Item #5

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

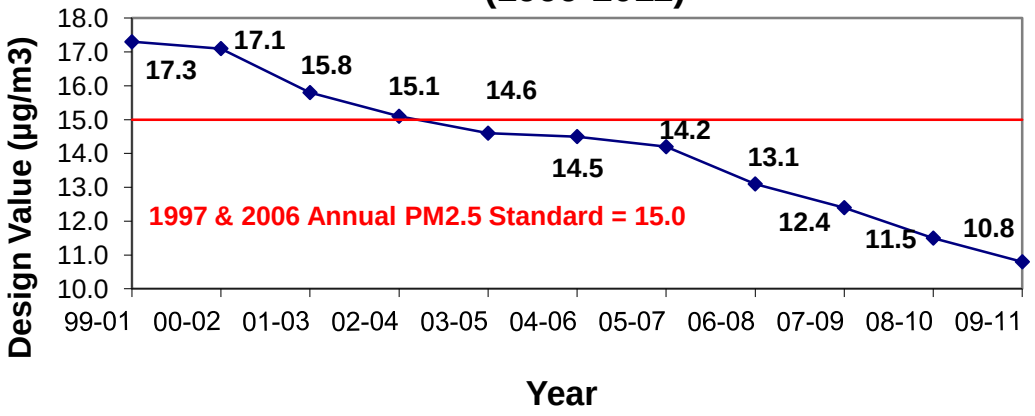
Steps to Official “Attainment” Status

- 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

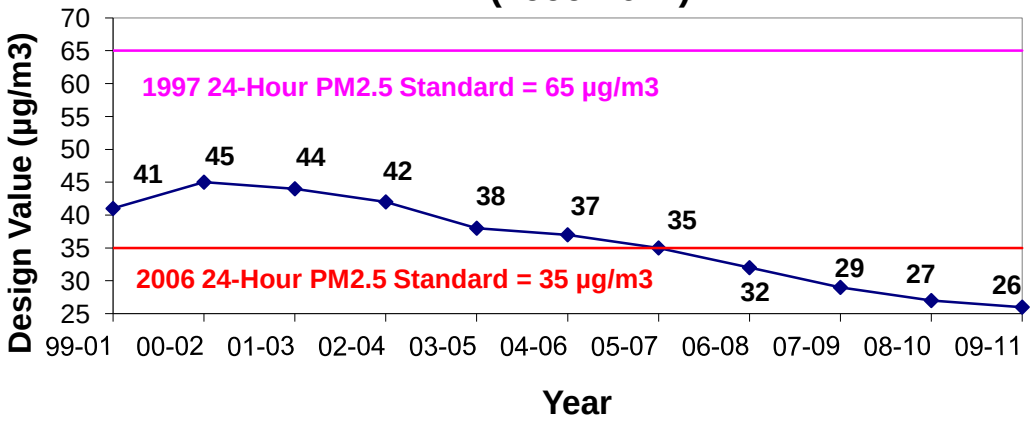
- Official recognition and public awareness:
  - Fine particle pollution ($PM_{2.5}$) levels are lower in the metropolitan Washington area than the level required by the federal health standard
  - Control measures such as cleaner engines, controls on power plants, diesel retrofit measures are working.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

Annual PM2.5 Design Value
Washington, DC-MD-VA Nonattainment Area
(1999-2011)



* Design value = 3-year avg of annual mean PM2.5 concentrations.

24-Hour PM2.5 Design Value
Washington, DC-MD-VA Nonattainment Area
(1999-2011)



* Design value = 3-year average of 98th Percentile of PM2.5 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

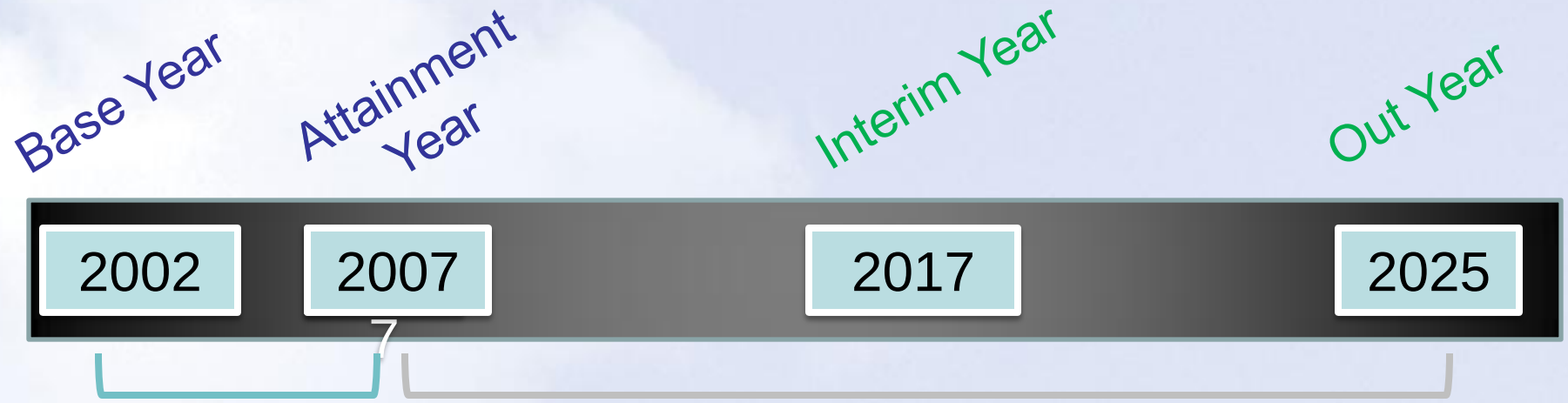
Point Source (Electric Generating Units & Non-EGU)

Area Source (residential wood burning, road dust)

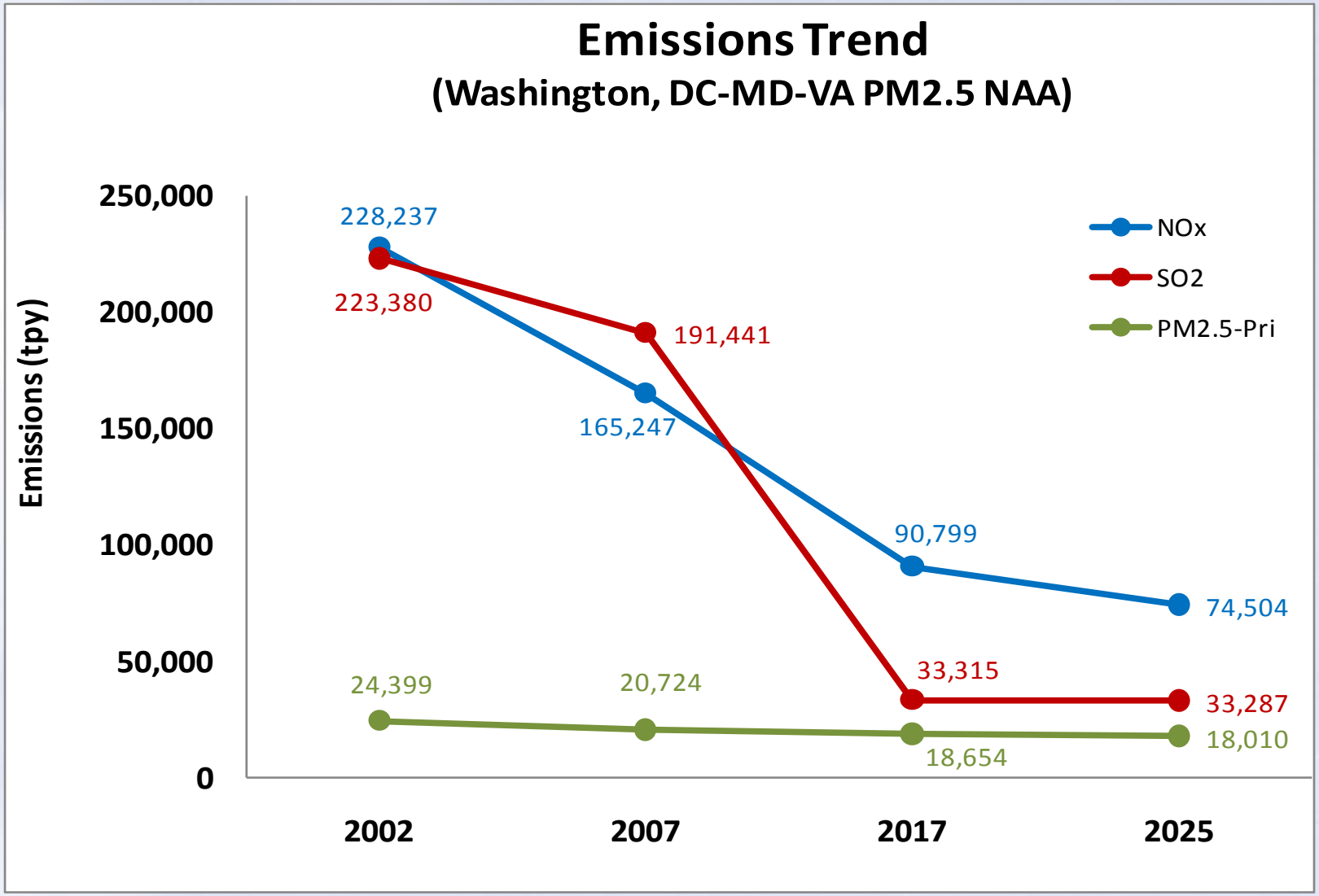
Nonroad Source (lawn mowers, marine engine, airport, railroad)

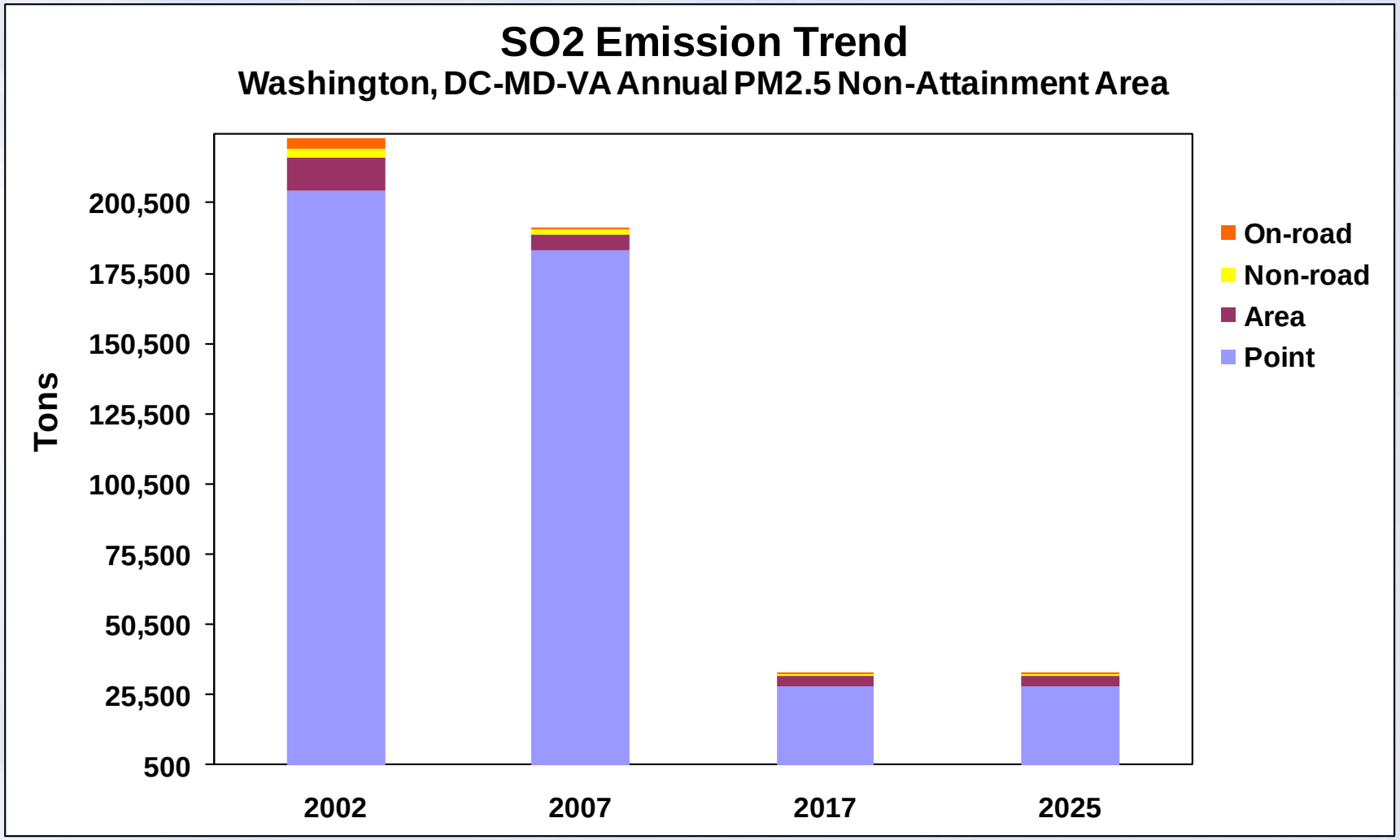
Onroad Source (motor vehicles)

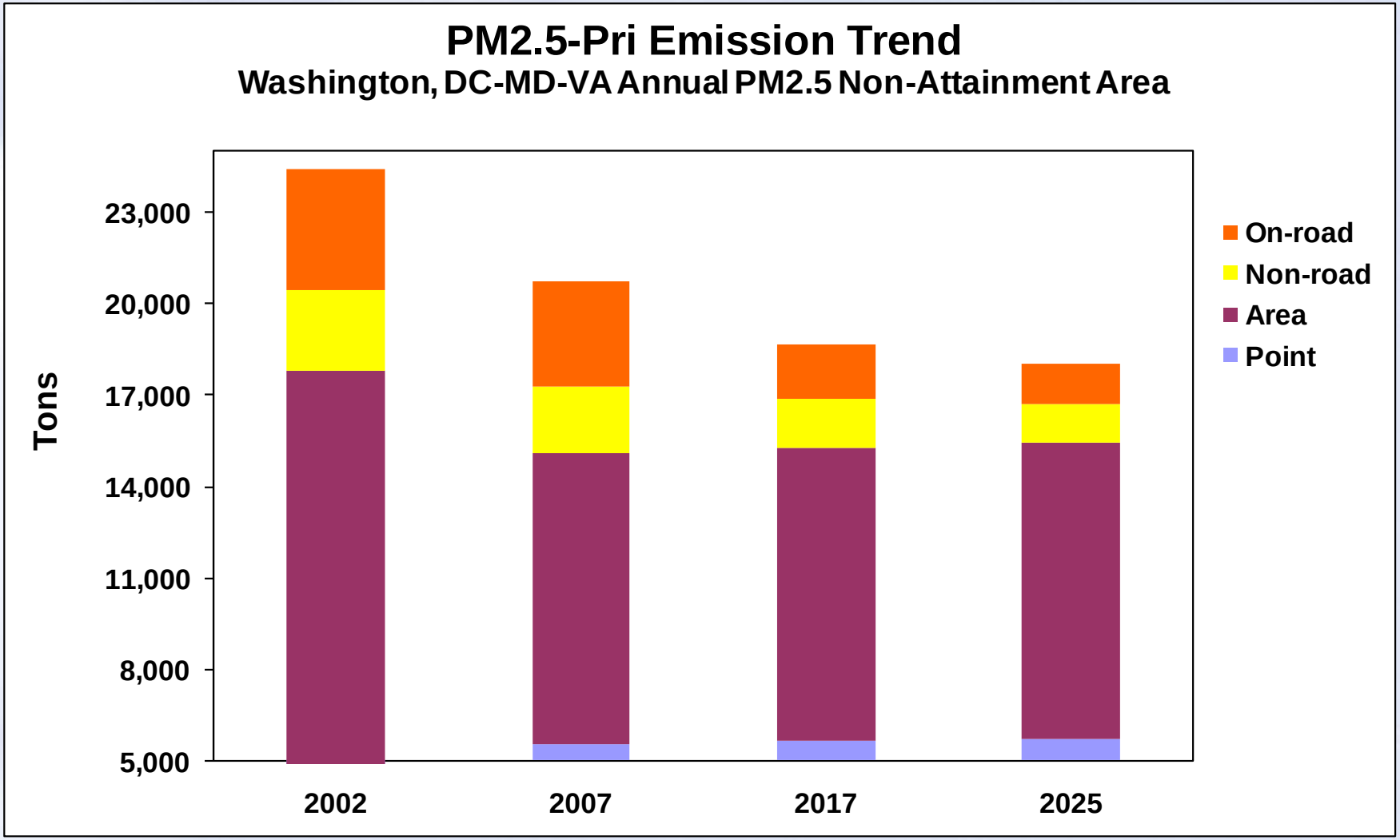
Redesignation Request & Maintenance Plan Timeframe

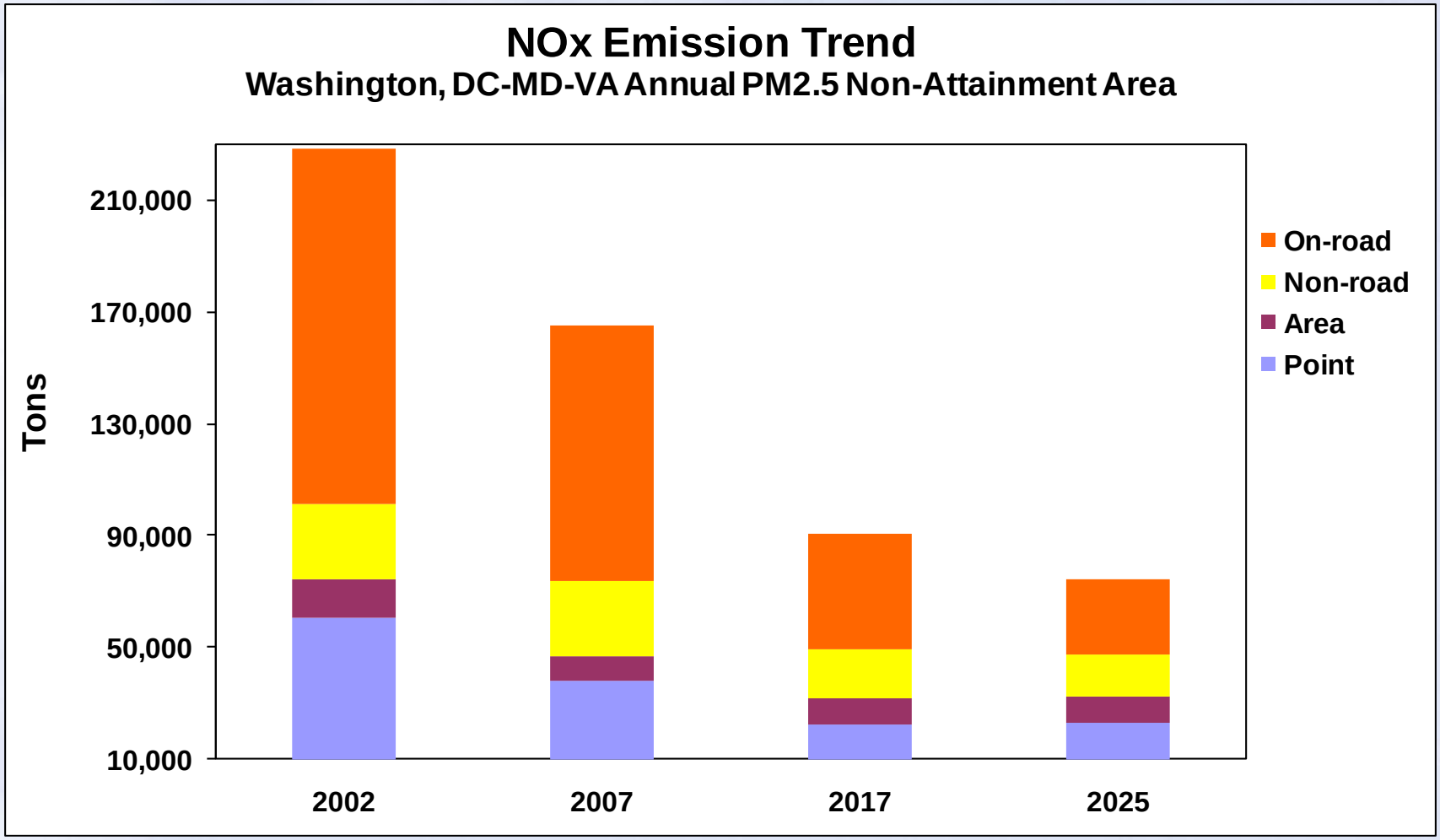


Emissions Trends, NOx, SO2, PM2.5 2007-2025




SO2 Emission Trend
Washington, DC-MD-VA Annual PM2.5 Non-Attainment Area
Tons
200,500
175,500
150,500
125,500
100,500
75,500
50,500
25,500
500
2002
2007
2017
2025
On-road
Non-road
Area
Point


PM2.5-Pri Emission Trend
Washington, DC-MD-VA Annual PM2.5 Non-Attainment Area
Tons
23,000
20,000
17,000
14,000
11,000
8,000
5,000
2002
2007
2017
2025
On-road
Non-road
Area
Point

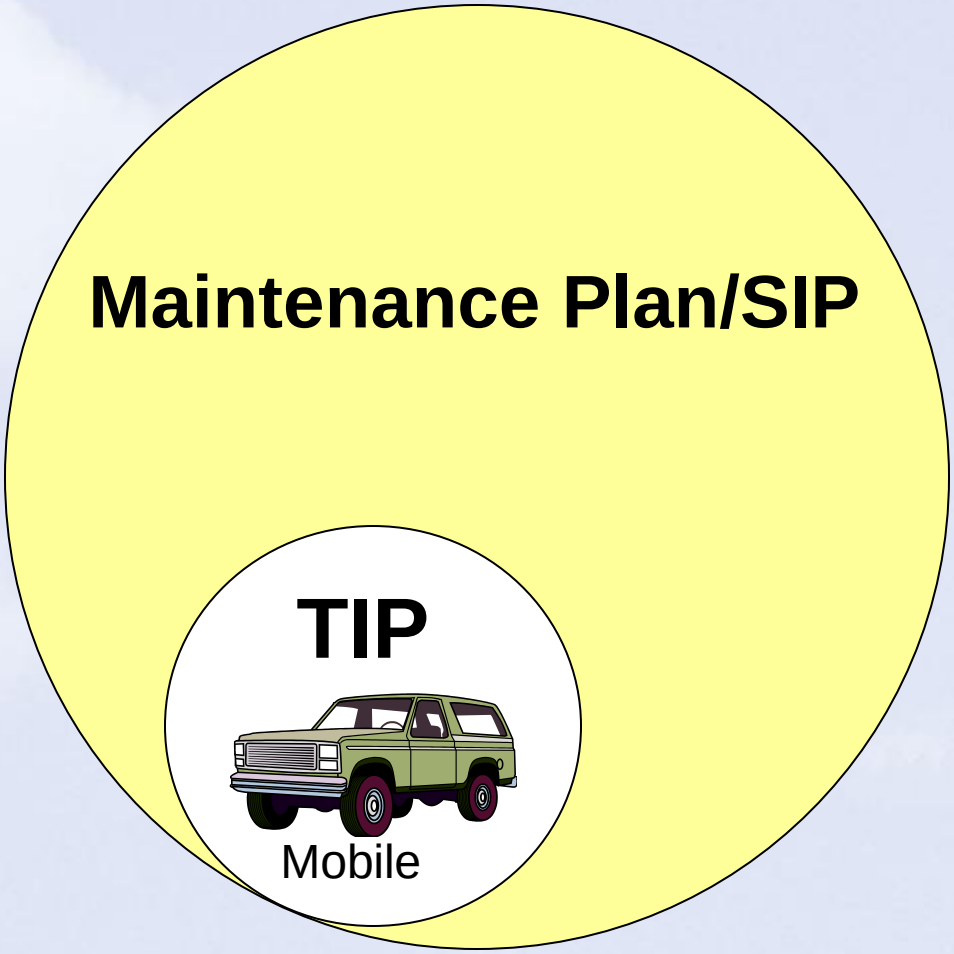

NOx Emission Trend
Washington, DC-MD-VA Annual PM2.5 Non-Attainment Area
Tons
210,000
170,000
130,000
90,000
50,000
10,000
2002
2007
2017
2025
On-road
Non-road
Area
Point

PM2.5 Maintenance Plan

- **NOx, SO2, & PM2.5-Primary emissions**
  - 2002 > 2007
    - Reduced emission satisfies the criterion for Redesignation Request
  - 2007 > 2017
  - 2007 > 2025
    - Downward trend demonstrates continued maintenance of 1997 annual PM2.5 standard (15 ug/m3)

How Do Transportation Plans Relate to the SIP?

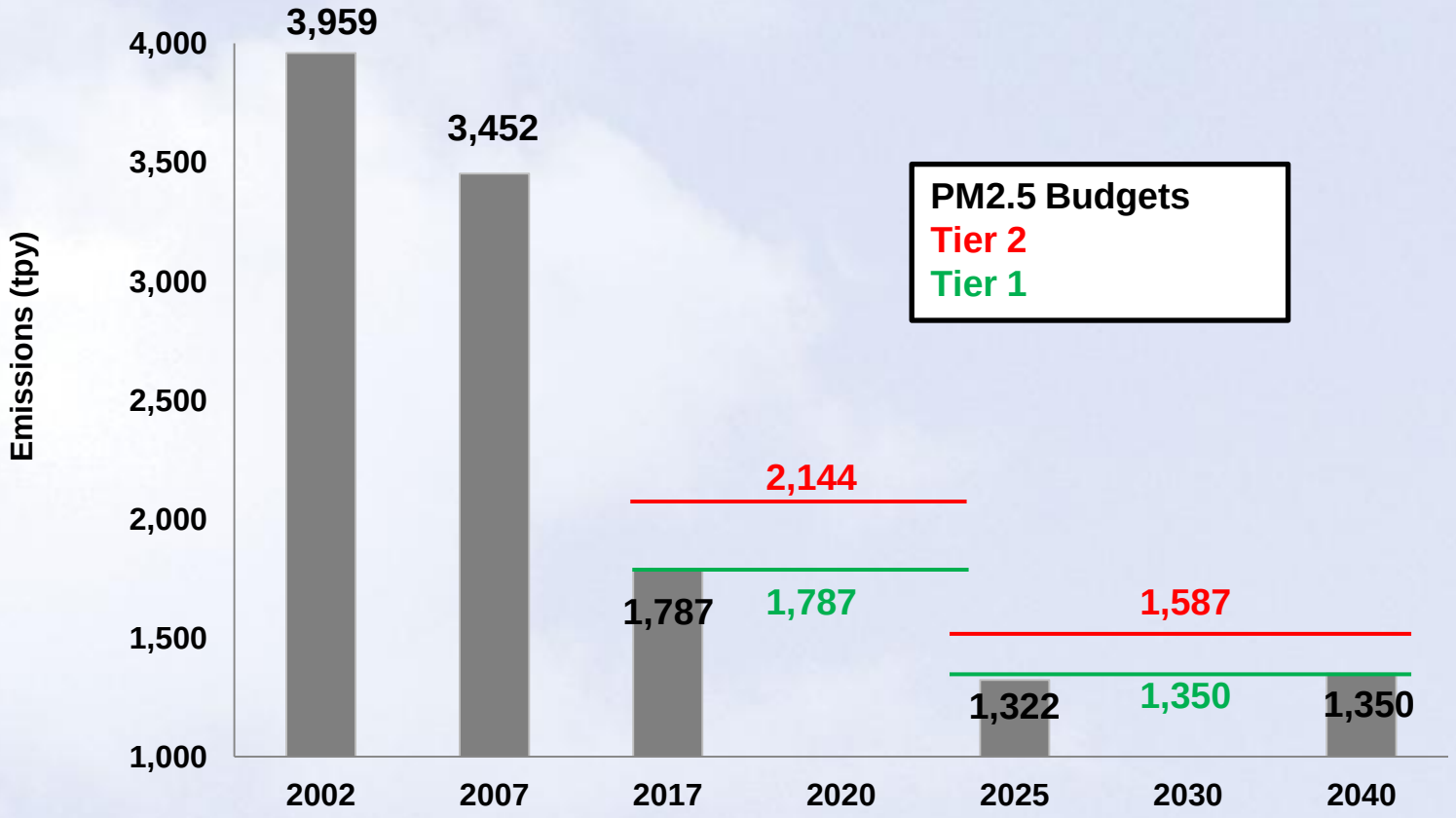
- The SIP sets the *mobile budget*, the maximum allowable emissions from vehicles.
- TPB must ensure that the regional transportation plan does not result in emissions above this level.



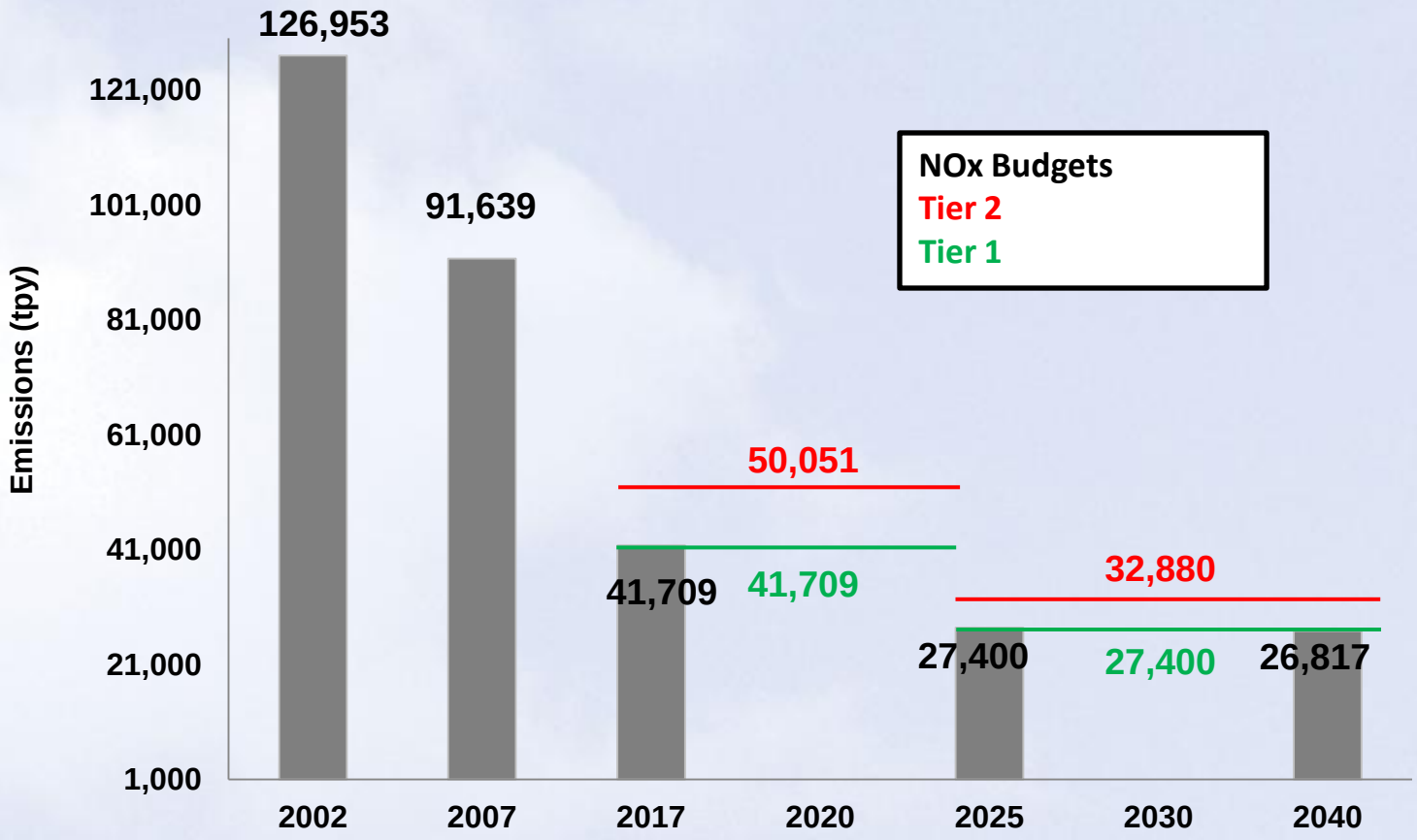
Maintenance Plan: Mobile Budgets

- **The Maintenance Plan sets two mobile emissions ceilings (“budgets”) for future years (NOx and PM2.5)**
- **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 NOx Emission (Washington, DC-MD-VA PM2.5 NAA)



Issues

- Protect public health by reducing emissions
- Need to reduce 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