ITEM 11 - Information
February 15, 2012

Briefing on Mobile Emissions Inventories for Fine Particle Pollution (PM2.5) for the 2012 Redesignation Request and Maintenance Plan

Staff Recommendation: Receive briefing on the scope and schedule for the redesignation request and maintenance plan, and on the mobile emission inventories that have been prepared as part of the maintenance plan.

Issues: None

Background: The Metropolitan Washington Air Quality Committee (MWAQC) is preparing a request to EPA for redesignation of the Washington DC-MD-VA nonattainment area to attainment status for PM2.5, along with a maintenance plan demonstrating compliance with PM2.5 standards through 2025.

National Capital Region Transportation Planning Board

777 North Capitol Street, N.E., Suite 300, Washington, D.C. 20002-4290 (202) 962-3310 Fax: (202) 962-3202

M E M O R A N D U M

To: **Transportation Planning Board**
From: **Elena Constantine**
Director, Systems Planning Applications
Date: **February 9, 2012**
Re: **Mobile Emissions Inventories for Fine Particle Pollution (PM2.5) and Implications for Air Quality Conformity**

BACKGROUND

A State Implementation Plan (SIP) for attaining PM2.5 pollution standards for the Washington region was submitted to EPA in 2008, but it was not acted on by EPA. The air quality in the region with respect to PM2.5 has been improving since 2005 based on data from monitors. Using such data, EPA issued a "Clean Data Determination" in 2009, which suspended the need for a wide range of regional activities aiming to bring the region into compliance with the national air quality standards. Once the region met the national standards for PM2.5, it was necessary to request that EPA formally re-designate the region as an "attainment area", and to develop a "Maintenance Plan" ensuring that compliance with the standards across all sources of emissions categories could be sustained into the future. In this context, PM2.5 emissions inventories were developed for all sources: point, area, non-road and on-road (i.e., motor vehicle).

DEVELOPMENT OF ON-ROAD PM2.5 EMISSIONS INVENTORIES

For the 2012 PM2.5 Maintenance Plan, emissions inventories were developed for the following milestone years:

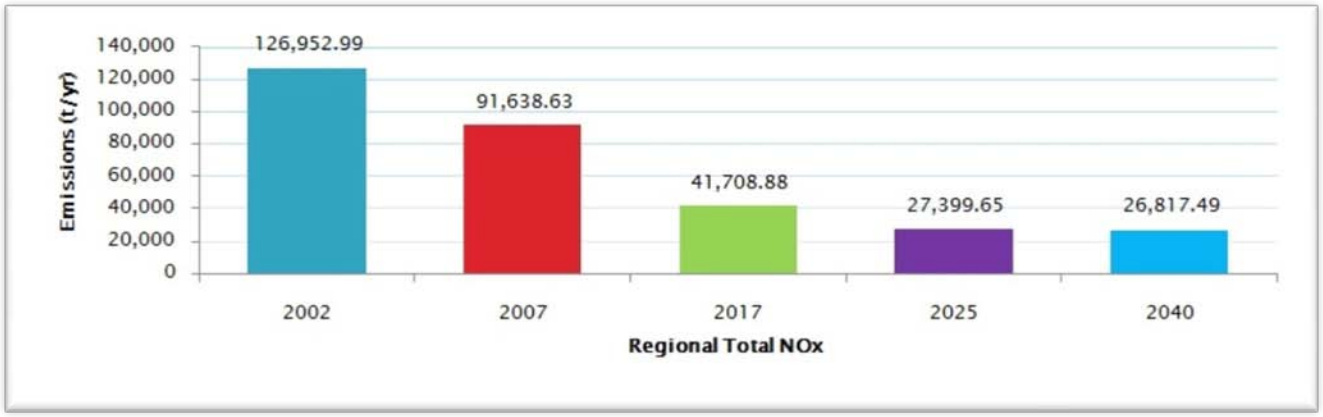
- 2002 (Base Year)
- 2007 (Attainment Year)
- 2017 (Interim Year)
- 2025 (Out Year)

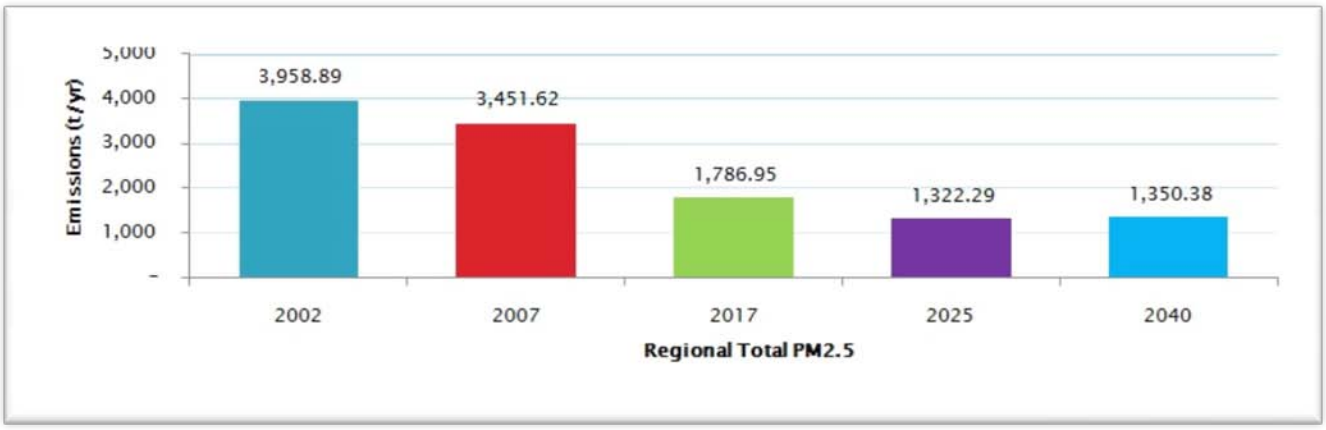
In addition, year 2040 analyses were undertaken for informational purposes in order to assess potential changes in emissions inventories in the out years of the Transportation Plan.

The analyses were conducted using the following planning assumptions:

- COG/TPB Version 2.3 Model (approved by the Board in November 2011)
- 2011 Constrained Long Range Plan (approved by the Board in November 2011)
- Round 8.0a Cooperative Land Use Forecasts
- MOVES2010a emissions model

ON-ROAD PM2.5 EMISSIONS INVENTORIES FINDINGS





- ✓ On-road precursor NOx emissions inventories have been declining since 2002; projected on-road NOx emissions for 2025 would be just 22 percent of what they were in 2002
- ✓ On-road PM2.5 emissions inventories have also been declining since 2002; projected on-road PM2.5 emissions for 2025 would be just 33 percent of what they were in 2002

Annual Inventories of PM2.5 (t/yr)

State	2002	2007	2017	2025	2040
DC	302.27	272.39	157.14	123.80	120.25
Suburban MD	2,056.87	1,756.91	890.64	637.90	645.89
Northern VA	1,599.75	1,422.32	739.17	560.59	584.24
Regional Total	**3,958.89**	**3,451.62**	**1,786.95**	**1,322.29**	**1,350.38**

Annual Inventories of Precursor NOx (t/yr)

State	2002	2007	2017	2025	2040
DC	9,962.80	7,511.73	3,395.06	2,005.43	1,890.08
Suburban MD	63,391.74	47,279.13	22,097.45	14,225.15	13,381.33
Northern VA	53,598.46	36,847.77	16,216.37	11,169.07	11,546.08
Regional Total	126,952.99	91,638.63	41,708.88	27,399.65	26,817.49

- ✓ On-road precursor NOx emissions inventories in suburban Maryland are projected to decline between 2025 and 2040, a trend that was attributed to the California Clean Car Program

- ✓ On-road precursor NOx emissions inventories in Northern Virginia are projected to increase by about 3 percent between 2025 and 2040, but the overall declining pattern of the region will be maintained

- ✓ On-road primary PM2.5 emissions inventories are projected to increase between 2025 and 2040 due to growth in vehicle use in both suburban Maryland and Northern Virginia while in the District of Columbia a small decrease is projected for the same period; overall the regional total will increase by about 2 percent between 2025 and 2040.

IMPLICATIONS FOR AIR QUALITY CONFORMITY

- ✓ On-road emissions budgets will be developed for the maintenance plan per EPA Transportation Conformity Regulations (§93.118(e)(4) and §93.124(a))

- ✓ Need for reasonable safety margins for years 2017 and 2025 to address uncertainties in future year inventories stemming from future vehicle fleet mix projections and new versions of emissions models (current model is MOVES2010a with updates announced for later this month and next year)

- ✓ Between 2007 and 2025, on-road emissions are projected to decline at a faster rate than any other source type: 70 percent for NOx and 62 percent for primary PM2.5.