ITEM 10 - Information

April 16, 2003

Update on Mobile Source Emissions Requirements for the Region's State Implementation Plan (SIP), CLRP and TIP Process, and on Transportation Emissions Reduction Measures (TERMs)

Staff Recommendation: Receive briefing on the attached letter of April 16, 2003 from Chairman Shapiro to Chairman Mendelson of the Metropolitan Washington Air Quality Committee (MWAQC). This letter transmits information provided to the TPB on the mobile source emissions requirements and the 2003 CLRP and FY 2004-2009 TIP air quality conformity requirements for consideration by MWAQC as the region's SIP update moves through the various critical stages scheduled for the next few months.

Issues: None

Background: At the January 15, February 19, and March 19 meetings, the Board was briefed on the mobile source emissions requirements for the SIP update as prescribed in the Environmental Protection Agency (EPA) proposed rule published in the November 13, 2002 Federal Register, and on the status of the analysis of the adopted and potential TERMs.

METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS

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April 16, 2003

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The Honorable Phil Mendelson
Chairman
Metropolitan Washington Air Quality Committee
777 North Capitol Street, NE
Suite 300
Washington, DC 20002-4239

Dear Chairman Mendelson:

Over the past year the National Capital Region Transportation Planning Board (TPB) has devoted substantial resources to updating mobile emissions estimates as part of the development of a new regional air quality plan by the Metropolitan Washington Air Quality Committee (MWAQC). Based on this plan, the District of Columbia, Maryland, and Virginia are expected to submit revisions to their Sate Implementation Plans (SIPs) to EPA for approval later this year. TPB and MWAQC have been working cooperatively to meet the attached schedule for addressing the severe area non-attainment requirements recently specified for the Washington metropolitan area by the Environmental Protection Agency (EPA).

As you know, the 2003 Constrained Long Range Plan (CLRP) and the FY2004-2009 Transportation Improvement Program (TIP) scheduled for approval by the TPB in October of this year must meet air quality conformity requirements which will be defined in large part by mobile emission budgets and other provisions included in the new air quality plan being developed by MWAQC. The TPB has been briefed at its last three meetings on certain aspects of these conformity requirements which could affect the TPB's ability to meet the important October 2003 deadline for approving the 2003 CLRP and the FY2004-2009 TIP. The purpose of this letter is to transmit information provided to the TPB on these conformity requirements for consideration by MWAQC as the air quality plan update moves through the various critical stages scheduled for the next few months.

(1) Emissions Reduction Requirements

With regard to meeting requirements for additional emissions reductions by the attainment year of 2005, it is the TPB's understanding that the new draft inventories (incorporating the draft Round 6.3 Cooperative Forecasts) for Volatile Organic Compounds (VOCs and Nitrogen Oxides (NOx) for 2005 by source category are significantly different from the modeled attainment inventory reported in the February 3, 2000 State Implementation Plan (SIP) Revision Phase II Attainment Plan (Table 8-3).

A comparison of these two inventories based on information presented to the TPB at its March 19 meeting is as follows:

2005 Modeled Attainment Inventory (2/3/00)
vs. 2005 Draft Controlled Inventory (4/2/03)

Emissions Type	VOC	NOx	VOC	NOx
	Modeled Attainment (Tons Per Day) (SIP 2/3/00)	Modeled Attainment (Tons Per Day) (SIP 2/3/00)	Controlled 2005 (Tons Per Day) (Draft 4/2/03)	Controlled 2005 (Tons Per Day) (Draft 4/2/03)
Point	15.6	171.1	17.6	110.2
Area	153.8	54.3	170.2	60.5
Non-road	66.8	93.1	74.4	82.7
Mobile	123.5	196.8	96.7	237.0
Total	359.7	515.3	358.9	490.4

While the new draft inventories are still below the modeled attainment inventories of 359.7 tons per day for VOC and 515.3 tons per day of NOx, VOC has increased significantly for area sources and decreased for mobile, whereas NOx has increased significantly for mobile and decreased for point sources. Rate of progress calculations conducted to date suggest that there may be a shortfall in VOC reductions which must be addressed. However, the magnitude of this shortfall will apparently not be known until mobile emissions are recalculated to reflect technical corrections requested by the state air agencies with respect to input parameters for inspection and maintenance programs, anti-tampering programs, and diesel sales fractions.

(2) Transportation Emission Reduction Measures (TERMs) and Transportation Control Measures (TCMs)

In the TPB process, TERMs are measures which can be included by the TPB in the CLRP and TIP to reduce VOC and/or NOx emissions. Several such measures have been adopted by the TPB over the past decade.

According to EPA's Conformity Rule, TCMs are measures "specifically identified and committed to in the applicable implementation plan – for the purpose of reducing emissions or concentrations of air pollutants from transportation sources." Consequently, a TERM becomes a TCM only if it is included specifically in the SIP. (EPA's conformity rule states that "vehicle technology-based, fuel-based and

maintenance-based measures which control the emissions from vehicles under fixed traffic conditions are not TCMs"). TCMs have a special status in the transportation conformity process in that in order to make a conformity determination the TPB must find that the CLRP and/or TIP "provides for timely completion or implementation of all TCMs in the applicable implementation plan." An ineffective TCM included in the SIP could preclude the TPB from making a conformity determination even if all other SIP and conformity requirements are met. (In San Francisco the federal district court found that the Metropolitan Planning Organization violated the SIP by not implementing a TCM calling for a 15 percent increase in transit ridership, even though the TCM was no longer needed for SIP or conformity purposes.)

The TPB is aware that a TCM substitution procedure is available in Portland, Oregon, and a very similar procedure has been developed in the state of Texas. These procedures were approved by EPA as SIP amendments in the respective states. (In the case of Texas, the Governor of Texas submitted the TCM SIP revision on May 17, 2000 and EPA approved it on December 5, 2002 with an effective date of January 6, 2003). In these cases substitution of a TCM no longer requires a SIP revision, but does require concurrence by the MPO, the responsible air agency, and EPA, as well as a public hearing and approval process which takes approximately 90 days.

Under EPA's conformity rule, replacement of an ineffective TCM with a more effective one in the Washington area SIP would currently require a SIP amendment. By comparison, if a TERM does not perform as expected, the TPB can substitute a more effective TERM through the CLRP or TIP update process without a SIP amendment. It is therefore recommended that in the development of the current severe SIP:

(1) TERMs should only be "hard-wired" into the new SIPs as TCMs if it is absolutely certain that they will be implemented as specified; and

(2) Any TCMs adopted in earlier SIPs should be reviewed and updated as needed in the new SIPs.

COG/TPB staff members are currently reviewing TCMs in earlier SIPs in order to identify any that need to be updated. Recommendations on any needed updates will be forwarded to MWAQC prior to its scheduled approval in May of draft SIP updates for public hearings.

(3) Reasonably Available Control Measures (RACM)

Section 172c (1) of the Clean Air Act requires that SIPs "provide for the implementation of all reasonably available control measures as expeditiously as possible." The TPB understands that MWAQC will need to undertake a RACM analysis as part of the new SIP update process to determine whether or not any such "reasonably available control measures" should be included in the SIP revisions.

In a report of October 12, 2000 EPA provided an analysis of RACM for four serious non-attainment areas (including the Washington metropolitan area) which reviewed numerous potential RACM measures. The report stated that:

> "Based on this analysis, EPA concluded these measures would either (a) likely require an intensive and costly effort for numerous small area sources, or (b) not advance the attainment date in any of the four areas. EPA reached this conclusion primarily because the reductions expected to be achieved by the potential RACM measures are relatively small, - - - These potential reductions are far less than the emissions reductions needed within the non-attainment areas to reach attainment."

More recently, the July 2, 2002 decision by the United States Court of Appeals for the District of Columbia Circuit upheld EPA's long-standing position that the state may "reject measures as not being RACM if they would not advance the attainment date, would cause substantial widespread and long-term adverse impacts, or would be economically or technologically unfeasible." This recent court decision together with previous EPA guidance and analysis would appear to limit severely the potential for measures to qualify as RACM for inclusion in the new SIP revisions.

(4) Contingency Measures

The TPB understands that contingency measures may be required in the SIP to provide additional VOC or NOx reductions in the event that the region does not reach its attainment or rate of progress goals. MWAQC is currently reviewing a range of possible contingency measures, including transportation emissions reduction measures (TERMs), and has begun to receive recommendations on specific measures through its public involvement process.

As you know, the TPB has been analyzing and prioritizing TERMs for a number of years as part of the air quality conformity requirement, and has included a number of these TERMs in its long-range plans and transportation improvement programs. Most recently, TPB staff has been updating estimates of emissions reductions, costs, and cost-effectiveness of potential TERMs to reflect current mobile emissions data and methods, most specifically revisions due to the application of EPA's MOBILE 6 model. An updated summary of analyses of vehicle and fuel technology-based TERMs for public vehicle fleets is provided as Attachment A to this letter.

(5) Schedule

Because of the interdependence of the SIP and transportation planning processes, the TPB and MWAQC have been working closely together over the past several months to meet the key deadlines defined in the attached schedule. The TPB will need EPA's determination that the mobile emissions budgets included in the SIP revisions are adequate for conformity purposes in order to make a conformity determination on the 2003 CLRP and the FY2004-2009 TIP. This conformity determination is scheduled for October of 2003 in order to provide time for the U.S. Department of Transportation (DOT) to approve the 2003 CLRP and FY2004-2009 by January of 2004.

It is the TPB's understanding that the conformity determination on the 2000 CLRP, the last 3-year update of the region's long-range transportation plan, will lapse in January 2004. If a new conformity determination is not in place by that time, only transportation

projects exempt from conformity and those other projects currently under contract could proceed. No new highway or transit projects affecting conformity could be placed under contract once a conformity lapse occurs.

Given the potential for delays in the implementation of new highway and transit projects, the TPB is concerned that EPA have available all of the information it needs in order to make an adequacy determination on new mobile emissions budgets by October of 2003. According to EPA's conformity rule, in order for EPA to find motor vehicle emissions budgets adequate for conformity the following key criteria (among others) must be satisfied:

- "The motor vehicle emissions budget(s), when considered together with all other emissions sources is consistent with applicable requirements for reasonable further progress, attainment, or maintenance (whichever is relevant to the given implementation plan submission);

- The motor vehicle emissions budget(s) is consistent with and clearly related to the emissions inventory and the control measures in the submitted control strategy implementation plan revision or maintenance plan."

The TPB would be pleased to provide any information or assistance required by MWAQC to ensure that all of the requirements for an EPA adequacy determination on the mobile emissions budgets are met in the draft SIP revisions scheduled for release in May.

The TPB looks forward to continuing close collaboration with MWAQC in the development of SIP revisions that will meet all of the associated requirements and deadlines, and ensure continued progress toward both clean air and improved transportation for the Washington metropolitan area.

Sincerely,

Peter Shapiro
Chairman
National Capital Region
Transportation Planning Board

Attachment

Schedule to Develop Severe Area SIP MWAQC 12/4/02			
Month	**SIP Schedule**	**State Action: Deadlines**	**TPB Conformity**
November 2002 **FR Notice of Proposed Reclassification**	**TAC**: Draft MOB6 budgets and attainment inventory for 2005; Identify control measures; RACM analysis; develop severe area RACT, threshold and offset rules		
December 2002*	**TAC:** Analysis of 1990 baseline; Identification of control measures **MWAQC:**Review mobile inventory for 2005; RACM analysis		TPB Reviews Draft Solicitation Document
January 2003* **FR Final Notice of Reclassification**	**Staff/TAC**: Develop target inventory for 1996 & 1999. **MWAQC:** Preliminary shortfall analysis for 2005	**States:** Final stationary source inventory 2005; list of shortfall measures;	TPB Reviews Draft Solicitation Document
February *	**Staff/TAC**: Develop target inventory for 2002, calculate ROP; review reduction measures; **MWAQC:** Draft ROP for 2002, 2005	**States:** Schedule for Title I modifications	TPB releases Final Solicitation Document
March*	**Staff/TAC:** Develop shortfall analysis, shortfall measures and contingency measures **MWAQC:** Briefing on shortfall package & contingency measures	**States:** provide evidence for: Title I modifications; OTC rulemakings; shortfall package & contingency measures (funding, regulations, MOU's)	Deadlines for Electronic Submission of CMS, CLRP and TIP data by Implementing Agencies. Also deadline to submit TERM analyses and status reports.
April	**Staff**: Draft Severe Area SIP Prepared		CLP and TIP Project Submissions Released for Public Comment and Inter-Agency Review
May*	**TAC and MWAQC:** approve Draft SIP for public hearing; notice of public hearings		TPB Reviews Public Comments, Approves project submissions for incorporation in Conformity Analysis for CLRP and TIP
June	Public Hearings		
July*	Respond to public comment; **TAC and MWAQC:** approve draft Severe Area SIP; States submit SIP to EPA		TPB briefed on Draft Conformity Determination, CLRP and TIP
September*			TPB releases draft conformity determination, 2003 CLRP, FY2004 TIP
October	EPA determines mobile budgets adequate for conformity		TPB approves conformity analysis; 2003 CLRP & FY04 TIP
December*			
January 2004			FHWA/DOT approve 2003 CLRP & FY2004 TIP
March 2004 **Deadline for SIP to EPA**			

*MWAQC meeting (meeting dates may vary from schedule)

ATTACHMENT A

Emissions Reduction, Cost, Cost Effectiveness of Technology Based TERMs For Public Sector Vehicle Fleets

Measure	# of Vehicle	Base Emissions (tons/day)		Emissions Reduced (tons/day)		Cost	Cost Effectiveness ($/ton)	
		VOC	NOx	VOC	NOx		VOC	NOx
ULSD + CRT Filter								-
Transit Buses	713	0.0961	1.9383	0.0433	-	$5,963,118	$143,703	-
School Buses	4,451	0.2365	3.4591	0.1064	-	$30,744,700	$218,682	-
Heavy Duty	2,652	0.1003	1.1148	0.0451	-	$17,463,585	$289,463	-
Total	**7,816**	**0.4329**	**6.5122**	**0.1948**	**-**	**54,171,403**	**$217,282**	**-**
Cetane Enhancing Fuel Additive								
Transit Buses	951	0.0961	1.9383	0.0144	0.0304	$224,682	$51,853	$24,622
School Buses	5,939	0.2365	3.4591	0.0360	0.0560	$538,493	$59,911	$38,438
Heavy Duty	3,536	0.1003	1.1148	0.0154	0.0181	$206,878	$66,982	$57,276
Total	**10,426**	**0.4329**	**6.5122**	**0.0658**	**0.1045**	**970,054**	**$59,582**	**$40,112**
PuriNOx with Oxidizing Catalyst								
Transit Buses	713	0.0961	1.9383	0.0360	0.1890	$2,488,894	$124,643	$23,772
School Buses	4,451	0.2365	3.4591	0.0887	0.3373	$10,352,560	$167,114	$43,951
Heavy Duty	2,652	0.1003	1.1148	0.0376	0.1087	$5,484,468	$202,658	$70,113
Total	**7,816**	**0.4329**	**6.5122**	**0.1623**	**0.6349**	**18,325,922**	**$164,805**	**$45,945**
Heavy & Light Duty Vehicle Replacement Program								
Taxicab Replacement Program (CNG) in the District of Columbia	100	-	-	0.0070	0.0170	$1,700,000	$144,994	$59,703
Taxicab Replacement Program – Conventiona Vehicles	100	-	-	0.0053	0.0139	$1,400,000	$161,264	$61,489
New Hybrid Light Duty Vehicles	2000	-	-	0.0340	0.0830	$4,000,000	$62,845	$25,744
CNG Buses in Replacing Diesel Buses	100	-	-	0.0590	0.2110	$39,200,000	$197,377	$55,190
CNG Vehicle Engines Replacing Heavy Duty Diesel Vehicle Engines	100	-	-	0.0210	0.0770	$8,000,000	$103,175	$28,139
Heavy Duty Vehicle Engine Replacement	100	-	-	0.0189	0.0650	$2,660,000	$115,814	$33,675

1) Cost include Capital Cost plus Operating Cost

2) The VOC Emissions Reduction associated with Cetane, and Oxidizing Catalystic Filter has not been certified by USEPA

NOx & VOC EMISSIONS FOR VEHICLE FLEET INVENTORY - OWNED BY PUBLIC SECTOR

(Vehicles greater than 8500 lbs. GVWR- excluding buses)

		Emission Rate (gms/mi)		Fairfax County		Emission (tons/day)		City of Fairfax		Emission (tons/day)		VDOT		Emission (tons/day)	
	Mobile 6 Class	VOC	NOx	Number of Vehicles	Average Annual VMT (per Vehicle)	VOC	NOx	Number of Vehicles	Average Annual VMT (per Vehicle)	VOC	NOx	Number of Vehicles	Average Annual VMT (per Vehicle)	VOC	NOx
1	HDGV2B (8501-10,000 lbs. GVWR)	0.78260	3.81330	177	6794	0.00519	0.02527	13	1988	0.00011	0.00054			0.00000	0.00000
2	HDGV3 (10,001-14,000 lbs. GVWR)	1.08960	4.23990	120	7164	0.00516	0.02009	2	1363	0.00002	0.00006			0.00000	0.00000
3	HDGV4 (14,001-16,000 lbs. GVWR)	1.98860	4.67690	7	3620	0.00028	0.00065			0.00000	0.00000			0.00000	0.00000
4	HDGV5 (16,001-19,500 lbs. GVWR)	1.10390	4.61170			0.00000	0.00000			0.00000	0.00000			0.00000	0.00000
5	HDGV6 (19,501-26,000 lbs. GVWR)	1.03930	4.55420	7	3099	0.00012	0.00054			0.00000	0.00000			0.00000	0.00000
6	HDGV7 (26,001-33,000 lbs.GVWR)	1.26730	5.17550			0.00000	0.00000	6	2748	0.00012	0.00047			0.00000	0.00000
7	HDGV8A (33,001-60,000 lbs. GVWR)	1.57690	5.81150	1	368	0.00000	0.00001			0.00000	0.00000			0.00000	0.00000
8	HDDV2B (8501-10,000 lbs. GVWR)	0.19980	3.15110	43	8824	0.00042	0.00659	11	3597	0.00004	0.00089	50	12508	0.00089	0.01086
9	HDDV3 (10,001-14,000 lbs. GVWR)	0.21680	3.48670	84	9295	0.00093	0.01500	4	1364	0.00001	0.00010			0.00000	0.00000
10	HDDV4 (14,001-16,000 lbs. GVWR)	0.25850	4.16530	21	9729	0.00029	0.00469	8	3149	0.00004	0.00058	27	14707	0.00057	0.00912
11	HDDV5 (16,001-19,500 lbs. GVWR)	0.27400	4.41760	11	7999	0.00013	0.00214	1	1617	0.00000	0.00004	3	31333	0.00014	0.00229
12	HDDV6 (19,501-26,000 lbs. GVWR)	0.37520	5.83970	84	9625	0.00167	0.02602			0.00000	0.00000	50	7996	0.00083	0.01287
13	HDDV7 (26,001-33,000 lbs. GVWR)	0.46550	7.26820	75	5875	0.00113	0.01765	11	4436	0.00013	0.00195	197	5954	0.00301	0.04699
14	HDDV8A (33,001-60,000 lbs. GVWR)	0.43330	8.88550	192	15997	0.00734	0.15042	10	4740	0.00011	0.00232	54	6667	0.00086	0.01763
15	HDDV8B (> 60,000 lbs. GVWR)	0.50690	10.50530	45	12130	0.00152	0.03161	7	3472	0.00007	0.00141			0.00000	0.00000
	TOTAL			867	9721	0.02419	0.30069	73	3252	0.00084	0.00817	381	8903	0.00609	0.09975

		Emission Rate (gms/mi)		Georgetown University		Emission (tons/day)		City of Greenbelt		Emission (tons/day)		Prince William County		Emission (tons/day)	
	Mobile 6 Class	VOC	NOx	Number of Vehicles	Average Annual VMT (per Vehicle)	VOC	NOx	Number of Vehicles	VMT (per Vehicle)	VOC	NOx	Number of Vehicles	Average Annual VMT (per Vehicle)	VOC	NOx
1	HDGV2B (8501-10,000 lbs. GVWR)	0.78260	3.81330			0.00000	0.00000			0.00000	0.00000	9	1966	0.00008	0.00037
2	HDGV3 (10,001-14,000 lbs. GVWR)	1.08960	4.23990			0.00000	0.00000	3	2000	0.00004	0.00014	2	11608	0.00014	0.00054
3	HDGV4 (14,001-16,000 lbs. GVWR)	1.98860	4.67690	1	500	0.00001	0.00001	1	1200	0.00001	0.00003	3	8411	0.00028	0.00065
4	HDGV5 (16,001-19,500 lbs. GVWR)	1.10390	4.61170			0.00000	0.00000			0.00000	0.00000			0.00000	0.00000
5	HDGV6 (19,501-26,000 lbs. GVWR)	1.03930	4.55420			0.00000	0.00000			0.00000	0.00000	2	1482	0.00002	0.00007
6	HDGV7 (26,001-33,000 lbs.GVWR)	1.26730	5.17550			0.00000	0.00000	1	3300	0.00002	0.00009			0.00000	0.00000
7	HDGV8A (33,001-60,000 lbs. GVWR)	1.57690	5.81150			0.00000	0.00000			0.00000	0.00000	1	923	0.00001	0.00003
8	HDDV2B (8501-10,000 lbs. GVWR)	0.19980	3.15110			0.00000	0.00000			0.00000	0.00000			0.00000	0.00000
9	HDDV3 (10,001-14,000 lbs. GVWR)	0.21680	3.48670			0.00000	0.00000	1	1000	0.00000	0.00002			0.00000	0.00000
10	HDDV4 (14,001-16,000 lbs. GVWR)	0.25850	4.16530			0.00000	0.00000			0.00000	0.00000	4	4883	0.00009	0.00045
11	HDDV5 (16,001-19,500 lbs. GVWR)	0.27400	4.41760			0.00000	0.00000			0.00000	0.00000			0.00000	0.00000
12	HDDV6 (19,501-26,000 lbs. GVWR)	0.37520	5.83970			0.00000	0.00000	4	394	0.00000	0.00005	1	354	0.00000	0.00001
13	HDDV7 (26,001-33,000 lbs. GVWR)	0.46550	7.26820			0.00000	0.00000	3	4500	0.00003	0.00054	3	1956	0.00002	0.00024
14	HDDV8A (33,001-60,000 lbs. GVWR)	0.43330	8.88550	3	5000	0.00004	0.00073	6	4167	0.00006	0.00122	12	14362	0.00041	0.00844
15	HDDV8B (> 60,000 lbs. GVWR)	0.50690	10.50530			0.00000	0.00000			0.00000	0.00000	5	3741	0.00009	0.00108
	TOTAL			4	3875	0.00004	0.00075	19	2715	0.00017	0.00210	25	8672	0.00102	0.01189

		Emission Rate (gms/mi)		Loudoun County		Emission (tons/day)		City of Rockville		Emission (tons/day)		Montgomery County		Emission (tons/day)	
	Mobile 6 Class	VOC	NOx	Number of Vehicles	Average Annual VMT (per Vehicle)	VOC	NOx	Number of Vehicles	Average Annual VMT (per Vehicle)	VOC	NOx	Number of Vehicles	Average Annual VMT (per Vehicle)	VOC	NOx
1	HDGV2B (8501-10,000 lbs. GVWR)	0.78260	3.81330	95	6794	0.00278	0.01357	22	7730	0.00073	0.00357			0.00000	0.00000
2	HDGV3 (10,001-14,000 lbs. GVWR)	1.08960	4.23990	25	7164	0.00108	0.00419	3	2262	0.00004	0.00016			0.00000	0.00000
3	HDGV4 (14,001-16,000 lbs. GVWR)	1.98860	4.67690	5	3620	0.00020	0.00047	5	4510	0.00025	0.00058			0.00000	0.00000
4	HDGV5 (16,001-19,500 lbs. GVWR)	1.10390	4.61170			0.00000	0.00000	1	12241	0.00007	0.00031			0.00000	0.00000
5	HDGV6 (19,501-26,000 lbs. GVWR)	1.03930	4.55420	1	3099	0.00002	0.00008	2	25613	0.00029	0.00129			0.00000	0.00000
6	HDGV7 (26,001-33,000 lbs.GVWR)	1.26730	5.17550			0.00000	0.00000	1	2161	0.00002	0.00006			0.00000	0.00000
7	HDGV8A (33,001-60,000 lbs. GVWR)	1.57690	5.81150			0.00000	0.00000			0.00000	0.00000			0.00000	0.00000
8	HDDV2B (8501-10,000 lbs. GVWR)	0.19980	3.15110	25	8824	0.00024	0.00383	2	14518	0.00003	0.00050	37	9271	0.00038	0.00596
9	HDDV3 (10,001-14,000 lbs. GVWR)	0.21680	3.48670	35	9295	0.00039	0.00625	6	10123	0.00007	0.00117	51	6160	0.00039	0.00604
10	HDDV4 (14,001-16,000 lbs. GVWR)	0.25850	4.16530	20	9729	0.00028	0.00447	2	12251	0.00003	0.00056			0.00000	0.00000
11	HDDV5 (16,001-19,500 lbs. GVWR)	0.27400	4.41760		7999	0.00000	0.00000	1	12591	0.00002	0.00031			0.00000	0.00000
12	HDDV6 (19,501-26,000 lbs. GVWR)	0.37520	5.83970	10	9625	0.00020	0.00310	7	4201	0.00006	0.00095	22	2960	0.00013	0.00210
13	HDDV7 (26,001-33,000 lbs. GVWR)	0.46550	7.26820	7	5875	0.00011	0.00165	11	8414	0.00024	0.00371			0.00000	0.00000
14	HDDV8A (33,001-60,000 lbs. GVWR)	0.43330	8.88550	6	15997	0.00023	0.00470	58	6043	0.00084	0.01716	172	6112	0.00251	0.05148
15	HDDV8B (> 60,000 lbs. GVWR)	0.50690	10.50530	5	12130	0.00017	0.00351			0.00000	0.00000			0.00000	0.00000
	TOTAL			234	8035	0.00569	0.04580	121	7143	0.00270	0.03033	282	6289	0.00340	0.06557

		Emission Rate (gms/mi)		City of Takoma Park		Emission (tons/day)		Town of Vienna		Emission (tons/day)		Maryland Depart. Of Agriculture		Emission (tons/day)	
	Mobile 6 Class	VOC	NOx	Number of Vehicles	Average Annual VMT (per Vehicle)	VOC	NOx	Number of Vehicles	VMT (per Vehicle)	VOC	NOx	Number of Vehicles	VMT (per Vehicle)	VOC	NOx
1	HDGV2B (8501-10,000 lbs. GVWR)	0.78260	3.81330			0.00000	0.00000	1	1000	0.00000	0.00002	2	6107	0.00000	0.00026
2	HDGV3 (10,001-14,000 lbs. GVWR)	1.08960	4.23990			0.00000	0.00000	2	7500	0.00009	0.00035			0.00000	0.00000
3	HDGV4 (14,001-16,000 lbs. GVWR)	1.98860	4.67690			0.00000	0.00000			0.00000	0.00000			0.00000	0.00000
4	HDGV5 (16,001-19,500 lbs. GVWR)	1.10390	4.61170			0.00000	0.00000			0.00000	0.00000			0.00000	0.00000
5	HDGV6 (19,501-26,000 lbs. GVWR)	1.03930	4.55420			0.00000	0.00000	1	1000	0.00001	0.00003			0.00000	0.00000
6	HDGV7 (26,001-33,000 lbs.GVWR)	1.26730	5.17550			0.00000	0.00000			0.00000	0.00000			0.00000	0.00000
7	HDGV8A (33,001-60,000 lbs. GVWR)	1.57690	5.81150			0.00000	0.00000			0.00000	0.00000			0.00000	0.00000
8	HDDV2B (8501-10,000 lbs. GVWR)	0.19980	3.15110			0.00000	0.00000			0.00000	0.00000			0.00000	0.00000
9	HDDV3 (10,001-14,000 lbs. GVWR)	0.21680	3.48670			0.00000	0.00000	3	5000	0.00002	0.00029			0.00000	0.00000
10	HDDV4 (14,001-16,000 lbs. GVWR)	0.25850	4.16530			0.00000	0.00000	5	4700	0.00003	0.00054	1	8258	0.00001	0.00019
11	HDDV5 (16,001-19,500 lbs. GVWR)	0.27400	4.41760			0.00000	0.00000			0.00000	0.00000			0.00000	0.00000
12	HDDV6 (19,501-26,000 lbs. GVWR)	0.37520	5.83970			0.00000	0.00000			0.00000	0.00000			0.00000	0.00000
13	HDDV7 (26,001-33,000 lbs. GVWR)	0.46550	7.26820			0.00000	0.00000	10	4200	0.00011	0.00168			0.00000	0.00000
14	HDDV8A (33,001-60,000 lbs. GVWR)	0.43330	8.88550	6	4538	0.00007	0.00133	12	13500	0.00039	0.00793	2	1836	0.00001	0.00018
15	HDDV8B (> 60,000 lbs. GVWR)	0.50690	10.50530			0.00000	0.00000	4	16250	0.00018	0.00376			0.00000	0.00000
	TOTAL			6	4538	0.00007	0.00133	38	8539	0.00083	0.01460	5	4829	0.00007	0.00063

NOx & VOC EMISSIONS FOR VEHICLE FLEET INVENTORY - OWNED BY PUBLIC SECTOR
(Vehicles greater than 8500 lbs. GVWR- excluding buses)

		Emission Rate (gms/mi)		City of Alexandria		Emission (tons/day)		City of Gaithersburg		Emission (tons/day)		District of Columbia		Emission (tons/day)	
	Mobile 6 Class	VOC	NOx	Number of Vehicles	Average Annual VMT (per Vehicle)	VOC	NOx	Number of Vehicles	Average Annual VMT (per Vehicle)	VOC	NOx	Number of Vehicles	Average Annual VMT (per Vehicle)	VOC	NOx
1	HDGV2B (8501-10,000 lbs. GVWR)	0.78260	3.81330			0.00000	0.00000	2	8500	0.00007	0.00036				
2	HDGV3 (10,001-14,000 lbs. GVWR)	1.06960	4.23990			0.00000	0.00000			0.00000	0.00000			0.00000	0.00000
3	HDGV4 (14,001-16,000 lbs. GVWR)	1.98860	4.67690			0.00000	0.00000	1	1000	0.00001	0.00003			0.00000	0.00000
4	HDGV5 (16,001-19,500 lbs. GVWR)	1.10390	4.61170			0.00000	0.00000			0.00000	0.00000			0.00000	0.00000
5	HDGV6 (19,501-26,000 lbs. GVWR)	1.03930	4.55420			0.00000	0.00000			0.00000	0.00000			0.00000	0.00000
6	HDGV7 (26,001-33,000 lbs.GVWR)	1.26730	5.17550			0.00000	0.00000			0.00000	0.00000			0.00000	0.00000
7	HDGV8A (33,001-60,000 lbs. GVWR)	1.57690	5.81150			0.00000	0.00000			0.00000	0.00000			0.00000	0.00000
8	HDDV2B (8501-10,000 lbs. GVWR)	0.19980	3.15110			0.00000	0.00000	11	4772	0.00006	0.00091	2	10000	0.00002	0.00035
9	HDDV3 (10,001-14,000 lbs. GVWR)	0.21680	3.48670	3	20000	0.00007	0.00115	2	5400	0.00001	0.00021			0.00000	0.00000
10	HDDV4 (14,001-16,000 lbs. GVWR)	0.25850	4.16530	17	15000	0.00036	0.00585			0.00000	0.00000	7	8571	0.00009	0.00138
11	HDDV5 (16,001-19,500 lbs. GVWR)	0.27400	4.41760	4	12000	0.00007	0.00117			0.00000	0.00000	6	14167	0.00013	0.00207
12	HDDV6 (19,501-26,000 lbs. GVWR)	0.37520	5.83970			0.00000	0.00000	4	2950	0.00002	0.00036	36	11211	0.00089	0.01371
13	HDDV7 (26,001-33,000 lbs. GVWR)	0.46550	7.26820	8	8500	0.00017	0.00272	8	3138	0.00006	0.00101	8	11375	0.00023	0.00365
14	HDDV8A (33,001-60,000 lbs. GVWR)	0.43330	8.88550	35	4857	0.00041	0.00833	12	4267	0.00012	0.00251	243	13370	0.00776	0.15911
15	HDDV8B (> 60,000 lbs. GVWR)	0.50690	10.50530	2	15000	0.00008	0.00174			0.00000	0.00000	17	12471	0.00059	0.01228
	TOTAL			45	14022	0.00117	0.02096	40	4235	0.00037	0.00540	321	12906	0.00870	0.19254

		Emission Rate (gms/mi)		Southern MD Pre-Release Unit		Emission (tons/day)		WMATA		Emission (tons/day)		University of Maryland		Emission (tons/day)	
	Mobile 6 Class	VOC	NOx	Number of Vehicles	Average Annual VMT (per Vehicle)	VOC	NOx	Number of Vehicles	Average Annual VMT (per Vehicle)	VOC	NOx	Number of Vehicles	Average Annual VMT (per Vehicle)	VOC	NOx
1	HDGV2B (8501-10,000 lbs. GVWR)	0.78260	3.81330	10	17667	0.00076	0.00371	323	12314	0.01716	0.08356	106	5840	0.00257	0.01301
2	HDGV3 (10,001-14,000 lbs. GVWR)	1.06960	4.23990			0.00000	0.00000	4	10713	0.00026	0.00100	17	4971	0.00061	0.00197
3	HDGV4 (14,001-16,000 lbs. GVWR)	1.98860	4.67690			0.00000	0.00000	85	10274	0.00957	0.02251	4	3750	0.00016	0.00039
4	HDGV5 (16,001-19,500 lbs. GVWR)	1.10390	4.61170			0.00000	0.00000			0.00000	0.00000	3	2500	0.00005	0.00019
5	HDGV6 (19,501-26,000 lbs. GVWR)	1.03930	4.55420			0.00000	0.00000	5	3460	0.00010	0.00043	6	2500	0.00009	0.00038
6	HDGV7 (26,001-33,000 lbs.GVWR)	1.26730	5.17550			0.00000	0.00000			0.00000	0.00000	6	9167	0.00039	0.00157
7	HDGV8A (33,001-60,000 lbs. GVWR)	1.57690	5.81150			0.00000	0.00000	2	5426	0.00009	0.00035	2	2500	0.00004	0.00016
8	HDDV2B (8501-10,000 lbs. GVWR)	0.19980	3.15110			0.00000	0.00000	14	8577	0.00013	0.00209	9	4167	0.00004	0.00065
9	HDDV3 (10,001-14,000 lbs. GVWR)	0.21680	3.48670			0.00000	0.00000	14	6897	0.00012	0.00186	11	9245	0.00012	0.00195
10	HDDV4 (14,001-16,000 lbs. GVWR)	0.25850	4.16530			0.00000	0.00000	51	9971	0.00072	0.01167	4	5000	0.00003	0.00046
11	HDDV5 (16,001-19,500 lbs. GVWR)	0.27400	4.41760			0.00000	0.00000	15	6783	0.00015	0.00248	2	2500	0.00001	0.00012
12	HDDV6 (19,501-26,000 lbs. GVWR)	0.37520	5.83970	1	7345	0.00002	0.00024	29	6896	0.00041	0.00644	7	2500	0.00004	0.00056
13	HDDV7 (26,001-33,000 lbs. GVWR)	0.46550	7.26820	1	12210	0.00003	0.00049	41	4227	0.00044	0.00694	9	7211	0.00017	0.00260
14	HDDV8A (33,001-60,000 lbs. GVWR)	0.43330	8.88550			0.00000	0.00000	4	11061	0.00011	0.00217	25	11056	0.00086	0.01354
15	HDDV8B (> 60,000 lbs. GVWR)	0.50690	10.50530			0.00000	0.00000			0.00000	0.00000	7	11429	0.00022	0.00463
	TOTAL			12	16352	0.00081	0.00444	587	10505	0.02927	0.14153	218	6441	0.00519	0.04219

NOx & VOC EMISSIONS FOR VEHICLE FLEET INVENTORY - OWNED BY PUBLIC SECTOR
(Vehicles greater than 8500 lbs. GVWR- excluding buses)

		Emission Rate (gms/mi)		Maryland SHA		Emission (tons/day)	
	Mobile 6 Class	VOC	NOx	Number of Vehicles	Average Annual VMT (per Vehicle)	VOC	NOx
1	HDGV2B (8501-10,000 lbs. GVWR)	0.78260	3.81330	31	25000	0.00334	0.01629
2	HDGV3 (10,001-14,000 lbs. GVWR)	1.08960	4.23990			0.00000	0.00000
3	HDGV4 (14,001-16,000 lbs. GVWR)	1.98860	4.67690			0.00000	0.00000
4	HDGV5 (16,001-19,500 lbs. GVWR)	1.10390	4.61170			0.00000	0.00000
5	HDGV6 (19,501-26,000 lbs. GVWR)	1.03930	4.55420			0.00000	0.00000
6	HDGV7 (26,001-33,000 lbs.GVWR)	1.26730	5.17550			0.00000	0.00000
7	HDGV8A (33,001-60,000 lbs. GVWR)	1.57690	5.81150			0.00000	0.00000
8	HDDV2B (8501-10,000 lbs. GVWR)	0.19980	3.15110			0.00000	0.00000
9	HDDV3 (10,001-14,000 lbs. GVWR)	0.21680	3.48670	17	25000	0.00051	0.00817
10	HDDV4 (14,001-16,000 lbs. GVWR)	0.25850	4.16530	8	20000	0.00023	0.00367
11	HDDV5 (16,001-19,500 lbs. GVWR)	0.27400	4.41760			0.00000	0.00000
12	HDDV6 (19,501-26,000 lbs. GVWR)	0.37520	5.83970			0.00000	0.00000
13	HDDV7 (26,001-33,000 lbs. GVWR)	0.46550	7.26820	6	3000	0.00005	0.00072
14	HDDV8A (33,001-60,000 lbs. GVWR)	0.43330	8.88550	187	10053	0.00449	0.09206
15	HDDV8B (> 60,000 lbs. GVWR)	0.50690	10.50530	9	10000	0.00025	0.00521
	TOTAL			258	12976	0.00887	0.12613