



# PM2.5 Maintenance Plan OVERVIEW

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# Air Pollution: Fine Particles

- Chemical, **particulate matter** or aerosol that modifies the natural characteristics of the atmosphere
- Created locally by emissions from coal combustion, cars & trucks, road construction
- Causes respiratory problems
- Impairs visibility



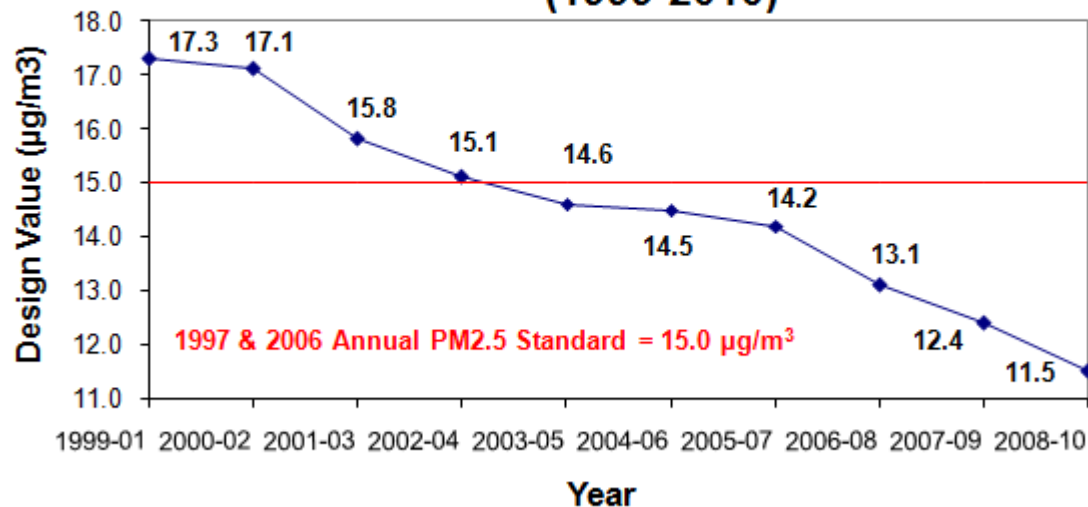
# Steps to Official “Attainment” Status

- 2005 - Air quality monitors indicate that average annual concentrations are below the national health standard
- 2008 – MWAQC, States submitted PM2.5 plan (SIP) showing attainment by 2009
- 2009 - EPA issued a “Clean Data Determination
- 2012 -States request redesignation to attainment and submit a plan to maintain low levels of fine particle pollution for 10 years into future

# Benefits of Attainment

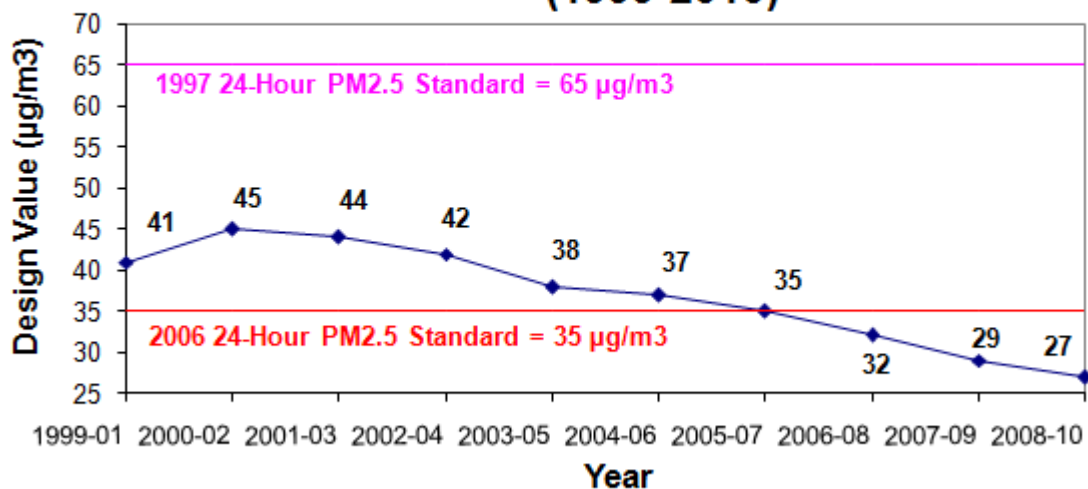
- Official recognition and public awareness:
  - Fine particle pollution (PM<sub>2.5</sub>) levels are lower in the metropolitan Washington area than the level required by the federal health standard
  - Control measures such as cleaner engines, controls on power plants, diesel retrofit measures are working.
- Reduces a significant obstacle for locating new cleaner generation capacity (economic development)

## Annual PM2.5 Design Value Washington, DC-MD-VA Nonattainment Area (1999-2010)



\* Design value = 3-year avg of annual mean PM<sub>2.5</sub> concentrations.

## 24-Hour PM2.5 Design Value Washington, DC-MD-VA Nonattainment Area (1999-2010)



\* Design value = 3-year average of 98<sup>th</sup> Percentile of PM<sub>2.5</sub> concentrations.

# Maintenance Plan

- **Emissions Inventories**
  - Continued emissions reduction in future
- **Mobile Budgets**
  - Mobile emissions ceiling for transportation conformity purposes
- **Contingency Measures**
  - Emissions controls to be implemented if region exceeds PM2.5 standard in future



# Emissions Inventories: 2002, 2007, 2017, 2025



Point Source (Electric Generating Units & Non-EGU)



Area Source (residential wood burning, road dust)



Nonroad Source (lawn mowers, marine engine, airport, railroad)



Onroad Source (motor vehicles)



# Redesignation Request & Maintenance Plan Timeframe

Base Year

Attainment  
Year

Interim Year

Out Year

2002

2007

2017

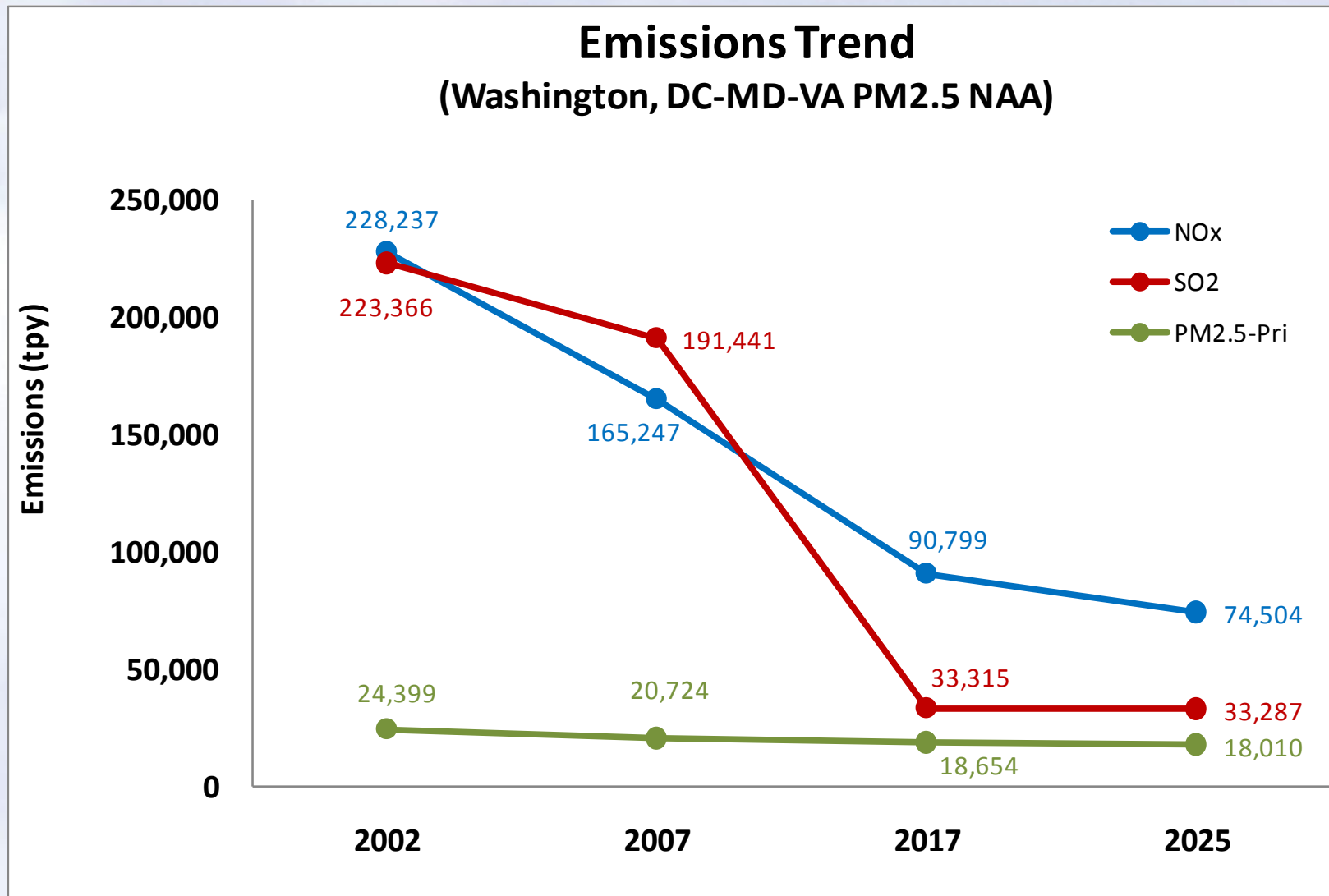
2025

Redesignation Request

Maintenance Plan

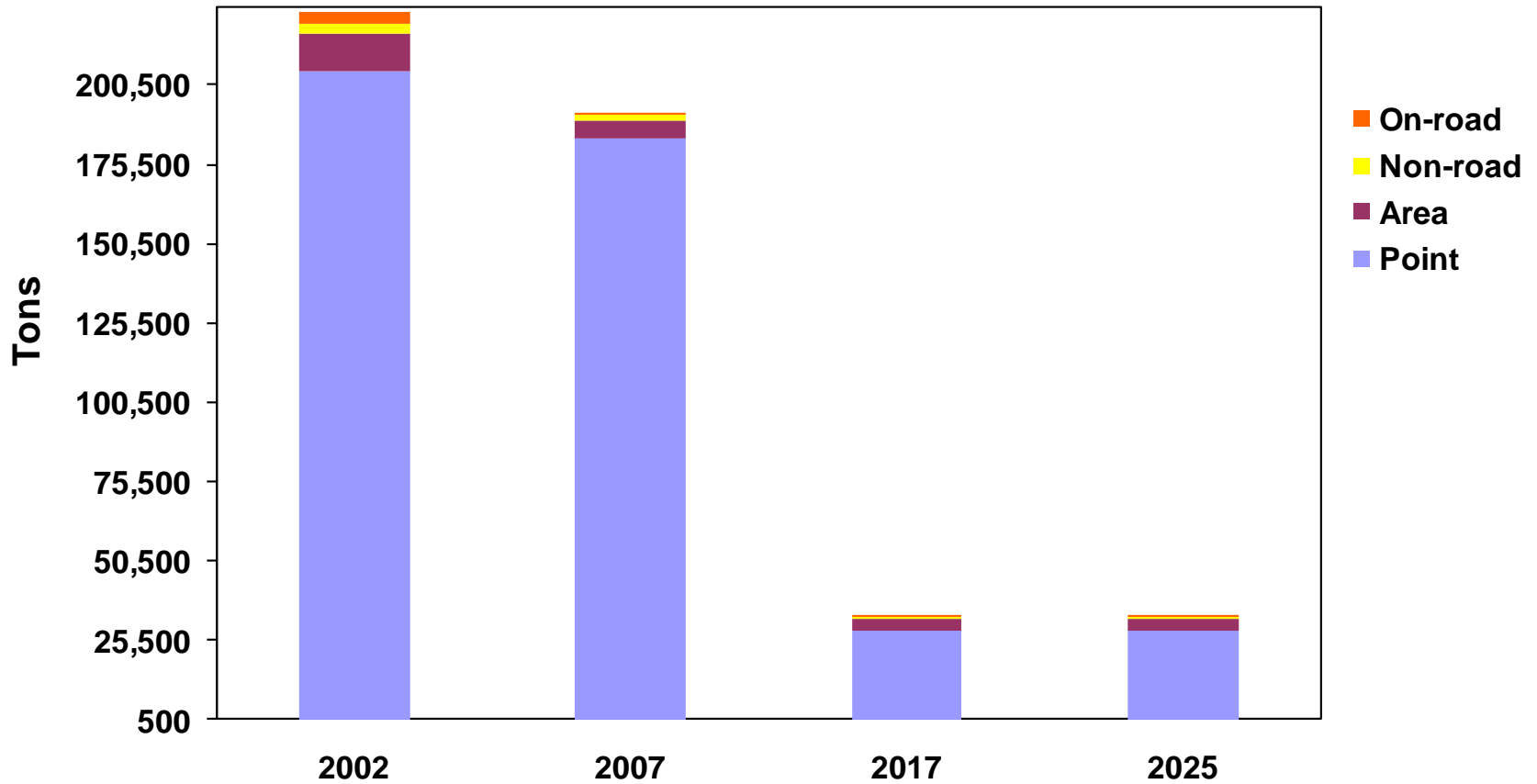


# Emissions Trends, NOx, SO2, PM2.5 2007-2025

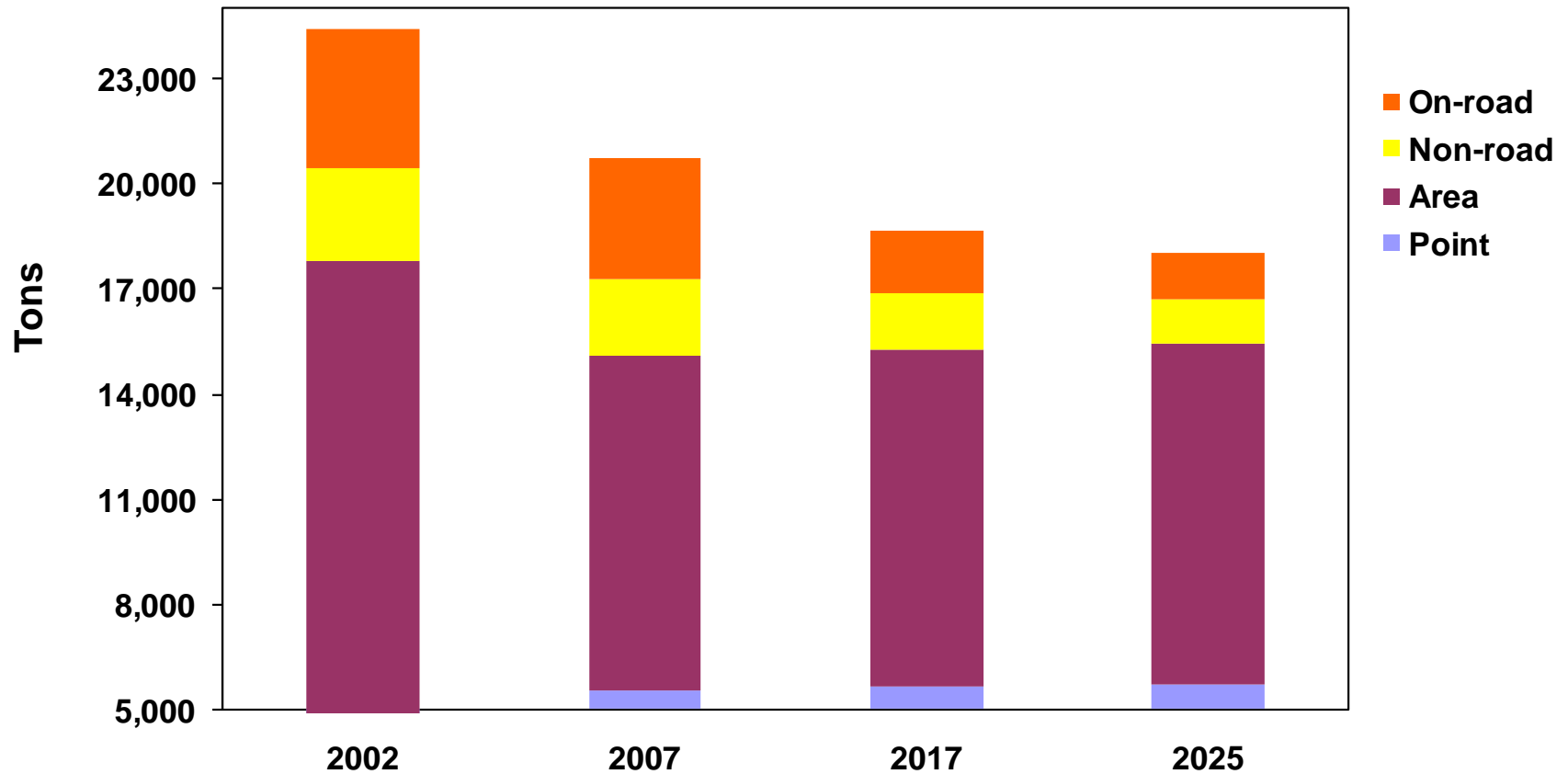


# SO2 Emission Trend

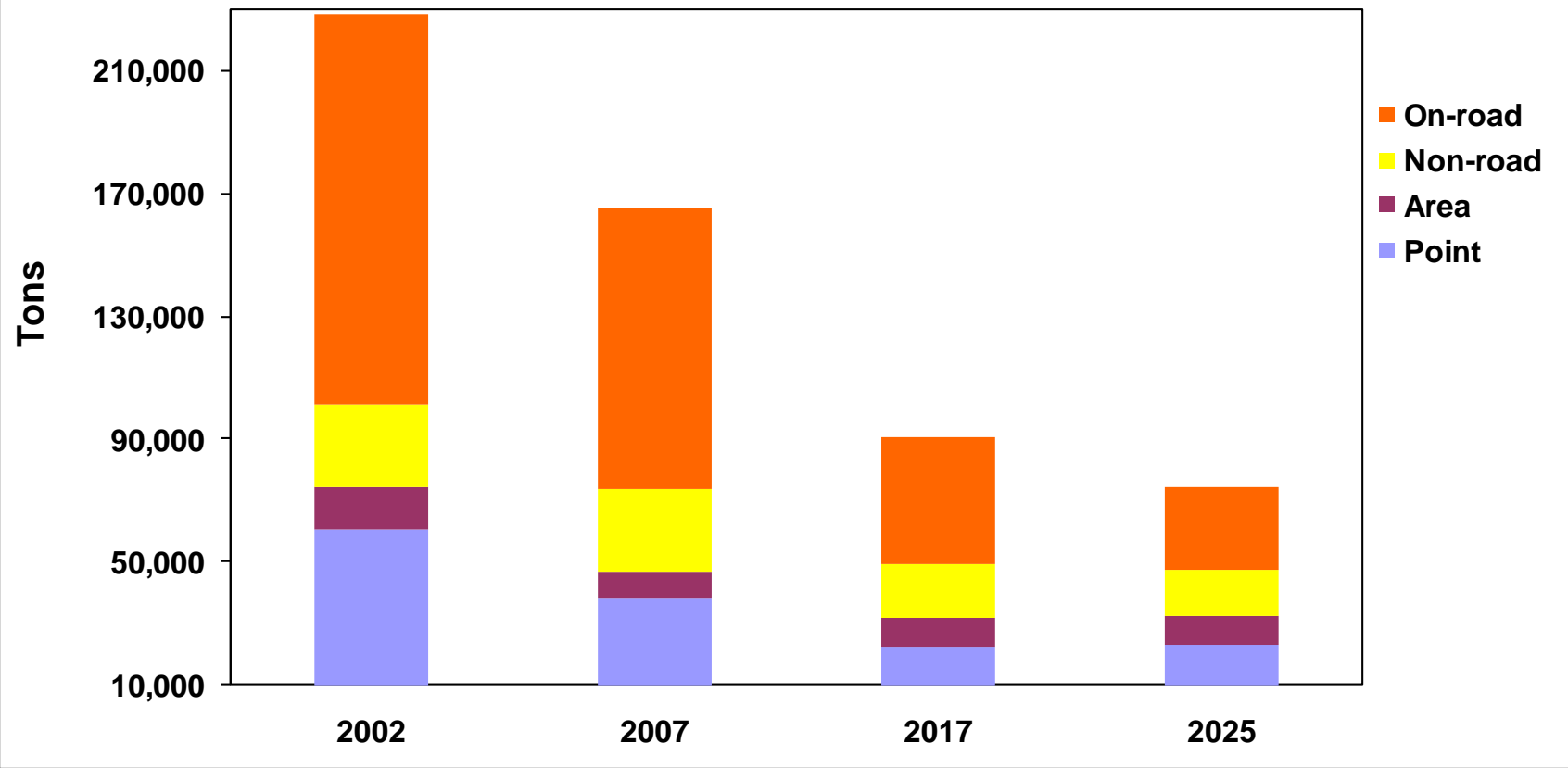
## Washington, DC-MD-VA Annual PM2.5 Non-Attainment Area



## 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



# PM2.5 Maintenance Plan

## – **NO<sub>x</sub>, SO<sub>2</sub>, & PM<sub>2.5</sub>-Primary emissions**

- 2002 > 2007
  - Reduced emission satisfies the criterion for Redesignation Request
- 2007 > 2017
- 2007 > 2025
  - Downward trend demonstrates continued maintenance of 1997 annual PM<sub>2.5</sub> standard (15 ug/m<sup>3</sup>)

# 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



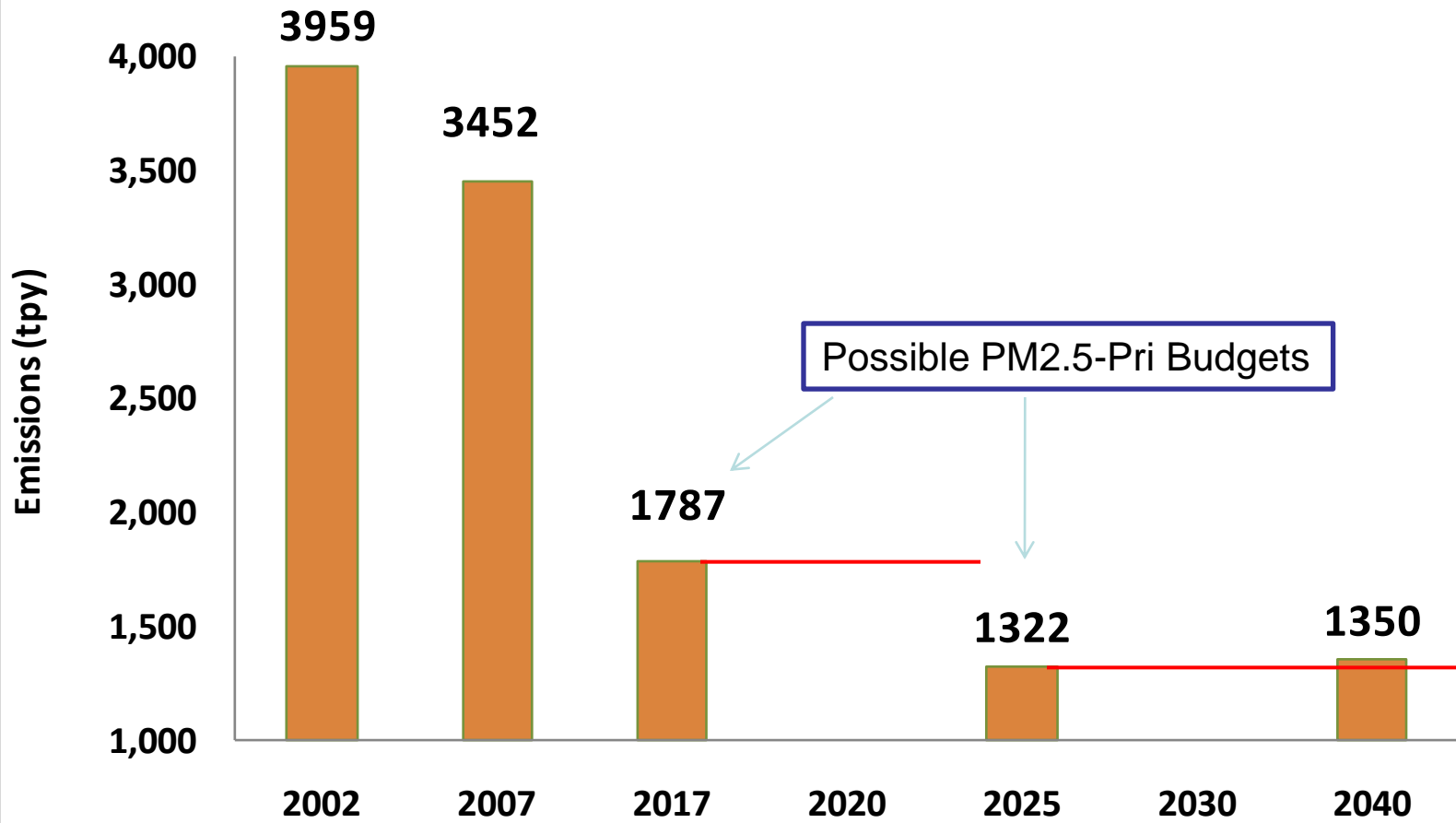
Mobile



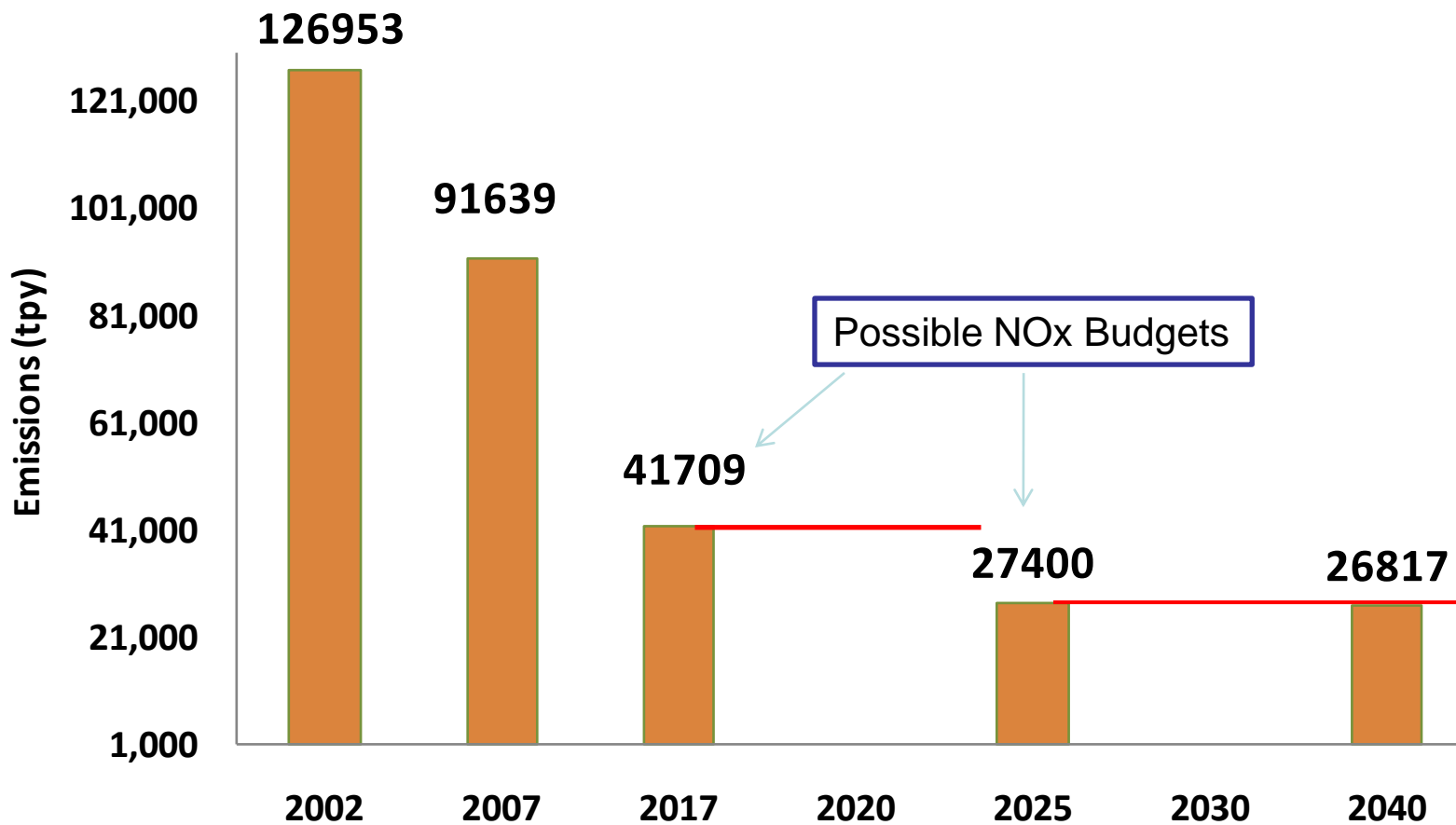
# Maintenance Plan: Mobile Budgets

- **The Maintenance Plan sets two mobile emissions ceilings (“budgets”) for future years (NO<sub>x</sub> and PM<sub>2.5</sub>)**
- **Clean Air Act requires transportation sector emissions can not go over the ceiling (conformity assessment)**
- **Transportation sector emissions are estimated whenever a new TIP is proposed**

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



# Onroad Mobile NO<sub>x</sub> Emission (Washington, DC-MD-VA PM<sub>2.5</sub> NAA)



# Issues

- Protect **public health** by reducing emissions
- Need to reduce  $\text{NO}_x$  emissions to lower ozone and fine particle pollution
- New, tougher ozone and fine particle standards in the next year
- Establish mobile budgets (emissions limits) that will conform to the plan and allow new **transportation improvements** to move ahead

# PM2.5 Schedule to Redesignation

