National Capital Region Transportation Planning Board

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MEMORANDUM

DATE: May 25, 2007

To: TPB Technical Committee

From: Ronald F. Kirby
Director, Department of
Transportation Planning

Re: Estimates of CO_2 Emissions from Mobile Sources

Over the past month or so I have received inquiries from the media, TPB members, and citizens concerning greenhouse gas emissions (GHG) from mobile sources, and how those emissions are changing over time. In response to these inquiries, I asked Eulalie Gower-Lucas of the DTP staff to prepare estimates of carbon dioxide emissions from mobile sources using data and forecasts of vehicle miles of travel (VMT) by vehicle type from the air quality conformity analysis for the 2006 Constrained Long Range Plan (CLRP) and FY2007-2012 Transportation Improvement Program (TIP), which were approved by the TPB on October 18, 2006.

The CO_2 estimates prepared by Eulalie were presented at the first meeting of the COG Climate Change Steering Committee held on May 23. The estimates, which are shown in the attached Table 1, are based on

- The geography of the 8-hour ozone non-attainment area, shown in the attached map;
- The conformity analysis for years 2002, 2010, and 2030, with interpolated estimates for 2000, 2005, and 2020.
- The Round 7.0a Cooperative Forecasts, and the road and transit networks in the 2006 CLRP and the FY2007-2012 TIP;
- The regional vehicle fleet inventory developed by DTP staff for 2005 using state registration data and Vehicle Identification Number (VIN) decoder software (a new inventory for the region will be developed in 2008).
- EPA's Mobile 6.2 emissions model, which has internal procedures for forecasting changes in fleet mix over time.

The estimates in Table 1 show that CO_2 emissions are increasing steadily over time, with an increase of 48 percent between 2002 and 2030. The increases are driven by growth in vehicle miles of travel and in emissions rates per mile over time.

Estimates of changes between 2002 and 2030 in households, employment, vehicle miles of travel, NOx and VOC emissions for the 8-hour ozone non-attainment area are provided in the attached Table 2 for comparison with the CO_2 changes.

Attachments

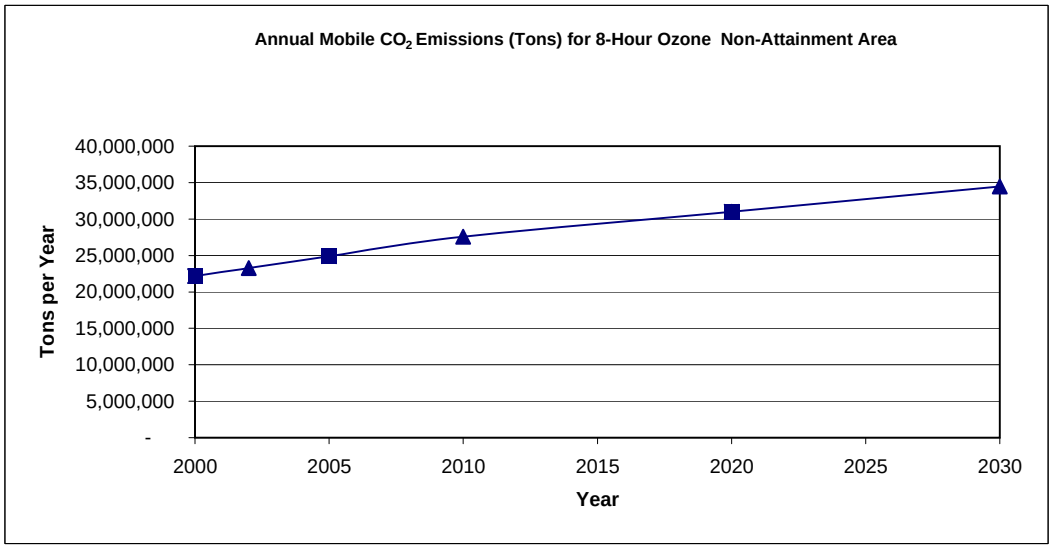
24-May-07

Table 1

Annual Mobile CO_2 Emissions (Tons) by State and the District of Columbia for the 8-Hour Ozone Non-attainment area

STATE	2002	2010	2030
District of Columbia	1,994,838	2,161,718	2,440,364
Maryland	11,045,158	12,868,522	16,242,179
Virginia	9,725,194	11,996,014	15,160,099
Off-Line emissions			
Transit Bus	238,837	259,626	258,072
School Bus	148,886	157,151	157,557
Auto Access to Transit	120,255	142,750	192,651
Total CO_2 Emissions	**23,273,168**	**27,585,781**	**34,450,922**

Regional Average Rates (Grams per Vehicle Mile)			
Major Road Network	506.39	526.53	546.48
Local Roads	453.82	475.57	489.53
School Bus	1633.6	1642.33	1646.74
Transit Bus	2402.39	2349.58	2334.14
Auto Access to Transit	439.746	461.07	473.48



Note:Years 2000, 2005 and 2020 were interpolated using the 2002, 2010 and 2030 emissions estimates shown in the above table.

Interpolated CO_2 emissions estimates for 2000, 2005 and 2020

2000	2005	2020
22,195,014	24,890,398	31,018,352

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Table 2

2002-2030 Changes in Households, Employment, VMT, NOx,VOC, and CO2 for the 8-Hour Ozone Non-Attainment Area

	2002	2030	% change
Households	2,893,646	4,162,621	44%
Employment	1,742,117	2,463,893	41%
Annual VMT (000,000's)	39,212	53,726	37%
NOx (tons/day)	259.232	34.899	-87%
VOC (tons/day)	101.117	39.41	-61%
CO2 (tons/year)	23,273,168	34,450,922	48%

Washington, D.C. - Maryland - Virginia
8-Hour Ozone Non-Attainment Area