
 - 2002 > 2007
 - Reduced emission satisfies the criterion for Redesignation Request
 - 2007 > 2017
 - 2007 > 2025
 - Downward trend demonstrates continued maintenance of 1997 annual PM_{2.5} standard (15 ug/m³)
- **Remaining issue: mobile budgets for PM_{2.5}-Pri & NO_x**

How Do Transportation Plans Relate to the SIP?

- The SIP sets the *mobile budget*, the maximum allowable emissions from vehicles.
- TPB must ensure that the regional transportation plan does not result in emissions above this level.

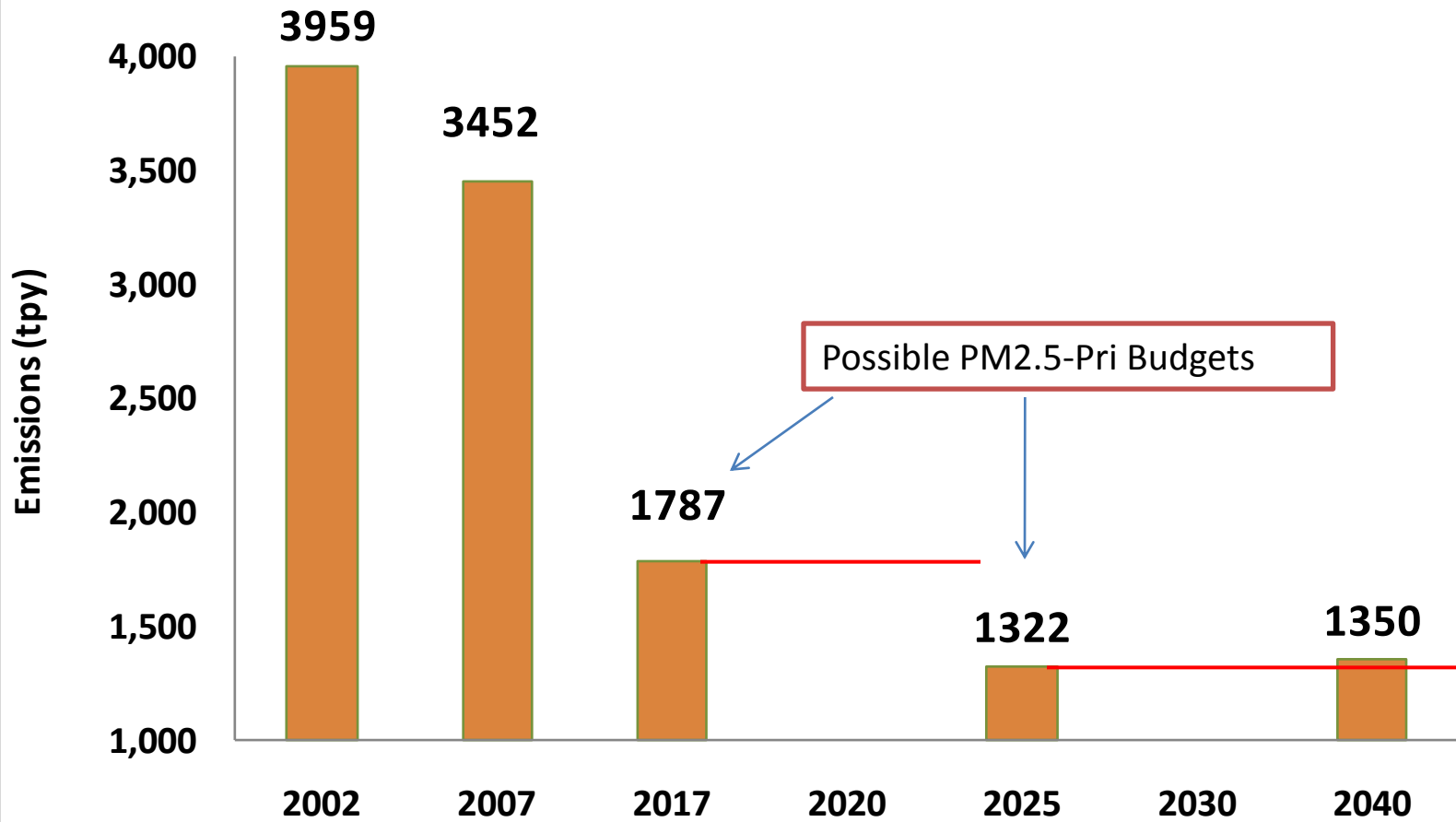
Maintenance Plan/SIP

TIP

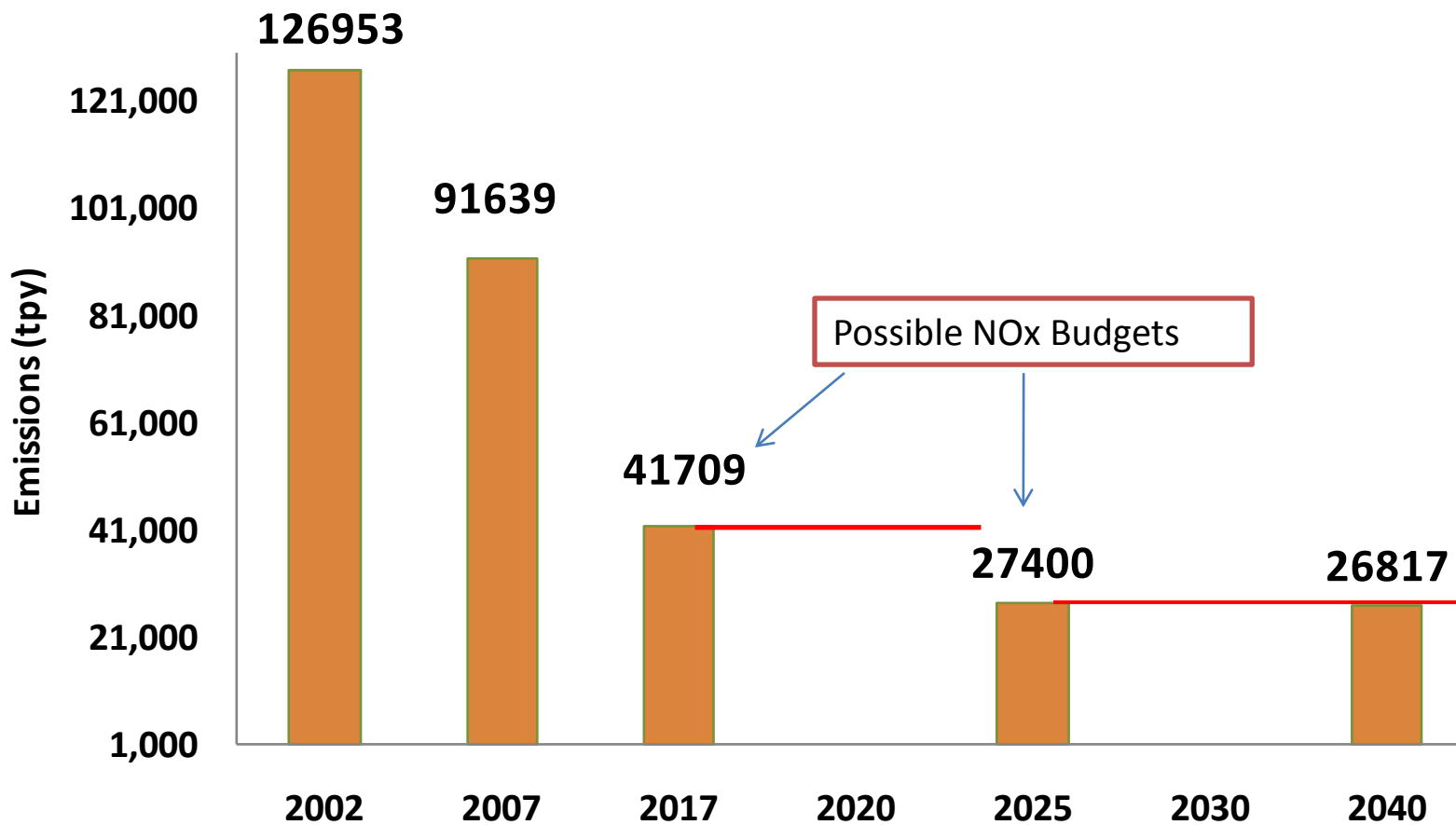


Mobile

Onroad Mobile PM2.5 Emission (Washington, DC-MD-VA PM2.5 NAA)



Onroad Mobile NO_x Emission (Washington, DC-MD-VA PM_{2.5} NAA)



Transportation Planning Board Position

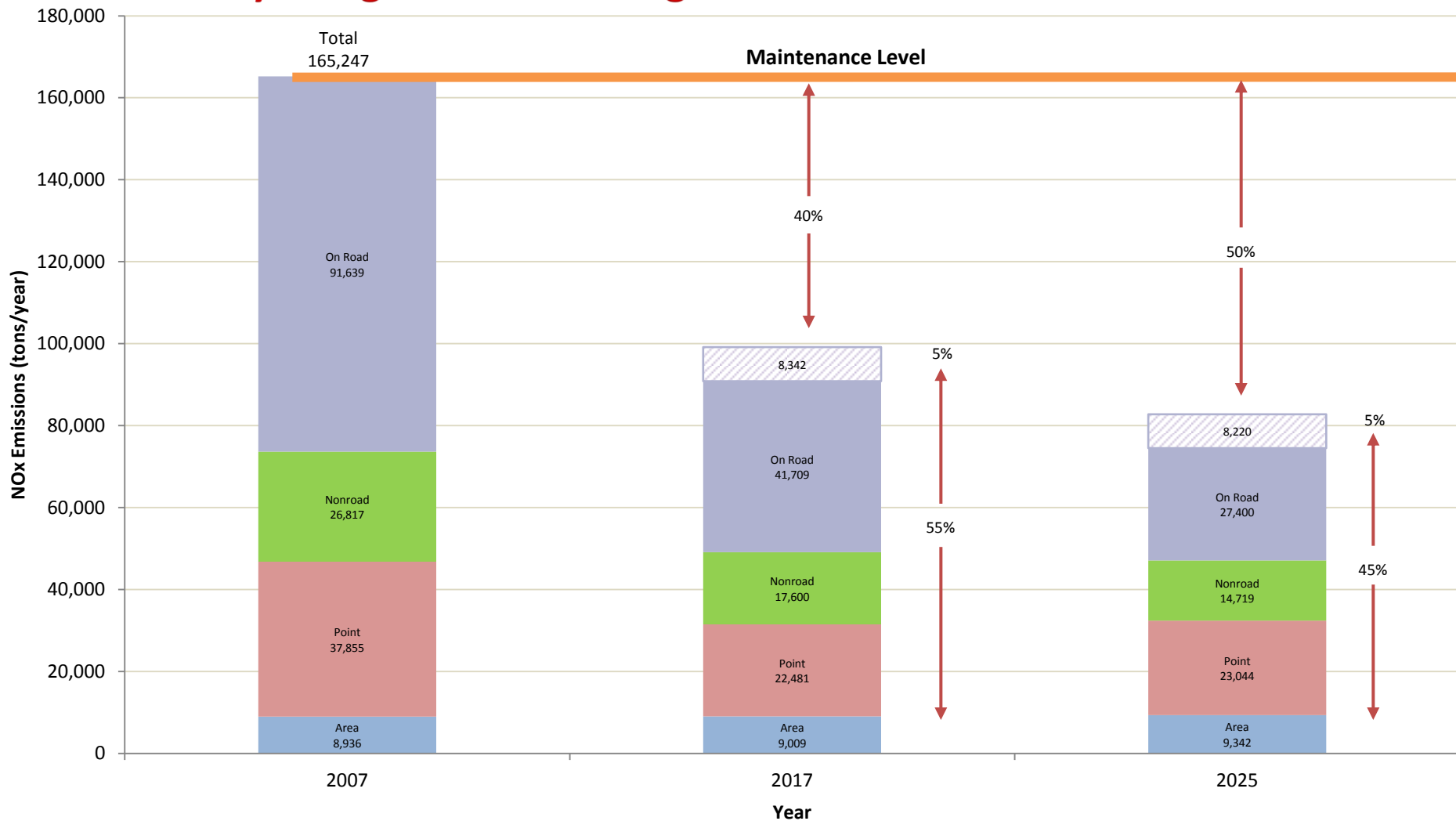
Elena Constantine

Dept. Transportation Planning

MWCOG

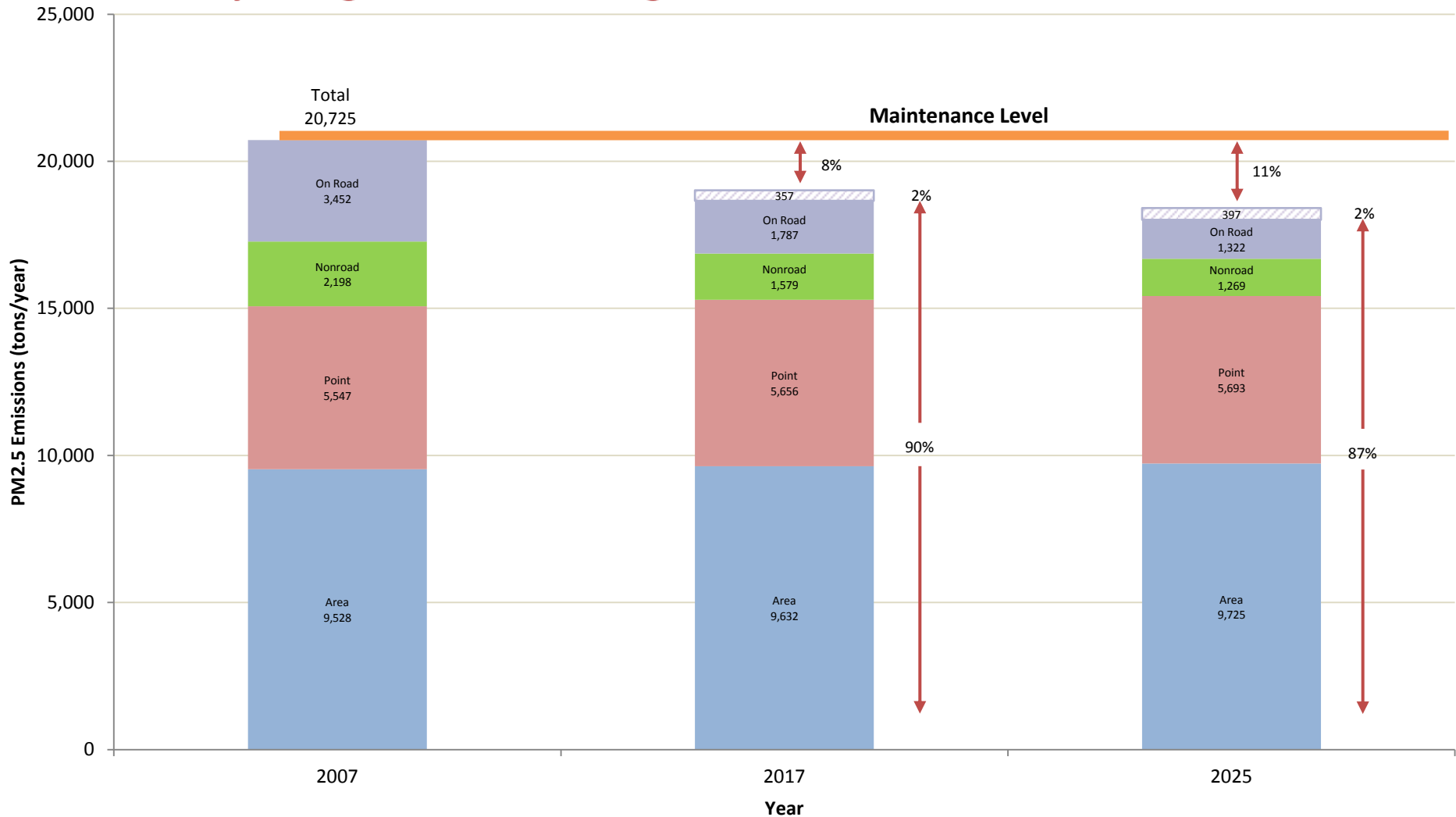
SETTING MOTOR VEHICLE EMISSIONS BUDGETS

Safety Margins as Percentages of Maintenance Level for NOx



SETTING MOTOR VEHICLE EMISSIONS BUDGETS

Safety Margins as Percentages of Maintenance Level for PM2.5



MOTOR VEHICLE EMISSIONS BUDGETS

Consequences of Conformity Lapse

- If conformity is not attained, a one-year lapse grace period starts: only projects already in a conforming Plan and TIP can move ahead
- If conformity is not attained within the grace period, the Plan/TIP enter a conformity lapse period: only three types of projects can move ahead:
 - Exempt projects from Air Quality Conformity determination
 - Transportation Control Measures (TCMs), which are in an approved SIP
 - Select phases of project development (e.g., design, R-O-W acquisition or construction having funding commitments, approval or authorization prior to the conformity lapse)
- No major new transit or highway projects could move forward during a conformity lapse period

SETTING MOTOR VEHICLE EMISSIONS BUDGETS

Key Considerations

Uncertainties in the 2017 and 2025 inventories stemming from:

➤ **Future vehicle fleet mix projections**

Example: The regional vehicle fleet aged an average of 1.21 years between 2005 and 2011. If (hypothetically) the vehicle fleet were to age another 1.21 years by 2025, precursor NO_x and primary PM_{2.5} emissions inventories would increase by 19 percent and 16 percent respectively

➤ **New versions of emissions estimating models (MOVES2010a, MOVES2010b, MOVES2013)**

Example: 2011 CLRP emissions with MOVES for year 2040 were higher by 126 percent for precursor NO_x, and 76 percent for primary PM_{2.5}, than corresponding estimates derived using Mobile6.2 for same fleet and travel inputs

➤ **No requirements to update SIPs** in order to address externally driven changes in key inputs such as regional vehicle fleet and EPA-mandated emissions model updates

SETTING MOTOR VEHICLE EMISSIONS BUDGETS

Transportation Emissions Reductions Measures (TERMs) have limited potential to reduce mobile emissions

- The TERMS already in the adopted 2011 CLRP taken together reduce precursor NO_x emissions for year 2040 by approximately one percent and primary PM_{2.5} by two percent
- The 26 next most cost-effective TERMS taken together would reduce precursor NO_x emissions for year 2040 by an additional two percent and primary PM_{2.5} by an additional one percent, at a cost of \$85 million annually

Note: Estimates derived using the Mobile6.2 emissions model

MOTOR VEHICLE EMISSIONS BUDGETS

Action Items

1. TPB to recommend to MWAQC safety margins for the 2012 PM2.5 Maintenance Plan as follows:
 - 20 percent safety margin for precursor NOx and primary PM2.5 for year 2017
 - 30 percent safety margin for precursor NOx and primary PM2.5 for year 2025
2. TPB to prepare a letter of recommendation to MWAQC articulating the need for safety margins for the interim and out years of the Maintenance Plan
3. TPB to urge MWAQC to commit to updating SIPs and motor vehicle emissions budgets when changes to the emissions estimating models mandated by EPA result in significant changes in emissions inventories

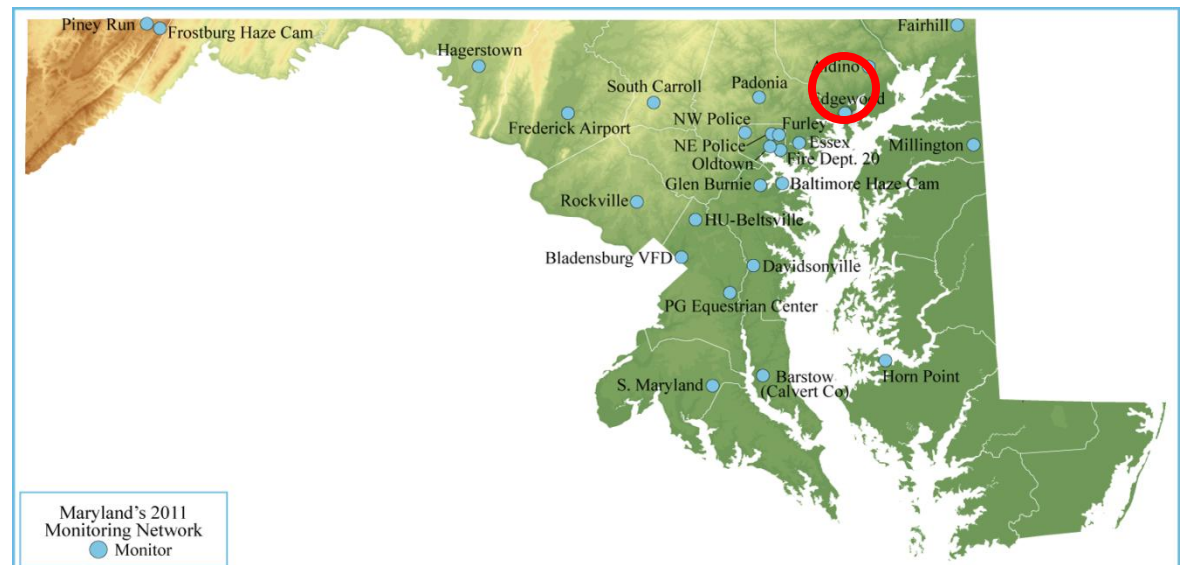
Air Quality Arguments, MDE and DDOE

Tad Aburn, Air Director, MD Dept. of
Environment

Cecily Beall, District Dept. of
Environment

Washington's Impact on Baltimore

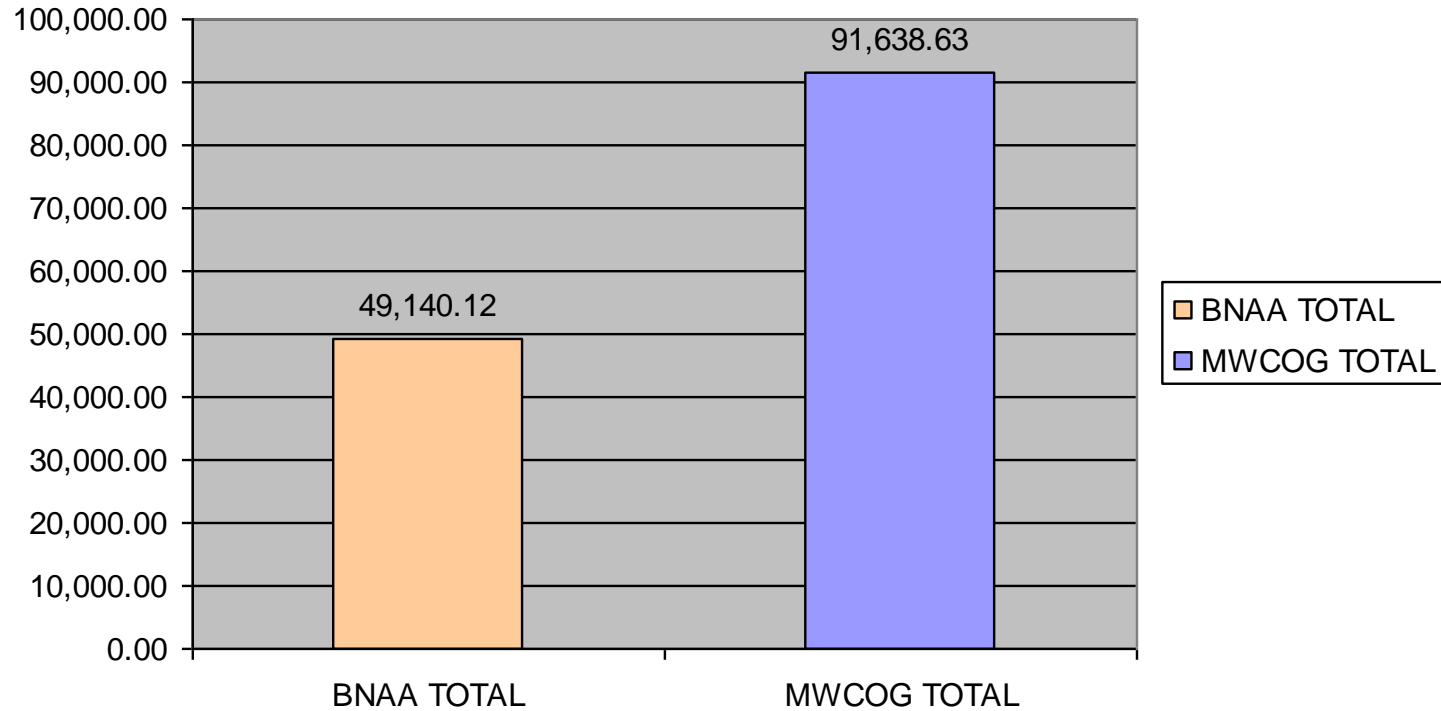
- Baltimore has a very difficult monitor in Edgewood, Maryland
 - Very close to the Chesapeake Bay
 - Last remaining problem monitor in the East for the 85 ppb ozone standard
- Recent research shows that – for ground level ozone - local transport from the Washington, DC area may significantly impact this monitor
- Research conducted by U of M and MDE to better understand how Chesapeake Bay breezes affect local air quality
- It's the Bays fault



Mobile Source NOx Emissions ...

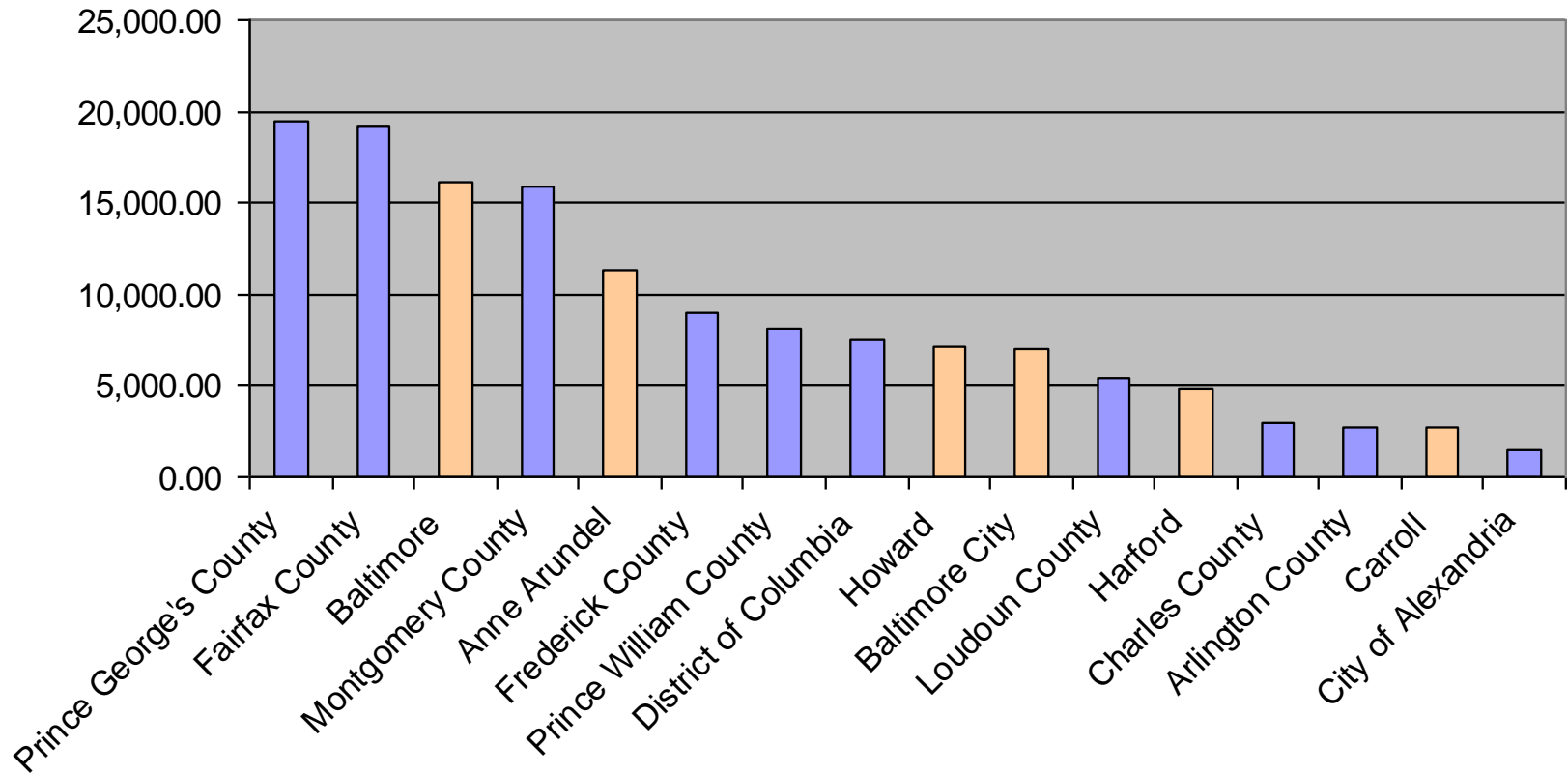
... in the Washington/Baltimore CSA

**Onroad Mobile NOx Comparison
2007 NOx (tpy)**



Mobile Source NOx Emissions ...

Onroad Mobile Comparison
2007 NOx (TPY)



MDE and DDOE Arguments

- Tougher air quality standards coming this year and next for PM2.5 and ozone
- NOx reductions are needed to attain current ozone standard
- Washington, DC area mobile sources contribute NOx to Baltimore region's ozone problem (MDE)
- Small buffer okay for PM2.5; NOx reductions needed (no buffer, lower budget)

Issues to be worked out

- Protect public health by reducing emissions
- Expecting new, tougher ozone and fine particle standards in the next year
- Need to reduce NO_x emissions to lower ozone and fine particle pollution
- Establish mobile budgets (emissions limits) that will conform to the plan and allow new transportation improvements to move ahead