APPENDIX D

Documentation of Emission Factor Development

Memorandum

Date: October 12, 2010

To: Jane Posey, TPB

From: Sunil Kumar, MWAQC

Subject: Documentation for Some MOBILE6 Inputs for 2011, 2020, 2030, and 2040 Ozone Season Day, Winter Season Day, and Annual Inventories for 2010 CLRP & 2011-2016 TIP

The purpose of this memorandum is to document the MOBILE6 inputs related to meteorology, fuel programs, Inspection & Maintenance (I&M) Programs, Anti Tempering Programs (ATP), additional state-specific emissions control programs, and NOx Rebuild Effects, which were used for developing the onroad emission inventories for calendar years 2011, 2020, 2030, and 2040 for the ozone season day, winter season day, and annual analyses for the 2010 CLRP & 2011-2016 TIP analysis. These inputs are being presented below.

Meteorology

Temperature and humidity used in the ozone SIP (May 2007), PM2.5 SIP (March 2008), and CO maintenance plan (September 1995) were used for the ozone season day, winter season day, and annual 2010 CLRP analyses respectively and are being presented below.

Ozone Season Day

Hour	Temperature (°F)	Relative Humidity (%)
1	70.7	84.0
2	74.3	76.5
3	78.6	66.7
4	82.3	59.3
5	85.5	52.9
6	88.1	48.8
7	90.0	45.0
8	91.2	42.1
9	91.9	42.2
10	92.5	43.1
11	92.1	42.3
12	91.0	43.6
13	89.2	47.6
14	86.7	52.3
15	82.8	60.4
16	80.3	67.2
17	78.6	72.2
18	77.7	74.4
19	76.7	78.1
20	75.4	80.9
21	74.9	79.5
22	74.7	79.4
23	74.2	79.3
24	73.6	81.1

Barometric Pressure (inches of mercury (Hg) – 29.8

Winter Season Day

Maximum Temperature (°F) = 33.0
Minimum Temperature (°F) = 53.0

Absolute Humidity (grains/lb) = 75

Annual

Hour	Temperature (°F)			Relative Humidity (%)		
	Winter/Season1 (Jan-Apr)	Summer/Season2 (May-Sep)	Fall/Season3 (Oct-Dec)	Winter/Season1 (Jan-Apr)	Summer/Season2 (May-Sep)	Fall/Season3 (Oct-Dec)
1	36.9	65.7	42.4	72.4	85.1	78.9
2	37.4	67.6	42.6	71.7	81.0	78.7
3	38.9	69.9	43.9	68.2	76.0	77.1
4	41.2	72.3	46.3	63.4	70.4	71.6
5	43.4	74.5	48.8	58.1	65.1	65.8
6	45.5	76.3	50.7	54.2	60.6	60.8
7	47.2	77.9	52.4	50.7	57.6	56.6
8	48.6	78.9	53.6	48.1	55.2	53.9
9	49.7	79.5	54.2	46.5	53.6	52.7
10	50.2	79.5	54.3	45.5	53.6	52.6
11	50.2	79.1	53.7	45.5	54.5	53.9
12	49.3	78.4	52.0	47.1	55.9	57.2
13	47.5	76.9	50.1	49.9	59.2	61.7
14	45.8	74.7	48.8	53.4	64.2	65.1
15	44.3	72.5	47.7	56.9	69.8	67.5
16	43.1	71.2	46.9	59.4	73.5	70.4
17	42.3	69.9	46.3	60.8	76.7	71.6
18	41.4	68.9	45.6	63.0	79.2	73.4
19	40.6	68.0	45.0	65.0	81.1	74.9
20	39.8	67.3	44.6	66.5	82.5	75.8
21	39.0	66.6	44.1	68.0	83.5	76.8
22	38.2	66.2	43.6	69.3	84.3	78.1
23	37.6	65.8	43.2	71.0	84.7	78.1
24	37.2	65.3	42.7	72.0	85.5	79.1

Barometric Pressure (inches of mercury (Hg) – 29.9 (All three seasons)

Fuel Programs

Separate sets of input files were created to model emission factors corresponding to travel in the COG region for each analysis years 1) on network and local roadways, 2) during auto access to transit, and 3) by diesel transit and school buses. While network, local, and auto-access facilities were modeled on a county level, buses were modeled on a regional level. For this reason, two separate sets of fuel programs were developed and are being provided below. Ether & Ethanol oxygen content and market share data are based on the Energy Policy Act (20050 and therefore common for network, local, and auto-access facilities and buses.

Network, Local, Auto-Access

	DC - RFG [a]			MD - RFG Counties			MD - NonRFG Counties	VA - RFG Counties			VA - NonRFG Counties
Season	Gas S [b] (ppm)	RVP	HWY Diesel S (ppm)	Gas S (ppm)	RVP	HWY Diesel S (ppm)	RVP	Gas S (ppm)	RVP	HWY Diesel S (ppm)	RVP
Winter	30.0	10.2	11.0	30.0	11.6	14.8	12.1	30.0	12.9	11.0	12.9
Summer/ Ozone Season	30.0	6.8	11.0	30.0	6.9	8.8	8.2	30.0	6.8	11.0	8.4
Fall	30.0	10.1	11.0	30.0	10.9	9.7	11.5	30.0	12.9	11.0	12.9

[a] RFG = Reformulated Gasoline
[b] S = Sulfur

Notes:
1. Season average RVP values were developed from monthly RVP values provided by states.
2. Gas & Highway Diesel Sulfur values are Mob6 defaults except for Maryland, which provided its own monthly Highway Diesel Sulfur values (email from M. Khan, MDE dt. 03.10.09).

Bus

Season	Gas S (ppm)	RVP	HWY Diesel S (ppm)
Winter	30.0	12.1	12.5
Summer/ Ozone Season	30.0	6.9	10.1
Fall	30.0	11.8	10.5

Network, Local, Auto-Access, & Bus

Season	Ether Oxy. Content (% by wt)	Ether Market Share (%)	Ethanol Oxy. Content (% by wt.)	Ethanol Market Share (%)
Winter	0.0	0.0	3.5	100.0
Summer/ Ozone Season	0.0	0.0	3.5	100.0
Fall	0.0	0.0	3.5	100.0
Note: Ether & Ethanol Oxygen Content and Market Share data are based on Energy Policy Act (2005).				

I/M Programs

Details of the format for the I/M programs listed here can found in the Mobile6 model user guide.

District of Columbia

* Inspection and Maintenance (I/M) Source File - DCpost2004.IM
* FEBRUARY 8, 2006
* District of Columbia's I/M input parameters for MOBILE6 for year 2004 and beyond:
* The actual start date of the IM240 was 1999
* The actual start date of the OBD testing was 2004
* The dates used below for IM240 and OBD testing are needed to obtain the appropriate I/M credit in MOBILE6.

> Exhaust I/M - LDV pre-83 MY IDLE test program #1
I/M PROGRAM : 1 1983 2050 2 T/O IDLE
I/M MODEL YEARS : 1 1972 1983
I/M VEHICLES : 1 22222 11111111 1
I/M STRINGENCY : 1 20.0
I/M COMPLIANCE : 1 96.0
I/M WAIVER RATES : 1 3.0 3.0
I/M EXEMPTION AGE : 1 25.0

> Exhaust I/M - LDV MY 84-95 IM240 test program #2 (DC IM240 Start:1999)
I/M PROGRAM : 2 1983 2050 2 T/O IM240
I/M MODEL YEARS : 2 1984 1995
I/M VEHICLES : 2 22222 11111111 1
I/M STRINGENCY : 2 20.0
I/M COMPLIANCE : 2 96.0
I/M WAIVER RATES : 2 3.0 3.0
I/M CUTPOINTS : 2 IM_ATP\DC.C02
I/M EXEMPTION AGE : 2 25.0

> Evap I/M - LDV pre-95 MY Gas Cap pressure test program #3
I/M PROGRAM : 3 1999 2050 2 T/O GC
I/M MODEL YEARS : 3 1972 1995
I/M VEHICLES : 3 22222 11111111 1
I/M COMPLIANCE : 3 96.0
I/M WAIVER RATES : 3 3.0 3.0
I/M EXEMPTION AGE : 3 25.0

> Exhaust I/M - LDV post-96 MY OBD test program #4(DC OBD Start:Jan 2004)
I/M PROGRAM : 4 1983 2050 2 T/O OBD I/M
I/M MODEL YEARS : 4 1996 2050
I/M VEHICLES : 4 22222 11111111 1
I/M STRINGENCY : 4 20.0
I/M COMPLIANCE : 4 96.0
I/M WAIVER RATES : 4 3.0 3.0
I/M EXEMPTION AGE : 4 25.0

> Evap I/M - LDV post-96 OBD Evap test program #5(DC OBD Start:Jan 2004)
I/M PROGRAM : 5 1999 2050 2 T/O EVAP OBD & GC
I/M MODEL YEARS : 5 1996 2050
I/M VEHICLES : 5 22222 11111111 1
I/M STRINGENCY : 5 20.0
I/M COMPLIANCE : 5 96.0
I/M WAIVER RATES : 5 3.0 3.0
I/M EXEMPTION AGE : 5 25.0

> Exhaust I/M - HDGV IDLE program #6
I/M PROGRAM : 6 1983 2050 2 T/O IDLE
I/M MODEL YEARS : 6 1972 2050
I/M VEHICLES : 6 11111 22222111 1
I/M STRINGENCY : 6 20.0
I/M COMPLIANCE : 6 96.0
I/M WAIVER RATES : 6 3.0 3.0
I/M EXEMPTION AGE : 6 25.0

Maryland

>IM Program as described in post-2009 RFP. Idle, OBD, and Mandatory Gas Cap for Non-OBD Vehicles.
>Waiver rates based on rates observed for January - June 2006 initial tests through 18 months after testing.
>Gas Cap waver rate is performance standard.

>Stringency based on July - December 2007

*Idle older LDGV, LDGT
I/M PROGRAM : 1 1984 2050 2 T/O Idle
I/M MODEL YEARS : 1 1977 1995
I/M VEHICLES : 1 22222 11111111 1
I/M STRINGENCY : 1 17.9
I/M COMPLIANCE : 1 96.0
I/M WAIVER RATES : 1 13.7 13.7
I/M GRACE PERIOD : 1 2

*Idle HDGT
I/M PROGRAM : 2 1984 2050 2 T/O Idle
I/M MODEL YEARS : 2 1977 2050
I/M VEHICLES : 2 11111 22222111 1
I/M STRINGENCY : 2 17.9
I/M COMPLIANCE : 2 96.0
I/M WAIVER RATES : 2 13.7 13.7
I/M GRACE PERIOD : 2 2

*OBD
I/M PROGRAM : 3 1984 2050 2 T/O OBD I/M
I/M MODEL YEARS : 3 1996 2050
I/M VEHICLES : 3 22222 11111111 1
I/M STRINGENCY : 3 17.9
I/M COMPLIANCE : 3 96.0
I/M WAIVER RATES : 3 6.3 6.3
I/M GRACE PERIOD : 3 2

*OBD Evap (Actual Start Year: July 2002)
I/M PROGRAM : 4 2002 2050 2 T/O EVAP OBD
I/M MODEL YEARS : 4 1996 2050
I/M VEHICLES : 4 22222 11111111 1
I/M COMPLIANCE : 4 96.0
I/M WAIVER RATES : 4 6.3 6.3
I/M GRACE PERIOD : 4 2

*Gas Cap older LDGV, LDGT
I/M PROGRAM : 5 2009 2050 2 T/O GC
I/M MODEL YEARS : 5 1977 1995
I/M VEHICLES : 5 22222 11111111 1
I/M COMPLIANCE : 5 96.0
I/M WAIVER RATES : 5 3.0 3.0
I/M GRACE PERIOD : 5 2

*Gas Cap HDGT
I/M PROGRAM : 6 2009 2050 2 T/O GC
I/M MODEL YEARS : 6 1977 2050
I/M VEHICLES : 6 11111 22222111 1
I/M COMPLIANCE : 6 96.0
I/M WAIVER RATES : 6 3.0 3.0
I/M GRACE PERIOD : 6 2

Virginia

Alexandria, Arlington County, Fairfax County, and Prince William

* Virginia's 2009 I/M programs for Alexandria, Arlington County, Fairfax County, and Prince William County.
* I/M Effectiveness reported in Program #3 applies to all exhaust programs modeled as TRC.
* First 4 years exempt.

> Exhaust I/M - IDLE test program #1
I/M PROGRAM : 1 1983 2050 2 TRC 2500/IDLE
I/M MODEL YEARS : 1 1968 1980
I/M VEHICLES : 1 22222 21111111 1
I/M STRINGENCY : 1 35
I/M COMPLIANCE : 1 98.0
I/M WAIVER RATES : 1 2.5 2.5
I/M EXEMPTION AGE : 1 24

> Exhaust I/M - ASM final program #2
I/M PROGRAM : 2 1983 2050 2 TRC ASM 2525/5015 FINAL
I/M MODEL YEARS : 2 1981 1995
I/M VEHICLES : 2 22222 11111111 1
I/M STRINGENCY : 2 35
I/M COMPLIANCE : 2 98.0
I/M WAIVER RATES : 2 2.5 2.5
I/M EXEMPTION AGE : 2 24

> Exhaust I/M - OBD test program #3
I/M PROGRAM : 3 1983 2050 2 TRC OBD I/M
I/M MODEL YEARS : 3 1996 2050
I/M VEHICLES : 3 22222 11111111 1
I/M STRINGENCY : 3 35
I/M COMPLIANCE : 3 98.0
I/M WAIVER RATES : 3 2.5 2.5
I/M EXEMPTION AGE : 3 24
I/M EFFECTIVENESS : 0.94 0.94 0.94
I/M GRACE PERIOD : 3 4

> Evap I/M - Evap OBD test program #4
I/M PROGRAM : 4 1998 2050 2 TRC EVAP OBD & GC
I/M MODEL YEARS : 4 1996 2050
I/M VEHICLES : 4 22222 11111111 1
I/M COMPLIANCE : 4 98.0
I/M WAIVER RATES : 4 2.5 2.5
I/M EXEMPTION AGE : 4 24
I/M GRACE PERIOD : 4 4

> Evap I/M - Gas Cap test program #5
I/M PROGRAM : 5 1998 2050 2 TRC GC
I/M MODEL YEARS : 5 1973 1995
I/M VEHICLES : 5 22222 11111111 1
I/M COMPLIANCE : 5 98.0
I/M WAIVER RATES : 5 2.5 2.5
I/M EXEMPTION AGE : 5 24

> Exhaust I/M - IDLE test program #6
I/M PROGRAM : 6 1983 2050 2 TRC 2500/IDLE
I/M MODEL YEARS : 6 1981 2050
I/M VEHICLES : 6 11111 21111111 1
I/M STRINGENCY : 6 35
I/M COMPLIANCE : 6 98.0
I/M WAIVER RATES : 6 2.5 2.5
I/M EXEMPTION AGE : 6 24
I/M GRACE PERIOD : 6 4

> Evap I/M - Gas Cap test program #7
I/M PROGRAM : 7 1998 2050 2 TRC GC
I/M MODEL YEARS : 7 1973 2050
I/M VEHICLES : 7 11111 21111111 1
I/M COMPLIANCE : 7 98.0
I/M WAIVER RATES : 7 2.5 2.5
I/M EXEMPTION AGE : 7 24
I/M GRACE PERIOD : 7 4

Loudoun and Stafford

* Virginia's 2009 I/M programs for Loudoun and Stafford Counties.
* I/M Effectiveness reported in Program #3 applies to all exhaust programs modeled as TRC.
* First 4 years exempt.

> Exhaust I/M - IDLE test program #1
I/M PROGRAM : 1 1998 2050 2 TRC 2500/IDLE
I/M MODEL YEARS : 1 1968 1980
I/M VEHICLES : 1 22222 21111111 1
I/M STRINGENCY : 1 35
I/M COMPLIANCE : 1 98.0
I/M WAIVER RATES : 1 2.5 2.5
I/M EXEMPTION AGE : 1 24

> Exhaust I/M - ASM final program #2
I/M PROGRAM : 2 1998 2050 2 TRC ASM 2525/5015 FINAL
I/M MODEL YEARS : 2 1981 1995
I/M VEHICLES : 2 22222 11111111 1
I/M STRINGENCY : 2 35
I/M COMPLIANCE : 2 98.0
I/M WAIVER RATES : 2 2.5 2.5
I/M EXEMPTION AGE : 2 24

> Exhaust I/M - OBD test program #3
I/M PROGRAM : 3 1998 2050 2 TRC OBD I/M
I/M MODEL YEARS : 3 1996 2050
I/M VEHICLES : 3 22222 11111111 1
I/M STRINGENCY : 3 35
I/M COMPLIANCE : 3 98.0
I/M WAIVER RATES : 3 2.5 2.5
I/M EXEMPTION AGE : 3 24
I/M EFFECTIVENESS : 0.94 0.94 0.94
I/M GRACE PERIOD : 3 4

> Evap I/M - Evap OBD test program #4
I/M PROGRAM : 4 1998 2050 2 TRC EVAP OBD & GC
I/M MODEL YEARS : 4 1996 2050
I/M VEHICLES : 4 22222 11111111 1
I/M COMPLIANCE : 4 98.0
I/M WAIVER RATES : 4 2.5 2.5
I/M EXEMPTION AGE : 4 24
I/M GRACE PERIOD : 4 4

> Evap I/M - Gas Cap test program #5
I/M PROGRAM : 5 1998 2050 2 TRC GC
I/M MODEL YEARS : 5 1973 1995
I/M VEHICLES : 5 22222 11111111 1
I/M COMPLIANCE : 5 98.0
I/M WAIVER RATES : 5 2.5 2.5
I/M EXEMPTION AGE : 5 24

> Exhaust I/M - IDLE test program #6
I/M PROGRAM : 6 1998 2050 2 TRC 2500/IDLE
I/M MODEL YEARS : 6 1981 2050
I/M VEHICLES : 6 11111 21111111 1
I/M STRINGENCY : 6 35
I/M COMPLIANCE : 6 98.0
I/M WAIVER RATES : 6 2.5 2.5
I/M EXEMPTION AGE : 6 24
I/M GRACE PERIOD : 6 4

> Evap I/M - Gas Cap test program #7
I/M PROGRAM : 7 1998 2050 2 TRC GC
I/M MODEL YEARS : 7 1973 2050
I/M VEHICLES : 7 11111 21111111 1
I/M COMPLIANCE : 7 98.0
I/M WAIVER RATES : 7 2.5 2.5
I/M EXEMPTION AGE : 7 24
I/M GRACE PERIOD : 7 4

Cut-Points

District of Columbia

Details of the format for the cut-points listed here can found in the Mobile6 model user guide.

Calendar Year: 2011

* District of Columbia IM cutpoints - applies to calendar year 2011
* Air Quality Division, District Department of the Environment
>

I/M CUTPOINTS									
* Model Years									
* 11	10	09	08	07	06	05	04	03	02
* 01	00	99	98	97	96	95	94	93	92
* 91	90	89	88	87					

* Block 1 (LDGV, Light LDGT1(EPA LD1))
0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800
0.800 0.800 0.800 0.800 0.800 0.800 1.200 1.200 1.200 1.200
1.200 2.000 2.000 2.000 2.000
15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.000
15.000 15.000 15.000 15.000 15.000 15.000 20.000 20.000 20.000 20.000
20.000 30.000 30.000 30.000 30.000
2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000
2.000 2.000 2.000 2.000 2.000 2.000 2.500 2.500 2.500 2.500
2.500 3.000 3.000 3.000 3.000

* Block 2 (Heavy LDGT1, Light LDGT2 (EPA LD2&3))
1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000
1.000 1.000 1.000 1.000 1.000 1.000 2.400 2.400 2.400 2.400
2.400 3.200 3.200 3.200 3.200
20.000 20.000 20.000 20.000 20.000 20.000 20.000 20.000 20.000 20.000
20.000 20.000 20.000 20.000 20.000 20.000 60.000 60.000 60.000 60.000
60.000 80.000 80.000 80.000 80.000
2.500 2.500 2.500 2.500 2.500 2.500 2.500 2.500 2.500 2.500
2.500 2.500 2.500 2.500 2.500 2.500 3.000 3.000 3.000 3.000
3.000 3.500 3.500 3.500 7.000

* Block 3 (Heavy LDGT2(EPA LD4))
2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400
2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400
2.400 3.200 3.200 3.200 3.200
60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000
60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000
60.000 80.000 80.000 80.000 80.000
4.000 4.000 4.000 4.000 4.000 4.000 4.000 4.000 4.000 4.000
4.000 4.000 4.000 4.000 4.000 4.000 4.500 4.500 4.500 4.500
4.500 5.000 5.000 5.000 7.000

* Block 4 (HDGV)
2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400
2.400 2.400 2.400 2.400 3.000 3.000 3.000 3.000 3.000 3.000
3.000 3.200 3.200 3.200 3.200
60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000
60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000
60.000 80.000 80.000 80.000 80.000
4.000 4.000 4.000 4.000 4.000 4.000 4.000 4.000 4.000 4.000
4.000 4.000 4.000 4.000 6.000 6.000 6.000 6.000 6.000 6.000
6.000 8.000 8.000 8.000 8.000

Calendar Year: 2020

* District of Columbia IM cutpoints - applies to calendar year 2020
* Air Quality Division, District Department of the Environment
>

I/M CUTPOINTS
* Model Years
* 20 19 18 17 16 15 14 13 12 11
* 10 09 08 07 06 05 04 03 02 01
* 00 99 98 97 96

* Block 1 (LDGV, Light LDGT1(EPA LD1))										
0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
0.800	0.800	0.800	0.800	0.800					
15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000
15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000
15.000	15.000	15.000	15.000	15.000					
2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
2.000	2.000	2.000	2.000	2.000					

* Block 2 (Heavy LDGT1, Light LDGT2 (EPA LD2&3))									
1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1.000	1.000	1.000	1.000	1.000					
20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
20.000	20.000	20.000	20.000	20.000					
2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500
2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500
2.500	2.500	2.500	2.500	2.500					

* Block 3 (Heavy LDGT2(EPA LD4))									
2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400
2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400
2.400	2.400	2.400	2.400	2.400					
60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000
60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000
60.000	60.000	60.000	60.000	60.000					
4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
4.000	4.000	4.000	4.000	4.000					

* Block 4 (HDGV)									
2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400
2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400
2.400	2.400	2.400	3.000	3.000					
60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000
60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000
60.000	60.000	60.000	60.000	60.000					
4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
4.000	4.000	4.000	6.000	6.000					

Calendar Year: 2030

* District of Columbia IM cutpoints - applies to calendar year 2030
* Air Quality Division, District Department of the Environment
>

I/M CUTPOINTS									
* Model Years									
* 30	29	28	27	26	25	24	23	22	21
* 20	19	18	17	16	15	14	13	12	11
* 10	09	08	07	06					

* Block 1 (LDGV, Light LDGT1(EPA LD1))										
0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	
0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	
0.800	0.800	0.800	0.800	0.800						
15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	
15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	
15.000	15.000	15.000	15.000	15.000						
2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	
2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	
2.000	2.000	2.000	2.000	2.000						

* Block 2 (Heavy LDGT1, Light LDGT2 (EPA LD2&3))										
1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
1.000	1.000	1.000	1.000	1.000						
20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	
20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	
20.000	20.000	20.000	20.000	20.000						
2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	
2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	
2.500	2.500	2.500	2.500	2.500						

* Block 3 (Heavy LDGT2(EPA LD4))										
2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	
2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	
2.400	2.400	2.400	2.400	2.400						
60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	
60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	
60.000	60.000	60.000	60.000	60.000						
4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	
4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	
4.000	4.000	4.000	4.000	4.000						

* Block 4 (HDGV)										
2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	
2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	
2.400	2.400	2.400	2.400	2.400						
60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	
60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	
60.000	60.000	60.000	60.000	60.000						
4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	
4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	
4.000	4.000	4.000	4.000	4.000						

Calendar Year: 2040

* District of Columbia IM cutpoints - applies to calendar year 2040
* Air Quality Division, District Department of the Environment
>

I/M CUTPOINTS									
* Model Years									
* 40	39	38	37	36	35	34	33	32	31
* 30	29	28	27	26	25	24	23	22	21
* 20	19	18	17	16					

* Block 1 (LDGV, Light LDGT1(EPA LD1))
0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800
0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800 0.800
0.800 0.800 0.800 0.800 0.800
15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.000
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2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000
2.000 2.000 2.000 2.000 2.000

* Block 2 (Heavy LDGT1, Light LDGT2 (EPA LD2&3))
1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000
1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000
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2.500 2.500 2.500 2.500 2.500

* Block 3 (Heavy LDGT2(EPA LD4))
2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400
2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400
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4.000 4.000 4.000 4.000 4.000 4.000 4.000 4.000 4.000 4.000
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* Block 4 (HDGV)
2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400
2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400 2.400
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Anti-Tempering Programs (ATP)

Anti-tampering Program Parameters for DC

Program Parameters	Recent Update
Program Start Year	1983
First Model Year	1968
Last Model Year	2050
Program Type	Test Only
Inspection Frequency	Biennial
Compliance Rate (%)	96
LDGV	Yes
LDGT1	Yes
LDGT2	Yes
LDGT3	Yes
LDGT4	Yes
HDGV2B	Yes
HDGV3	Yes
HDGV4	Yes
HDGV5	Yes
HDGV6	Yes
HDGV7	No
HDGV8A	No
HDGV8B	No
GAS BUS	No
Inspections Performed	
Air pump system disablement	No
Catalyst removal	Yes
Fuel inlet restrictor disablement	Yes
Tailpipe lead deposit test	No
EGR disablement	No
Evaporative system disablement	No
PCV system disablement	No
Missing gas cap	Yes

Anti-tampering Program Parameters for Maryland

Program Parameters	Recent Update**
Program Start Year	1989
First Model Year	1977
Last Model Year	2050
Program Type	Test Only
Inspection Frequency	Biennial
Compliance Rate (%)	96
Vehicle Types	
LDGV	Yes
LDGT1	Yes
LDGT2	Yes
LDGT3	Yes
LDGT4	Yes
HDGV2B	Yes
HDGV3	Yes
HDGV4	Yes
HDGV5	Yes
HDGV6	Yes
HDGV7	No
HDGV8A	No
HDGV8B	No
GAS BUS	No
Inspections Performed	
Air pump system disablement	No
Catalyst removal	Yes
Fuel inlet restrictor disablement	Yes
Tailpipe lead deposit test	No
EGR disablement	No
Evaporative system disablement	No
PCV system disablement	No
Missing gas cap	Yes
*** Maryland's ATP applies to all counties except St. Mary's County.**	

Anti-tampering Program Parameters for Virginia*

Program Parameters	Recent Update
Program Start Year	1989**
First Model Year	1968
Last Model Year	2050
Program Type	Test and Repair Computerized***
Inspection Frequency	Biennial
Compliance Rate (%)	98
Vehicle Types	
LDGV	Yes
LDGT1	Yes
LDGT2	Yes
LDGT3	Yes
LDGT4	Yes
HDGV2B	Yes
HDGV3	No
HDGV4	No
HDGV5	No
HDGV6	No
HDGV7	No
HDGV8A	No
HDGV8B	No
GAS BUS	No
Inspections Performed	
Air pump system disablement	Yes
Catalyst removal	Yes
Fuel inlet restrictor disablement	No
Tailpipe lead deposit test	No
EGR disablement	Yes
Evaporative system disablement	Yes
PCV system disablement	Yes
Missing gas cap	Yes

*** Virginia's ATP applies to all jurisdictions except Clark and Spotsylvania counties.**

**** ATP start year is 1998 for Loudoun and Stafford Counties.**

***** Modeled as Test Only (T/O). Per Mobile6 User's Guide (Section 2.8.9.3), EPA no longer support test and repair benefit discount.**

Additional State-Specific Control Programs

Maryland adopted CAL-LEV II program and it is applicable for any evaluation year beginning 2011. Therefore, this program was modeled for all four conformity analysis years. Following auxiliary files provided by the Maryland Department of the Environment (MDE) staff were used to model the above program for Maryland jurisdictions. Details of the format for these auxiliary files can be found in the Mobile6 model user guide.

LevIIExh.S11 (T2 EXH PHASE-IN)

T2 EXH PHASE-IN
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0.000,0.000,0.000,0.300,0.300,0.550,0.550,0.200,0.144,0.144,0.144,0.113
0.000,0.000,0.000,0.200,0.200,0.100,0.100,0.101,0.101,0.101,0.101,0.102
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.061,0.061,0.061,0.061,0.061
0.386,0.787,1.000,0.400,0.400,0.100,0.100,0.040,0.041,0.041,0.041,0.041
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0.000,0.000,0.337,1.000,0.600,0.800,0.800,0.350,0.350,0.350,0.350,0.350
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0.000,0.000,0.337,0.400,0.400,0.200,0.200,0.450,0.450,0.450,0.450,0.450
0.000,0.000,0.000,0.300,0.300,0.300,0.300,0.350,0.350,0.350,0.350,0.350
0.000,0.000,0.000,0.300,0.300,0.300,0.300,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
1.000,1.000,0.663,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
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0.000,0.000,0.000,0.000,0.000,0.200,0.200,0.200,0.200,0.200,0.200,0.200
0.000,0.000,0.337,0.400,0.400,0.200,0.200,0.450,0.450,0.450,0.450,0.450
0.000,0.000,0.000,0.300,0.300,0.300,0.300,0.350,0.350,0.350,0.350,0.350
0.000,0.000,0.000,0.300,0.300,0.300,0.300,0.000,0.000,0.000,0.000,0.000
1.000,1.000,0.663,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
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0.000,0.000,0.000,0.000,0.740,0.740,0.740,1.000,1.000,1.000,1.000,1.000
0.370,0.740,1.000,1.000,0.260,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.630,0.260,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.260,0.000,0.000,0.000,0.000,0.000,0.000
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0.370,0.740,1.000,1.000,0.260,0.260,0.260,0.000,0.000,0.000,0.000,0.000
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0.630,0.260,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
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0.000,0.000,0.000,0.000,0.000,0.000,0.000,1.000,1.000,1.000,1.000,1.000
0.000,0.000,0.220,1.000,1.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
1.000,1.000,0.780,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,1.000,1.000,0.000,0.000,0.000,0.000,0.000
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0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.220,1.000,1.000,1.000,1.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
1.000,1.000,0.780,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
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0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,1.000,1.000,1.000,1.000,1.000
0.000,0.000,0.220,1.000,1.000,1.000,1.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
1.000,1.000,0.780,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000

LevIIEvp.S11 (T2 EVAP PHASE-IN)

T2 EVAP PHASE-IN
0.25,0.50,0.75,1.00,1.00,1.00,1.00,1.00,1.00,1.00,1.00,1.00,
0.25,0.50,0.75,1.00,1.00,1.00,1.00,1.00,1.00,1.00,1.00,1.00,
0.25,0.50,0.75,1.00,1.00,1.00,1.00,1.00,1.00,1.00,1.00,1.00,
0.00,0.00,0.00,0.00,0.50,1.00,1.00,1.00,1.00,1.00,1.00,1.00,
0.00,0.00,0.00,0.00,0.50,1.00,1.00,1.00,1.00,1.00,1.00,1.00/

LevIIStd.d (T2 CERT)

T2 CERT

0.000	0.000	0.000	0.000	0.000
0.007	0.007	0.007	0.007	0.007
0.040	0.040	0.040	0.040	0.040
0.051	0.051	0.051	0.051	0.051
0.040	0.040	0.040	0.040	0.040
0.075	0.075	0.075	0.075	0.075
0.100	0.100	0.100	0.125	0.125
0.075	0.075	0.100	0.140	0.140
0.125	0.125	0.125	0.160	0.195
0.040	0.040	0.050	0.100	0.117
0.075	0.075	0.100	0.160	0.195
0.000	0.000	0.000	0.000	0.000

0.000	0.000	0.000	0.000	0.000
1.700	1.700	1.700	1.700	1.700
1.700	1.700	1.700	1.700	1.700
1.700	1.700	1.700	1.700	1.700
1.700	1.700	1.700	1.700	1.700
3.400	3.400	3.400	3.400	3.400
3.400	3.400	3.400	3.400	3.400
3.400	3.400	3.400	3.400	3.400
3.400	3.400	3.400	3.400	3.400
1.700	1.700	2.200	4.400	5.000
3.400	3.400	4.400	4.400	5.000
0.000	0.000	0.000	0.000	0.000

0.000	0.000	0.000	0.000	0.000
0.014	0.014	0.014	0.014	0.014
0.021	0.021	0.021	0.021	0.021
0.029	0.029	0.029	0.029	0.029
0.050	0.050	0.050	0.050	0.050
0.050	0.050	0.050	0.050	0.050
0.140	0.140	0.140	0.140	0.140
0.200	0.200	0.200	0.200	0.200
0.400	0.400	0.400	0.400	0.400
0.200	0.200	0.400	0.400	0.600
0.200	0.200	0.400	0.400	0.600
0.000	0.000	0.000	0.000	0.000/

LevII94.S11 (94+ LDG IMP)

94+ LDG IMPLEMENTATION

* The data is divided into 5 blocks, one each for LDGV, LDGT1, LDGT2,
* LDGT3, and LDGT4. In each data block there is one data line for each
* calendar year from 1994 to 2025. Each line contains the phase-in
* values for that year for 11 different vehicle standards categories.
* The first column is Tier0   the second is intermediate Tier1, the third
* is Tier1, and the fourth column is Tier2. The remaining columns are
* intermediate TLEV, TLEV, intermediate LEV, LEV, intermediate ULEV, ULEV,
* and ZEV. These are the standards categories defined by the California
* LEV program.

* LDGV
* T0 T1 T1 T2 TLEV TLEV LEV LEV ULEV ULEV ZEV
* (int) (int) (int) (int)
0.6 0.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.2 0.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.6 0.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.2 0.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.3 0.0 0.0 0.4 0.0 0.3 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.4 0.0 0.6 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0
0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.99 0.0 0.0 0.0 0.0 0.0 0.0 0.01
0.0 0.0 0.0 0.986 0.0 0.0 0.0 0.0 0.0 0.0 0.014
0.0 0.0 0.0 0.986 0.0 0.0 0.0 0.0 0.0 0.0 0.014

0.0	0.0	0.0	0.986	0.0	0.0	0.0	0.0	0.0	0.0	0.014
0.0	0.0	0.0	0.981	0.0	0.0	0.0	0.0	0.0	0.0	0.019
0.0	0.0	0.0	0.981	0.0	0.0	0.0	0.0	0.0	0.0	0.019
0.0	0.0	0.0	0.981	0.0	0.0	0.0	0.0	0.0	0.0	0.019
0.0	0.0	0.0	0.976	0.0	0.0	0.0	0.0	0.0	0.0	0.024
0.0	0.0	0.0	0.976	0.0	0.0	0.0	0.0	0.0	0.0	0.024
0.0	0.0	0.0	0.976	0.0	0.0	0.0	0.0	0.0	0.0	0.024
0.0	0.0	0.0	0.976	0.0	0.0	0.0	0.0	0.0	0.0	0.024
0.0	0.0	0.0	0.976	0.0	0.0	0.0	0.0	0.0	0.0	0.024
0.0	0.0	0.0	0.976	0.0	0.0	0.0	0.0	0.0	0.0	0.024
0.0	0.0	0.0	0.976	0.0	0.0	0.0	0.0	0.0	0.0	0.024
0.0	0.0	0.0	0.976	0.0	0.0	0.0	0.0	0.0	0.0	0.024

* LDGT1										
0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.3	0.0	0.0	0.4	0.0	0.3	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.6	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.99	0.0	0.0	0.0	0.0	0.0	0.0	0.01
0.0	0.0	0.0	0.986	0.0	0.0	0.0	0.0	0.0	0.0	0.014
0.0	0.0	0.0	0.986	0.0	0.0	0.0	0.0	0.0	0.0	0.014
0.0	0.0	0.0	0.986	0.0	0.0	0.0	0.0	0.0	0.0	0.014
0.0	0.0	0.0	0.981	0.0	0.0	0.0	0.0	0.0	0.0	0.019
0.0	0.0	0.0	0.981	0.0	0.0	0.0	0.0	0.0	0.0	0.019
0.0	0.0	0.0	0.981	0.0	0.0	0.0	0.0	0.0	0.0	0.019
0.0	0.0	0.0	0.976	0.0	0.0	0.0	0.0	0.0	0.0	0.024
0.0	0.0	0.0	0.976	0.0	0.0	0.0	0.0	0.0	0.0	0.024
0.0	0.0	0.0	0.976	0.0	0.0	0.0	0.0	0.0	0.0	0.024
0.0	0.0	0.0	0.976	0.0	0.0	0.0	0.0	0.0	0.0	0.024
0.0	0.0	0.0	0.976	0.0	0.0	0.0	0.0	0.0	0.0	0.024
0.0	0.0	0.0	0.976	0.0	0.0	0.0	0.0	0.0	0.0	0.024
0.0	0.0	0.0	0.976	0.0	0.0	0.0	0.0	0.0	0.0	0.024
0.0	0.0	0.0	0.976	0.0	0.0	0.0	0.0	0.0	0.0	0.024

* LDGT2											
0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.3	0.0	0.0	0.4	0.0	0.3	0.0	0.0	0.0	
0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.6	0.0	0.0	0.0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

* LDGT3											
1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

* LDGT4										
1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NOx Rebuild Effects

Following NOx rebuild effects percentages were used for all 2010 CLRP analysis years:

Jurisdiction	NOx Rebuild Effects (%)
District of Columbia	0.11
Maryland	0.90
Virginia	0.25
Regional (Average of above three jurisdictions)	0.50
Note: Regional average NOx rebuild effect data was used for modeling buses, which are modeled on a regional level.	

Memo

To: Air Quality Conformity Files

From: Eulalie G. Lucas

Date: 10/8/2010

Re: Inputs to MOBILE6 Emissions Factor Development: Ozone season, Wintertime CO and $PM_{2.5}$ Annual.

Introduction

This memo documents updates to the preparation of mobile emission rates associated with the air quality analysis of the 2010 Constrained Long Range Plan (CLRP) and the FY 2011-2016 Transportation Improvement Plan (TIP). Inputs for this analysis are for typical ozone, winter day and for annual conditions.

Procedures used in the development of MOBILE6.2 inputs decks have not changed and detailed information is available in a January 27, 2003 memo to the Council of Governments (COG) staff from Maureen Mullen of EH Pechan staff. This memo is contained in previous air quality conformity determination reports, e.g., the October 19, 2005 report for the 2005 CLRP and the FY 2006-2011 TIP

Process and Inputs

Development of MOBILE6.2 input decks is an inter-departmental work task. COG's Department of Environmental Programs (DEP) staff requests non- travel related inputs from the states and the District of Columbia air agency staff. DTP staff incorporates these inputs into MOBILE input decks and the decks are returned to DEP staff for review and approval. Once input files are approved the MOBILE model is executed and emission rates are generated. Rates are then applied along with travel data using COG's post-processor, for all milestone years.

The following tables describe and list either Mobile default values or a reference to a local data source. Table 1 shows command line information specific to the current analysis as well as input requirement with a description of these inputs. Table 2 shows trip length distributions and Table 3 shows LEV implementation schedules for COG's non-attainment areas as described in the one-hour and eight-hour ozone day State Implementation Plans. Table 4 is summary of scenarios by analysis type along with a brief description. Table 5 contains values for the distribution of engine starts for three modes stabilized, cold and hot for each hour of the day, separately for weekdays and weekends. Included in this appendix is a memo from Daivamani Sivasailam documenting 2008 vehicle registration and diesel sales fractions, these two inputs vary by jurisdiction and contribute significantly to emission rates development.

Results

Tables 6, 7 and 8 show Vehicle Miles of Travel (VMT) fractions for the three traffic streams modeled: network, local roads and auto access to transit. MOBILE6.2 default heavy duty truck VMT percents are replaced to represent local conditions for network and local roads. The network traffic stream includes all vehicle types and all facility types. Local roads traffic stream accounts for VMT on facility types that are not represented on our network and has a significantly lower heavy duty truck percent. Auto-access to transit traffic stream represents VMT associated with trips made to access transit and does not include heavy duty trucks. Table 9 shows the percent VMT mix associated with school and transit bus operation. Year 2011 is illustrated here but all milestone years are available upon request.

Updates

Updates specified by the District of Columbia, Maryland and Virginia air management agencies are covered in more detail in Sunil Kumar's memo dated 10/12/2010 included in this Appendix.

Table 1

MOBILE62 Run Information Common to All COG Counties For Ozone day, Annual Runs and Winter CO

Command	Input	Description
MOBILE6 INPUT FILE	No input required.	Specific to Jurisdiction
REPORT FILE	No input required.	Specifies name for descriptive output file(s).
EMISSIONS TABLE	User-supplied	Specifies a file name for the database output file.
SPREADSHEET	User-supplied	Instructs MOBILE6 to output the average calendar year emission factors in a form suitable for direct input into a spreadsheet program.
POLLUTANTS*	Specific to seasonal runs	Controls which HC, CO, and NOx pollutants will be calculated and output to the database report and descriptive output.
PARTICULATE EF*	PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV	Used for seasonal runs particulate matter ($PM_{2.5}$) and NOx as a precursor for $PM_{2.5}$.
EXPRESS HC AS VOC +	No input required.	Directs MOBILE6 to output exhaust HC as volatile organic compounds.
EXPAND EVAPORATIVE+	No input required.	Six evaporative emission types in descriptive output.
EXPAND EXHAUST+	No input required.	Start, running and total exhaust EFs displayed in descriptive output.
NO REFUELING+	No input required.	"zero " for refueling (Stage 2) emissions.
WE DA TRI LEN DI	Varies. .	Table 2 Varies by time range
94+ LDG IMP	User-supplied	1994 and later fleet penetration fractions for light-duty gasoline vehicles under the Tier 1, NLEV (or California LEV 1), and Tier 2 standards. Table 3
REBUILD EFFECTS	Values supplied by state air agency staff.	Rebuild program effectiveness rate used to reduce heavy-duty diesel vehicle NOx off-cycle emissions for years 2009 and beyond Vary by state: DC 11%,MD 90%, VA 25%
REG DIST	Vary by jurisdiction	2008 Vehicle Registration specific to jurisdiction for 16 composite vehicles types. Updated every three years. See D. Sivasailam memo attached.
ANTI-TAMP PROG	Vary by state	See S. Kumar memo of 10/12/2010
I/M DESC FILE#	User-supplied	See S. Kumar memo of 10/12/2010
FUEL PROGRAM	Vary by state	See S. Kumar memo of 10/12/2010
OXYGENATED FUELS	Regional Values	See S. Kumar memo of 10/12/2010
TEMPERATURE	Ozone season	See S. Kumar memo of 10/12/2010
	Seasonal	See S. Kumar memo of 10/12/2010
	Winter	See S. Kumar memo of 10/12/2010
DIESEL FRACTIONS	Vary by jurisdiction	See D. Sivasailam memo attached
FUEL RVP	Vary by jurisdiction Ozone season	See S. Kumar memo of 9/12/2010
	Seasonal	See S. Kumar memo of 10/12/2010
HUMIDITY	Ozone season	See S. Kumar memo of 10/12/2010
	Winter CO	See S. Kumar memo of 10/12/2010
	Seasonal	See S. Kumar memo of 10/12/2010
SCENARIO RECORD	Automatically generated.	Allows user to label individual scenario results. Marks start of new scenario. Table 4

CALENDAR YEAR	Varies.	Calendar year of scenario evaluated.
EVALUATION MONTH	Varies.	Specifies January 1 (1) or July 1 (7) for calendar year of interest.
ALTITUDE	1	High or low altitude of area evaluated.
BAROMETRIC PRES*	User-supplied	See S. Kumar memo of 10/12/2010
AVERAGE SPEED	Varies. .	Table 4 Varies by scenario
SOAK DISTRIBUTION	Regional	Table 5 Varies by operating mode
VMT FRACTIONS	Varies by jurisdiction.	See Tables 6,7,8,9
VMT BY FACILITY	FV4.FV for freeway ramp; FV3.FV for local roads	Values represent MOBILE6 defaults for each scenario.
DIESEL SULFUR*	Varies. by jurisdiction.	See S. Kumar memo of 10/12/2010
PARTICLE SIZE*	Regional	2.5

+ - Does not apply to $PM_{2.5}$ analysis (Annual runs).
* - Applies only when modeling $PM_{2.5}$.
# - Used when an ATP or I/M control programs are in effect.

Table 2
Trip Length Distributions

Length of Trip	MWCOG Regional Percentage of VMT (%)	MOBILE6 Default Percentage of VMT (%)
< 10 Minutes	10.86	6.74
11 - 20 Minutes	24.98	18.51
21 - 30 Minutes	19.71	16.78
31 - 40 Minutes	13.44	13.11
41 - 50 Minutes	9.29	8.33
> 50 Minutes	21.72	36.53

Table 3
LEV Implementation Schedule for MWCOG Region

Percentage of New Vehicle Sales				
Model Year	Tier 1	Transitional LEV	LEV	Tier 2
1999	30	40	30	0
2000	0	40	60	0
2001	0	0	100	0
2002	0	0	100	0
2003	0	0	100	0
2004+	0	0	0	100

Table 4
Summary of Scenarios Modeled in MOBILE6.2
Network, Local roads and Auto Access to Transit, School and Transit bus
Analysis: Ozone and winter day and annual runs

Scenario Number	Operating Mode	Facility Type	Average Speed	VMT Fractions	Month\Season Sequence
Ozone\Winter Analysis					
1-65	Stabilized	Arterial\Collectors	1-65 mph	Network or Auto Access	
66-130	Stabilized	Freeways excluding Ramps	1-65 mph	Network or Auto Access	
131	Stabilized	Freeway Ramps	34.6 mph	Network or Auto Access	
132	Cold	Local Roadways	12.9 mph	Network or Auto Access	
133	Hot	Local Roadways	12.9 mph	Network or Auto Access	
134	Stabilized	Local Roadways	12.9 mph	Network or Auto Access	
135-179*	Stabilized	Local Roadways as Arterial	1-45 mph	Local	
Seasonal Analysis					
1-195	Stabilized	Arterial\Collectors	1-65 mph	Network or Auto Access	1-3
196-390	Stabilized	Freeways excluding Ramps	1-65 mph	Network or Auto Access	1-4
391-393	Stabilized	Freeway Ramps	34.6 mph	Network or Auto Access	1-3
394-402	Cold	Local Roadways	12.9 mph	Network or Auto Access	1-3 (for each season, data sequence is as follow: cold, hot, then stabilized)
	Hot	Local Roadways	12.9 mph	Network or Auto Access	
	Stabilized	Local Roadways	12.9 mph	Local or Auto Access	
403-537*	Stabilized	Local Roadways as Arterial	1-45 mph	Local	
Transit and School Bus					
1-65	Stabilized	Arterial/Collectors	1-65 mph	100%	Ozone, winter, annual
66	Stabilized	Freeway Ramps	34.6 mph	100%	Ozone, winter, annual
67	Stabilized	Local Road	12.9 mph	100%	Ozone, winter, annual

Notes:
1. Season: 1 – January thru April; 2 – May thru September; 3 – October thru December
2. * - Applies to network and local road types only.

Table 5
Soak Distributions

Stabilized Operating Mode

SOAK DISTRIBUTION									
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*1.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*1.00

Cold Start Operating Mode

SOAK DISTRIBUTION									
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*1.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*1.00	24*0.00	24*0.00

Hot Start Operating Mode

SOAK DISTRIBUTION									
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*1.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*1.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00
24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00	24*0.00

Table 6

2011 Summer VMT Mix Fractions for Network Analysis

Vehicle Type	2011 Summer VMT Mix Fractions											
	DC	Maryland Counties					Virginia Counties					
		Calvert	Charles	Frederick	Montgomery	Prince Ge	Alexandria	Arlington	Fairfax	Loudon	Prince William	Stafford
LDGV	0.3367	0.3425	0.3436	0.3439	0.3334	0.3403	0.3325	0.3349	0.3336	0.3335	0.3367	0.3389
LDGT1	0.0873	0.0889	0.0850	0.0855	0.0875	0.0854	0.0825	0.0867	0.0884	0.0887	0.0892	0.0934
LDGT2	0.3237	0.3153	0.3166	0.3198	0.3247	0.3191	0.3277	0.3238	0.3231	0.3229	0.3200	0.3110
LDGT3	0.1085	0.1076	0.1092	0.1065	0.1112	0.1098	0.1127	0.1107	0.1108	0.1105	0.1094	0.1039
LDGT4	0.0531	0.0554	0.0552	0.0541	0.0532	0.0549	0.0543	0.0534	0.0535	0.0540	0.0540	0.0478
HDGV2B	0.0211	0.0202	0.0192	0.0198	0.0195	0.0184	0.0200	0.0198	0.0197	0.0197	0.0194	0.0196
HDGV3	0.0012	0.0009	0.0008	0.0009	0.0008	0.0008	0.0010	0.0010	0.0010	0.0010	0.0010	0.0007
HDGV4	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002
HDGV5	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0007
HDGV6	0.0004	0.0005	0.0004	0.0004	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0016
HDGV7	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0007
HDGV8A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV8B	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LDDV	0.0007	0.0009	0.0009	0.0009	0.0009	0.0009	0.0006	0.0008	0.0008	0.0008	0.0008	0.0033
LDDT12	0.0004	0.0003	0.0004	0.0004	0.0004	0.0004	0.0005	0.0004	0.0005	0.0005	0.0004	0.0111
HDDV2B	0.0060	0.0087	0.0083	0.0084	0.0084	0.0078	0.0074	0.0072	0.0073	0.0072	0.0071	0.0059
HDDV3	0.0016	0.0021	0.0020	0.0021	0.0019	0.0018	0.0017	0.0016	0.0017	0.0018	0.0018	0.0018
HDDV4	0.0018	0.0018	0.0018	0.0019	0.0019	0.0018	0.0019	0.0018	0.0019	0.0019	0.0018	0.0021
HDDV5	0.0026	0.0020	0.0020	0.0020	0.0020	0.0019	0.0017	0.0018	0.0019	0.0020	0.0019	0.0010
HDDV6	0.0059	0.0066	0.0059	0.0066	0.0064	0.0067	0.0072	0.0060	0.0061	0.0061	0.0064	0.0048
HDDV7	0.0061	0.0045	0.0057	0.0054	0.0058	0.0059	0.0049	0.0044	0.0056	0.0055	0.0063	0.0069
HDDV8A	0.0080	0.0078	0.0079	0.0078	0.0079	0.0083	0.0078	0.0082	0.0082	0.0082	0.0081	0.0084
HDDV8B	0.0285	0.0280	0.0291	0.0278	0.0280	0.0294	0.0290	0.0308	0.0293	0.0292	0.0288	0.0293
MC	0.0049	0.0047	0.0047	0.0046	0.0044	0.0048	0.0043	0.0045	0.0045	0.0044	0.0047	0.0047
HDGB	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDBT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDBS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LDDT34	0.0008	0.0006	0.0006	0.0006	0.0006	0.0005	0.0011	0.0009	0.0009	0.0009	0.0008	0.0022

Table 7
2011 Summer VMT Mix Fractions for Local Analysis

Vehicle Type	2011 Summer VMT Mix Fractions											
	DC	Maryland Counties					Virginia Counties					
		Calvert	Charles	Frederick	Montgomery	Prince George's	Alexandria	Arlington	Fairfax	Loudon	Prince William	Stafford
LDGV	0.3608	0.3671	0.3681	0.3684	0.3573	0.3646	0.3563	0.3589	0.3575	0.3574	0.3609	0.3632
LDGT1	0.0936	0.0953	0.0911	0.0916	0.0937	0.0915	0.0884	0.0930	0.0947	0.0950	0.0956	0.1001
LDGT2	0.3469	0.3378	0.3393	0.3427	0.3479	0.3419	0.3511	0.3470	0.3463	0.3460	0.3429	0.3332
LDGT3	0.1163	0.1152	0.1170	0.1140	0.1191	0.1175	0.1207	0.1185	0.1188	0.1184	0.1172	0.1113
LDGT4	0.0569	0.0594	0.0592	0.0580	0.0570	0.0589	0.0582	0.0572	0.0574	0.0579	0.0579	0.0511
HDGV2B	0.0046	0.0044	0.0042	0.0043	0.0043	0.0040	0.0044	0.0043	0.0043	0.0043	0.0042	0.0043
HDGV3	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
HDGV4	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000
HDGV5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002
HDGV6	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0004
HDGV7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001
HDGV8A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV8B	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LDDV	0.0008	0.0009	0.0010	0.0010	0.0009	0.0010	0.0007	0.0008	0.0008	0.0008	0.0008	0.0035
LDDT12	0.0004	0.0004	0.0004	0.0004	0.0005	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0119
HDDV2B	0.0013	0.0019	0.0018	0.0018	0.0018	0.0017	0.0016	0.0016	0.0016	0.0016	0.0016	0.0013
HDDV3	0.0003	0.0004	0.0004	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
HDDV4	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0005
HDDV5	0.0006	0.0005	0.0005	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0005	0.0004	0.0002
HDDV6	0.0013	0.0015	0.0013	0.0014	0.0014	0.0015	0.0016	0.0013	0.0013	0.0013	0.0014	0.0010
HDDV7	0.0014	0.0010	0.0013	0.0012	0.0013	0.0013	0.0011	0.0010	0.0012	0.0012	0.0014	0.0016
HDDV8A	0.0017	0.0017	0.0017	0.0017	0.0017	0.0018	0.0017	0.0018	0.0018	0.0018	0.0018	0.0018
HDDV8B	0.0062	0.0061	0.0063	0.0062	0.0061	0.0065	0.0063	0.0066	0.0064	0.0064	0.0063	0.0063
MC	0.0052	0.0050	0.0050	0.0049	0.0047	0.0052	0.0046	0.0049	0.0048	0.0047	0.0050	0.0050
HDGB	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDBT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDBS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LDDT34	0.0008	0.0006	0.0006	0.0006	0.0007	0.0006	0.0012	0.0009	0.0009	0.0010	0.0009	0.0024

Table 8

2011 Summer VMT Mix Fractions for Auto Access to Transit Analysis

Vehicle Type	2011 Summer VMT Mix Fractions											
	DC	Maryland Counties					Virginia Counties					
		Calvert	Charles	Frederick	Montgomery	Prince Ge	Alexandria	Arlington	Fairfax	Loudon	Prince William	Stafford
LDGV	0.3675	0.3738	0.3750	0.3753	0.3640	0.3715	0.3699	0.3655	0.3642	0.3641	0.3641	0.3699
LDGT1	0.0953	0.0971	0.0928	0.0933	0.0954	0.0931	0.1020	0.0947	0.0965	0.0968	0.0968	0.1020
LDGT2	0.3534	0.3441	0.3456	0.3491	0.3544	0.3483	0.3394	0.3534	0.3527	0.3524	0.3524	0.3394
LDGT3	0.1185	0.1174	0.1192	0.1162	0.1214	0.1197	0.1133	0.1207	0.1209	0.1206	0.1206	0.1133
LDGT4	0.0580	0.0605	0.0603	0.0591	0.0580	0.0600	0.0521	0.0583	0.0584	0.0590	0.0590	0.0521
HDGV2B	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV8A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV8B	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LDDV	0.0008	0.0010	0.0010	0.0010	0.0009	0.0010	0.0036	0.0009	0.0009	0.0008	0.0008	0.0036
LDDT12	0.0004	0.0004	0.0004	0.0004	0.0005	0.0004	0.0121	0.0005	0.0005	0.0005	0.0005	0.0121
HDDV2B	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDV3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDV4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDV5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDV6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDV7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDV8A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDV8B	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MC	0.0053	0.0051	0.0051	0.0050	0.0048	0.0053	0.0051	0.0050	0.0049	0.0048	0.0048	0.0051
HDGB	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDBT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDBS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LDDT34	0.0008	0.0006	0.0006	0.0006	0.0007	0.0006	0.0024	0.0010	0.0010	0.0010	0.0010	0.0024

Table 9
2011 VMT Mix Fractions
For School Bus and Transit Bus Analysis

Vehicle Type	VMT Mix Fractions	
	School Bus	Transit Bus
LDV	0.0000	0.0000
LDT1	0.0000	0.0000
LDT2	0.0000	0.0000
LDT3	0.0000	0.0000
LDT4	0.0000	0.0000
HDV2B	0.0000	0.0000
HDV3	0.0000	0.0000
HDV4	0.0000	0.0000
HDV5	0.0000	0.0000
HDV6	0.0000	0.0000
HDV7	0.0000	0.0000
HDV8A	0.0000	0.0000
HDV8B	0.0000	0.0000
HDBS	1.0000	0.0000
HDBT	0.0000	1.0000
MC	0.0000	0.0000

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

October 12, 2010

To: Air Quality Conformity Files

From: Daivamani Sivasailam
Principal Transportation Engineer

Subject: Development of vehicle age distributions and diesel vehicle percentages for Mobile 6.2 model using VIN decoder software – 2008 Registration Data

Introduction

This memorandum summarizes the methodology used, and the results obtained, in developing Mobile 6 input files of vehicle characteristics data summarized from 2008 District of Columbia, Maryland and Virginia vehicle registration data. EPA's Mobile 6 model requires age distribution (1-25+ years) and diesel fueled vehicle percentages for 16 separate vehicle types (passenger cars, motorcycles, light trucks, and heavy trucks in ascending weight categories). The model then generates 28 vehicle types by applying the diesel percentages to the relevant vehicle types. This work continues the cycle of obtaining consistent vehicle registrations on a 3 year basis. These results will be used in the development of the mobile source emissions inventories for the air quality conformity assessment of 2009 Constrained Long Range Plan (CLRP) and FY 2010-2015 Transportation Improvement Program.

Background

In 2005, Department of Transportation Planning staff embarked on the use of VIN decoder software to develop registration and diesel sales percentages. Similarly during the Summer of 2008 the newest version of the software was purchased and registration data were obtained from the three state air agencies as of July 1, 2008. Using an approach similar to the 2005 exercise staff successfully decoded the VIN numbers and developed jurisdictional level vehicle age distribution and diesel sales fraction files.

Committee Review

Several conference calls and meetings were held with air and transportation department representatives to discuss the results, and a number of changes were suggested to improve the vehicle age distributions and diesel vehicle percentages. Changes to the procedures as compared to the 2005 exercise are listed below.

1) Vehicles Aged 25 Years and Older:

Since the VIN decoder software could not fully decode vehicles manufactured prior to 1981, staff used the registration data base (which contained control totals of total number of vehicle registrations by model year) to identify the total number of vehicles that were 25 years and older. These vehicles were then distributed among the 16 vehicle types using the vehicle type distribution of vehicles aged 25 through 27 that were decoded using the software.

2) Aggregation of Diesel Fractions by Jurisdiction

In Maryland and Northern Virginia, age distributions by vehicle type were developed at the county level. However, diesel percentages by vehicle type were aggregated to represent all counties in Maryland, and all jurisdictions in Northern Virginia. The District's data, due to an under-representation of vehicles for some types, were combined with the urban jurisdictions of Montgomery, Prince George's, Alexandria, Arlington and Fairfax to develop diesel vehicle percentages for the District of Columbia. For school bus and transit bus there is a single regional diesel fraction file.

Detailed Documentation

Three individual detailed memoranda, one each for the District of Columbia, Maryland, and Virginia, have been prepared and are available upon request. These memos detail the work activities including control totals, data tables, and charts of the age distribution and diesel vehicle fractions for each vehicle type.

Final Input Files

Attached are the final input files (XX.RDT) and (XX.DSF) for the Mobile 6.2 model prepared using the vehicle registration data.
Attachments

Alexandria, VA--2008 Registration Data

* LDV									
0.1468	0.1295	0.0726	0.0577	0.0572	0.0633	0.0595	0.0567	0.0568	0.0469
0.0409	0.0382	0.0292	0.0300	0.0228	0.0186	0.0140	0.0109	0.0100	0.0064
0.0046	0.0036	0.0026	0.0021	0.0189					
* LDT1									
0.0251	0.0689	0.0589	0.0562	0.0328	0.1214	0.1104	0.0962	0.0536	0.0645
0.0711	0.0787	0.0483	0.0120	0.0077	0.0055	0.0066	0.0087	0.0044	0.0077
0.0068	0.0066	0.0077	0.0000	0.0403					
* LDT2									
0.1637	0.1608	0.0731	0.0731	0.0766	0.0630	0.0620	0.0556	0.0503	0.0414
0.0376	0.0301	0.0229	0.0220	0.0169	0.0110	0.0069	0.0058	0.0040	0.0037
0.0031	0.0017	0.0018	0.0009	0.0120					
* LDT3									
0.1798	0.1351	0.1007	0.0783	0.0772	0.0729	0.0605	0.0526	0.0511	0.0435
0.0263	0.0195	0.0166	0.0158	0.0147	0.0078	0.0068	0.0046	0.0043	0.0051
0.0036	0.0021	0.0017	0.0017	0.0176					
* LDT4									
0.2031	0.2115	0.0685	0.0785	0.0862	0.0714	0.0352	0.0379	0.0454	0.0479
0.0337	0.0282	0.0077	0.0073	0.0128	0.0042	0.0031	0.0005	0.0031	0.0026
0.0026	0.0020	0.0020	0.0000	0.0048					
* HDV2B									
0.1247	0.0906	0.0787	0.0861	0.0705	0.0732	0.0656	0.0489	0.0615	0.0391
0.0226	0.0342	0.0225	0.0330	0.0181	0.0133	0.0108	0.0045	0.0054	0.0060
0.0143	0.0104	0.0102	0.0058	0.0500					
* HDV3									
0.1174	0.0741	0.0969	0.0896	0.0515	0.0804	0.0477	0.0398	0.0695	0.0465
0.0256	0.0277	0.0109	0.0532	0.0239	0.0068	0.0051	0.0138	0.0088	0.0084
0.0207	0.0161	0.0127	0.0042	0.0487					
* HDV4									
0.0288	0.0806	0.1727	0.0461	0.0288	0.0576	0.0633	0.0633	0.0864	0.0921
0.0374	0.0604	0.0201	0.0461	0.0201	0.0115	0.0086	0.0115	0.0058	0.0144
0.0115	0.0058	0.0029	0.0029	0.0213					
* HDV5									
0.0326	0.0762	0.0653	0.0435	0.1850	0.1088	0.0000	0.0435	0.0544	0.1197
0.0218	0.0762	0.0544	0.0109	0.0109	0.0109	0.0000	0.0000	0.0109	0.0109
0.0000	0.0326	0.0109	0.0109	0.0098					
* HDV6									
0.1140	0.1374	0.1268	0.1672	0.0484	0.0375	0.0349	0.0433	0.0426	0.0273
0.0245	0.0375	0.0219	0.0304	0.0115	0.0063	0.0112	0.0030	0.0030	0.0002
0.0046	0.0074	0.0118	0.0031	0.0441					
* HDV7									
0.0000	0.0366	0.0366	0.0183	0.0366	0.0275	0.0275	0.0183	0.1465	0.0183
0.0458	0.0366	0.0550	0.0916	0.0000	0.0366	0.0458	0.0641	0.0366	0.0366
0.0092	0.0366	0.0092	0.0092	0.1208					
* HDV8A									
0.0622	0.0957	0.0335	0.0813	0.0478	0.0478	0.0526	0.0526	0.0718	0.0813
0.0383	0.0191	0.0478	0.0431	0.0526	0.0191	0.0191	0.0191	0.0048	0.0191
0.0144	0.0048	0.0144	0.0048	0.0526					
* HDV8B									
0.0769	0.1154	0.0385	0.0769	0.0385	0.0385	0.0769	0.0385	0.0769	0.0769
0.0385	0.0385	0.0385	0.0385	0.0385	0.0385	0.0385	0.0385	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0385					
* HDBS									
0.0876	0.0537	0.0407	0.0093	0.0860	0.0416	0.0644	0.0658	0.0618	0.0723
0.0604	0.0450	0.0197	0.0325	0.0241	0.0139	0.0117	0.0236	0.0415	0.0404
0.0111	0.0179	0.0089	0.0042	0.0618					
* HDBT									
0.0564	0.0312	0.0839	0.1056	0.0594	0.0545	0.0651	0.0641	0.0947	0.0426
0.0634	0.0756	0.0156	0.0208	0.0179	0.0096	0.0166	0.0096	0.0085	0.0259
0.0190	0.0216	0.0015	0.0063	0.0306					
* MC									
0.0528	0.1196	0.1366	0.0838	0.0880	0.0813	0.0686	0.0546	0.0461	0.0285
0.0297	0.0206	0.0182	0.0219	0.0140	0.0079	0.0073	0.0055	0.0067	0.0030
0.0042	0.0055	0.0091	0.0085	0.0779					

Arlington County, VA—2008 Registration Data

* LDV									
0.0468	0.0743	0.0737	0.0708	0.0731	0.0752	0.0771	0.0720	0.0694	0.0606
0.0522	0.0460	0.0356	0.0353	0.0275	0.0220	0.0177	0.0150	0.0118	0.0081
0.0058	0.0048	0.0036	0.0026	0.0189					
* LDT1									
0.0278	0.0722	0.0559	0.0673	0.0183	0.0861	0.1052	0.1035	0.0618	0.0618
0.0687	0.0644	0.0644	0.0132	0.0061	0.0096	0.0113	0.0070	0.0061	0.0122
0.0104	0.0165	0.0073	0.0026	0.0403					
* LDT2									
0.0521	0.0825	0.0847	0.0907	0.1026	0.0855	0.0820	0.0733	0.0688	0.0515
0.0483	0.0382	0.0299	0.0269	0.0201	0.0140	0.0086	0.0083	0.0057	0.0045
0.0034	0.0026	0.0024	0.0016	0.0120					
* LDT3									
0.0682	0.0772	0.1126	0.0932	0.0947	0.0868	0.0740	0.0703	0.0585	0.0588
0.0305	0.0294	0.0246	0.0219	0.0208	0.0109	0.0083	0.0049	0.0078	0.0105
0.0074	0.0041	0.0040	0.0028	0.0176					
* LDT4									
0.0660	0.1687	0.0687	0.0872	0.1167	0.0959	0.0498	0.0554	0.0567	0.0675
0.0561	0.0305	0.0199	0.0125	0.0125	0.0025	0.0044	0.0033	0.0056	0.0044
0.0037	0.0052	0.0019	0.0002	0.0048					
* HDV2B									
0.0269	0.0454	0.1217	0.0613	0.0725	0.0888	0.0690	0.0787	0.0731	0.0554
0.0241	0.0407	0.0299	0.0368	0.0294	0.0202	0.0107	0.0085	0.0096	0.0138
0.0141	0.0083	0.0056	0.0057	0.0500					
* HDV3									
0.0265	0.0329	0.1241	0.1021	0.0874	0.0833	0.0279	0.0478	0.0619	0.0742
0.0232	0.0501	0.0171	0.0326	0.0227	0.0114	0.0062	0.0066	0.0095	0.0175
0.0379	0.0156	0.0208	0.0118	0.0487					
* HDV4									
0.0087	0.0173	0.0996	0.0779	0.0390	0.0563	0.0779	0.0693	0.0953	0.0563
0.0779	0.0779	0.0173	0.0476	0.0433	0.0303	0.0303	0.0173	0.0043	0.0130
0.0130	0.0043	0.0043	0.0000	0.0213					
* HDV5									
0.0183	0.0550	0.0733	0.1467	0.1100	0.0550	0.0367	0.1284	0.0917	0.1100
0.0000	0.0183	0.0183	0.0183	0.0000	0.0183	0.0183	0.0183	0.0183	0.0000
0.0000	0.0367	0.0000	0.0000	0.0098					
* HDV6									
0.0105	0.0879	0.0910	0.0574	0.1047	0.0441	0.0412	0.0352	0.0729	0.0974
0.0419	0.0726	0.0276	0.0247	0.0178	0.0098	0.0022	0.0165	0.0165	0.0162
0.0025	0.0327	0.0086	0.0241	0.0441					
* HDV7									
0.0000	0.0412	0.0412	0.0000	0.0000	0.0000	0.0137	0.0687	0.0137	0.0412
0.1236	0.0550	0.0137	0.0412	0.0412	0.0412	0.0412	0.0137	0.0137	0.0687
0.0687	0.0275	0.0412	0.0687	0.1208					
* HDV8A									
0.0136	0.0543	0.0950	0.0407	0.0633	0.1131	0.0317	0.0724	0.1629	0.0452
0.0317	0.0136	0.0226	0.0226	0.0317	0.0362	0.0136	0.0226	0.0181	0.0226
0.0226	0.0000	0.0045	0.0045	0.0407					
* HDV8B									
0.0000	0.0588	0.1176	0.0588	0.0588	0.1176	0.0588	0.0588	0.1765	0.0588
0.0588	0.0000	0.0000	0.0000	0.0588	0.0588	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0588					
* HDBS									
0.0876	0.0537	0.0407	0.0093	0.0860	0.0416	0.0644	0.0658	0.0618	0.0723
0.0604	0.0450	0.0197	0.0325	0.0241	0.0139	0.0117	0.0236	0.0415	0.0404
0.0111	0.0179	0.0089	0.0042	0.0618					
* HDBT									
0.0564	0.0312	0.0839	0.1056	0.0594	0.0545	0.0651	0.0641	0.0947	0.0426
0.0634	0.0756	0.0156	0.0208	0.0179	0.0096	0.0166	0.0096	0.0085	0.0259
0.0190	0.0216	0.0015	0.0063	0.0306					
* MC									
0.0459	0.1028	0.1014	0.1097	0.0854	0.0959	0.0615	0.0643	0.0473	0.0317
0.0271	0.0193	0.0216	0.0165	0.0211	0.0142	0.0096	0.0073	0.0092	0.0055
0.0037	0.0028	0.0110	0.0073	0.0779					

Calvert County, MD—2008 Registration Data

* LDV
0.0521 0.0741 0.0730 0.0784 0.0721 0.0753 0.0746 0.0657 0.0677 0.0564
0.0496 0.0435 0.0328 0.0347 0.0272 0.0223 0.0167 0.0148 0.0120 0.0085
0.0073 0.0067 0.0059 0.0045 0.0241

* LDT1
0.0459 0.0879 0.1116 0.0953 0.0342 0.0798 0.0684 0.0667 0.0293 0.0358
0.0326 0.0277 0.0342 0.0065 0.0033 0.0147 0.0130 0.0065 0.0081 0.0231
0.0442 0.0293 0.0247 0.0114 0.0660

* LDT2
0.0396 0.0684 0.0750 0.0926 0.0925 0.0845 0.0819 0.0649 0.0686 0.0538
0.0456 0.0410 0.0303 0.0275 0.0244 0.0190 0.0129 0.0122 0.0096 0.0107
0.0087 0.0069 0.0068 0.0037 0.0190

* LDT3
0.0420 0.0684 0.0790 0.0880 0.0998 0.0985 0.0832 0.0685 0.0566 0.0521
0.0346 0.0316 0.0310 0.0326 0.0277 0.0166 0.0129 0.0079 0.0120 0.0082
0.0080 0.0063 0.0055 0.0028 0.0264

* LDT4
0.0488 0.1431 0.0981 0.1133 0.1437 0.1018 0.0559 0.0470 0.0437 0.0578
0.0406 0.0289 0.0115 0.0155 0.0115 0.0063 0.0031 0.0044 0.0050 0.0045
0.0045 0.0008 0.0015 0.0012 0.0074

* HDV2B
0.0320 0.0471 0.0951 0.0806 0.0929 0.1043 0.0812 0.0616 0.0642 0.0430
0.0223 0.0450 0.0279 0.0317 0.0160 0.0150 0.0132 0.0057 0.0111 0.0148
0.0105 0.0072 0.0098 0.0070 0.0608

* HDV3
0.0526 0.0568 0.1295 0.1088 0.0768 0.0866 0.0652 0.0544 0.0470 0.0498
0.0224 0.0292 0.0059 0.0206 0.0109 0.0104 0.0124 0.0047 0.0096 0.0225
0.0211 0.0132 0.0139 0.0049 0.0709

* HDV4
0.0379 0.0379 0.0730 0.0433 0.0352 0.1055 0.0595 0.0379 0.0703 0.0703
0.0270 0.0460 0.0406 0.0514 0.0433 0.0243 0.0135 0.0189 0.0270 0.0298
0.0243 0.0162 0.0081 0.0162 0.0425

* HDV5
0.0253 0.0505 0.1178 0.1263 0.1263 0.0926 0.0842 0.0253 0.0421 0.0505
0.0253 0.0842 0.0084 0.0505 0.0421 0.0000 0.0084 0.0000 0.0084 0.0000
0.0000 0.0084 0.0000 0.0084 0.0152

* HDV6
0.0302 0.0692 0.0693 0.0521 0.1250 0.0778 0.0649 0.0648 0.0908 0.0777
0.0217 0.0131 0.0216 0.0348 0.0217 0.0133 0.0218 0.0044 0.0131 0.0218
0.0174 0.0088 0.0130 0.0044 0.0474

* HDV7
0.0000 0.0000 0.0150 0.0450 0.0674 0.0375 0.0150 0.0300 0.0375 0.0225
0.0150 0.0375 0.0075 0.0450 0.0075 0.0225 0.0450 0.0599 0.0749 0.0824
0.0749 0.0300 0.0375 0.0525 0.1382

* HDV8A
0.0294 0.0490 0.0588 0.0621 0.0817 0.0490 0.0294 0.0686 0.0621 0.0458
0.0458 0.0392 0.0359 0.0490 0.0425 0.0229 0.0098 0.0392 0.0131 0.0229
0.0229 0.0196 0.0131 0.0163 0.0719

* HDV8B
0.0268 0.0536 0.0536 0.0625 0.0804 0.0446 0.0268 0.0714 0.0625 0.0446
0.0446 0.0446 0.0357 0.0536 0.0446 0.0268 0.0089 0.0357 0.0089 0.0179
0.0268 0.0179 0.0179 0.0179 0.0714

* HDBS
0.0876 0.0537 0.0407 0.0093 0.0860 0.0416 0.0644 0.0658 0.0618 0.0723
0.0604 0.0450 0.0197 0.0325 0.0241 0.0139 0.0117 0.0236 0.0415 0.0404
0.0111 0.0179 0.0089 0.0042 0.0618

* HDBT
0.0564 0.0312 0.0839 0.1056 0.0594 0.0545 0.0651 0.0641 0.0947 0.0426
0.0634 0.0756 0.0156 0.0208 0.0179 0.0096 0.0166 0.0096 0.0085 0.0259
0.0190 0.0216 0.0015 0.0063 0.0306

* MC
0.0473 0.1172 0.1052 0.0999 0.0784 0.0905 0.0676 0.0514 0.0455 0.0353
0.0247 0.0191 0.0206 0.0153 0.0109 0.0118 0.0100 0.0050 0.0082 0.0065
0.0071 0.0050 0.0109 0.0088 0.0981

Charles County,MD—2008 Registration Data

* LDV									
0.0463	0.0722	0.0745	0.0774	0.0730	0.0800	0.0764	0.0666	0.0703	0.0565
0.0478	0.0451	0.0352	0.0361	0.0269	0.0217	0.0172	0.0131	0.0105	0.0083
0.0066	0.0057	0.0047	0.0035	0.0241					
* LDT1									
0.0425	0.0744	0.0600	0.0906	0.0319	0.0853	0.0794	0.0683	0.0410	0.0440
0.0304	0.0364	0.0486	0.0167	0.0076	0.0094	0.0091	0.0137	0.0139	0.0182
0.0519	0.0258	0.0182	0.0170	0.0660					
* LDT2									
0.0352	0.0707	0.0732	0.0950	0.0937	0.0865	0.0840	0.0671	0.0655	0.0483
0.0490	0.0421	0.0301	0.0275	0.0278	0.0185	0.0115	0.0122	0.0089	0.0086
0.0094	0.0067	0.0058	0.0039	0.0190					
* LDT3									
0.0358	0.0671	0.0910	0.0914	0.1101	0.1024	0.0848	0.0641	0.0537	0.0571
0.0333	0.0298	0.0279	0.0301	0.0255	0.0142	0.0108	0.0064	0.0097	0.0078
0.0070	0.0050	0.0053	0.0034	0.0264					
* LDT4									
0.0443	0.1350	0.0900	0.1166	0.1502	0.1028	0.0533	0.0561	0.0530	0.0612
0.0421	0.0264	0.0119	0.0089	0.0057	0.0049	0.0019	0.0026	0.0050	0.0050
0.0083	0.0043	0.0015	0.0015	0.0074					
* HDV2B									
0.0309	0.0455	0.0894	0.0751	0.0978	0.0989	0.0751	0.0650	0.0556	0.0488
0.0210	0.0419	0.0306	0.0348	0.0201	0.0169	0.0128	0.0096	0.0140	0.0143
0.0121	0.0076	0.0141	0.0074	0.0608					
* HDV3									
0.0347	0.0569	0.1080	0.1027	0.0756	0.0921	0.0925	0.0796	0.0536	0.0469
0.0176	0.0188	0.0184	0.0177	0.0184	0.0152	0.0015	0.0036	0.0099	0.0146
0.0110	0.0120	0.0164	0.0114	0.0709					
* HDV4									
0.0417	0.0636	0.0894	0.0457	0.0556	0.0576	0.0715	0.0477	0.0556	0.0556
0.0258	0.0377	0.0199	0.0338	0.0656	0.0358	0.0219	0.0219	0.0258	0.0417
0.0278	0.0040	0.0040	0.0079	0.0425					
* HDV5									
0.0556	0.0556	0.1892	0.0779	0.0779	0.0779	0.0779	0.0389	0.0445	0.0779
0.0278	0.0389	0.0278	0.0334	0.0056	0.0056	0.0167	0.0167	0.0056	0.0000
0.0167	0.0167	0.0000	0.0000	0.0152					
* HDV6									
0.0080	0.0565	0.0701	0.0565	0.0778	0.0725	0.0590	0.0644	0.0804	0.0725
0.0404	0.0456	0.0431	0.0379	0.0243	0.0083	0.0189	0.0109	0.0243	0.0164
0.0135	0.0082	0.0323	0.0107	0.0474					
* HDV7									
0.0270	0.0270	0.0338	0.0575	0.0304	0.0372	0.0406	0.0575	0.0575	0.0270
0.0439	0.0304	0.0372	0.0642	0.0304	0.0270	0.0237	0.0304	0.0304	0.0338
0.0203	0.0541	0.0237	0.0169	0.1382					
* HDV8A									
0.0306	0.0881	0.0252	0.0773	0.0414	0.0791	0.0396	0.0629	0.0953	0.0540
0.0486	0.0252	0.0360	0.0414	0.0198	0.0288	0.0054	0.0198	0.0180	0.0180
0.0216	0.0252	0.0162	0.0144	0.0683					
* HDV8B									
0.0357	0.0952	0.0238	0.0833	0.0476	0.0833	0.0357	0.0595	0.0952	0.0476
0.0476	0.0238	0.0357	0.0357	0.0238	0.0238	0.0119	0.0238	0.0119	0.0119
0.0238	0.0238	0.0119	0.0119	0.0714					
* HDBS									
0.0876	0.0537	0.0407	0.0093	0.0860	0.0416	0.0644	0.0658	0.0618	0.0723
0.0604	0.0450	0.0197	0.0325	0.0241	0.0139	0.0117	0.0236	0.0415	0.0404
0.0111	0.0179	0.0089	0.0042	0.0618					
* HDBT									
0.0564	0.0312	0.0839	0.1056	0.0594	0.0545	0.0651	0.0641	0.0947	0.0426
0.0634	0.0756	0.0156	0.0208	0.0179	0.0096	0.0166	0.0096	0.0085	0.0259
0.0190	0.0216	0.0015	0.0063	0.0306					
* MC									
0.0495	0.1138	0.1112	0.0993	0.0769	0.0896	0.0678	0.0596	0.0460	0.0335
0.0251	0.0209	0.0181	0.0153	0.0132	0.0097	0.0091	0.0071	0.0056	0.0065
0.0039	0.0048	0.0078	0.0076	0.0981					

District of Columbia--2008 Registration Data

* LDV									
0.0392	0.0695	0.0668	0.0653	0.0679	0.0724	0.0691	0.0718	0.0731	0.0629
0.0534	0.0521	0.0400	0.0412	0.0313	0.0250	0.0210	0.0157	0.0143	0.0103
0.0088	0.0068	0.0047	0.0033	0.0142					

* LDT1									
0.0460	0.0272	0.0763	0.0590	0.0201	0.0862	0.1030	0.0888	0.0602	0.0648
0.0732	0.0726	0.0654	0.0143	0.0091	0.0039	0.0084	0.0026	0.0026	0.0494
0.0207	0.0138	0.0078	0.0032	0.0215					

* LDT2									
0.0434	0.0763	0.0833	0.0904	0.0959	0.0787	0.0828	0.0695	0.0630	0.0553
0.0491	0.0429	0.0335	0.0303	0.0236	0.0194	0.0115	0.0100	0.0070	0.0072
0.0072	0.0056	0.0027	0.0024	0.0090					

* LDT3									
0.0527	0.0673	0.0970	0.0829	0.1017	0.0856	0.0744	0.0623	0.0565	0.0591
0.0339	0.0312	0.0294	0.0318	0.0273	0.0165	0.0129	0.0085	0.0128	0.0102
0.0116	0.0074	0.0050	0.0049	0.0173					

* LDT4									
0.0537	0.1422	0.0664	0.0793	0.1236	0.0957	0.0505	0.0606	0.0661	0.0674
0.0576	0.0444	0.0167	0.0141	0.0102	0.0056	0.0046	0.0042	0.0055	0.0096
0.0088	0.0033	0.0025	0.0018	0.0055					

* HDV2B									
0.0368	0.0621	0.0694	0.0603	0.0580	0.0628	0.0634	0.0721	0.0712	0.0617
0.0530	0.0469	0.0320	0.0297	0.0254	0.0210	0.0131	0.0165	0.0157	0.0181
0.0226	0.0243	0.0073	0.0117	0.0451					

* HDV3									
0.0716	0.0341	0.0585	0.0738	0.0589	0.1298	0.0595	0.0777	0.0544	0.0463
0.0598	0.0326	0.0134	0.0211	0.0451	0.0197	0.0072	0.0129	0.0191	0.0285
0.0148	0.0213	0.0076	0.0047	0.0276					

* HDV4									
0.0141	0.0141	0.2322	0.0264	0.0180	0.0225	0.0663	0.0619	0.1136	0.0574
0.0888	0.0551	0.0259	0.0219	0.0365	0.0141	0.0214	0.0129	0.0219	0.0202
0.0107	0.0090	0.0051	0.0062	0.0239					

* HDV5									
0.1745	0.0929	0.1266	0.0816	0.1097	0.0450	0.0563	0.0281	0.0366	0.0872
0.0028	0.0084	0.0028	0.0084	0.0056	0.0028	0.0113	0.0028	0.0028	0.0056
0.0169	0.0113	0.0225	0.0084	0.0489					

* HDV6									
0.0149	0.0664	0.0582	0.0371	0.0332	0.0235	0.0905	0.0712	0.0455	0.0340
0.0386	0.0158	0.0243	0.0489	0.0357	0.0374	0.0209	0.0528	0.0177	0.0349
0.0527	0.0475	0.0076	0.0232	0.0674					

* HDV7									
0.0282	0.0377	0.0282	0.0126	0.0188	0.0628	0.0879	0.0471	0.0534	0.0188
0.0220	0.0094	0.0094	0.0847	0.0628	0.0471	0.0910	0.0220	0.0471	0.0314
0.0282	0.0659	0.0157	0.0157	0.0522					

* HDV8A									
0.0431	0.0254	0.0626	0.0450	0.0117	0.0587	0.1037	0.2035	0.0372	0.0548
0.0215	0.0489	0.0078	0.0196	0.0274	0.0313	0.0059	0.0235	0.0431	0.0000
0.0587	0.0391	0.0117	0.0000	0.0157					

* HDV8B									
0.0435	0.0290	0.0580	0.0435	0.0145	0.0580	0.1014	0.2029	0.0435	0.0580
0.0290	0.0435	0.0000	0.0145	0.0290	0.0290	0.0000	0.0290	0.0435	0.0000
0.0580	0.0435	0.0145	0.0000	0.0145					

* HDBS									
0.0876	0.0537	0.0407	0.0093	0.0860	0.0416	0.0644	0.0658	0.0618	0.0723
0.0604	0.0450	0.0197	0.0325	0.0241	0.0139	0.0117	0.0236	0.0415	0.0404
0.0111	0.0179	0.0089	0.0042	0.0618					

* HDBT									
0.0564	0.0312	0.0839	0.1056	0.0594	0.0545	0.0651	0.0641	0.0947	0.0426
0.0634	0.0756	0.0156	0.0208	0.0179	0.0096	0.0166	0.0096	0.0085	0.0259
0.0190	0.0216	0.0015	0.0063	0.0306					

* MC									
0.0479	0.1423	0.1180	0.0978	0.0853	0.0833	0.0752	0.0614	0.0310	0.0368
0.0179	0.0651	0.0125	0.0118	0.0317	0.0185	0.0074	0.0047	0.0037	0.0051
0.0047	0.0013	0.0051	0.0040	0.0274					

Frederick County, MD--2008 Registration Data

* LDV									
0.0464	0.0683	0.0744	0.0777	0.0740	0.0778	0.0795	0.0704	0.0715	0.0590
0.0492	0.0443	0.0358	0.0346	0.0257	0.0205	0.0156	0.0138	0.0108	0.0081
0.0060	0.0055	0.0040	0.0030	0.0241					
* LDT1									
0.0462	0.0676	0.0637	0.0733	0.0256	0.0816	0.0882	0.0866	0.0495	0.0422
0.0396	0.0388	0.0552	0.0157	0.0109	0.0051	0.0091	0.0074	0.0115	0.0183
0.0412	0.0308	0.0194	0.0067	0.0660					
* LDT2									
0.0358	0.0682	0.0758	0.0955	0.0965	0.0882	0.0860	0.0707	0.0693	0.0530
0.0487	0.0394	0.0285	0.0272	0.0241	0.0155	0.0114	0.0103	0.0089	0.0077
0.0074	0.0057	0.0044	0.0027	0.0190					
* LDT3									
0.0405	0.0578	0.0793	0.0840	0.0991	0.1001	0.0845	0.0661	0.0604	0.0549
0.0361	0.0309	0.0295	0.0352	0.0275	0.0166	0.0135	0.0077	0.0091	0.0102
0.0087	0.0093	0.0085	0.0044	0.0264					
* LDT4									
0.0442	0.1264	0.0839	0.1140	0.1429	0.0926	0.0623	0.0536	0.0472	0.0681
0.0378	0.0352	0.0115	0.0102	0.0108	0.0064	0.0058	0.0027	0.0069	0.0081
0.0112	0.0085	0.0011	0.0010	0.0074					
* HDV2B									
0.0267	0.0441	0.0768	0.0742	0.1017	0.0938	0.0758	0.0754	0.0613	0.0557
0.0243	0.0526	0.0315	0.0336	0.0178	0.0141	0.0102	0.0075	0.0126	0.0152
0.0092	0.0072	0.0102	0.0079	0.0608					
* HDV3									
0.0588	0.0614	0.1241	0.1098	0.0746	0.0721	0.0693	0.0584	0.0552	0.0491
0.0135	0.0295	0.0190	0.0256	0.0139	0.0125	0.0087	0.0091	0.0121	0.0109
0.0145	0.0085	0.0109	0.0076	0.0709					
* HDV4									
0.0291	0.0381	0.0762	0.0672	0.0632	0.0602	0.0632	0.0732	0.0712	0.0722
0.0341	0.0501	0.0341	0.0361	0.0461	0.0221	0.0211	0.0201	0.0150	0.0291
0.0180	0.0080	0.0050	0.0050	0.0425					
* HDV5									
0.0313	0.0797	0.1309	0.1053	0.0911	0.0882	0.0712	0.0598	0.0712	0.0911
0.0085	0.0455	0.0199	0.0370	0.0171	0.0114	0.0028	0.0028	0.0085	0.0057
0.0000	0.0028	0.0000	0.0028	0.0152					
* HDV6									
0.0162	0.0981	0.0797	0.0721	0.0734	0.0436	0.0621	0.0658	0.0832	0.0746
0.0646	0.0300	0.0152	0.0523	0.0150	0.0213	0.0089	0.0137	0.0126	0.0100
0.0113	0.0139	0.0087	0.0063	0.0474					
* HDV7									
0.0234	0.0371	0.0234	0.0567	0.0293	0.0430	0.0215	0.0293	0.0547	0.0313
0.0293	0.0313	0.0176	0.0391	0.0313	0.0215	0.0313	0.0469	0.0489	0.0293
0.0508	0.0528	0.0469	0.0352	0.1382					
* HDV8A									
0.0217	0.0462	0.0774	0.0943	0.0491	0.0462	0.0283	0.0481	0.0689	0.0745
0.0302	0.0358	0.0396	0.0481	0.0292	0.0226	0.0151	0.0113	0.0217	0.0170
0.0349	0.0283	0.0151	0.0142	0.0821					
* HDV8B									
0.0223	0.0446	0.0764	0.0955	0.0478	0.0446	0.0287	0.0478	0.0701	0.0732
0.0318	0.0350	0.0382	0.0478	0.0287	0.0223	0.0159	0.0127	0.0223	0.0159
0.0350	0.0287	0.0159	0.0159	0.0828					
* HDBS									
0.0876	0.0537	0.0407	0.0093	0.0860	0.0416	0.0644	0.0658	0.0618	0.0723
0.0604	0.0450	0.0197	0.0325	0.0241	0.0139	0.0117	0.0236	0.0415	0.0404
0.0111	0.0179	0.0089	0.0042	0.0618					
* HDBT									
0.0564	0.0312	0.0839	0.1056	0.0594	0.0545	0.0651	0.0641	0.0947	0.0426
0.0634	0.0756	0.0156	0.0208	0.0179	0.0096	0.0166	0.0096	0.0085	0.0259
0.0190	0.0216	0.0015	0.0063	0.0306					
* MC									
0.0497	0.1040	0.1084	0.0973	0.0731	0.0866	0.0681	0.0530	0.0469	0.0315
0.0292	0.0191	0.0216	0.0151	0.0127	0.0131	0.0105	0.0095	0.0081	0.0066
0.0082	0.0080	0.0116	0.0100	0.0981					

Fairfax County, VA—2008 Registration Data

* LDV
0.0499 0.0776 0.0744 0.0721 0.0723 0.0770 0.0737 0.0699 0.0728 0.0607
0.0518 0.0454 0.0358 0.0355 0.0274 0.0213 0.0167 0.0132 0.0108 0.0077
0.0053 0.0042 0.0031 0.0024 0.0189
* LDT1
0.0357 0.0854 0.0583 0.0593 0.0230 0.0996 0.1231 0.0951 0.0555 0.0633
0.0550 0.0640 0.0519 0.0091 0.0075 0.0075 0.0069 0.0080 0.0048 0.0089
0.0134 0.0116 0.0094 0.0035 0.0403
* LDT2
0.0494 0.0824 0.0886 0.0967 0.1041 0.0861 0.0835 0.0719 0.0689 0.0530
0.0467 0.0380 0.0278 0.0245 0.0193 0.0131 0.0081 0.0075 0.0049 0.0044
0.0034 0.0026 0.0020 0.0012 0.0120
* LDT3
0.0635 0.0789 0.1102 0.0936 0.1095 0.0966 0.0796 0.0684 0.0620 0.0514
0.0296 0.0253 0.0211 0.0237 0.0188 0.0098 0.0069 0.0053 0.0068 0.0070
0.0056 0.0037 0.0030 0.0019 0.0176
* LDT4
0.0553 0.1456 0.0862 0.1128 0.1332 0.1003 0.0547 0.0577 0.0530 0.0671
0.0416 0.0321 0.0130 0.0098 0.0099 0.0051 0.0018 0.0016 0.0031 0.0037
0.0041 0.0018 0.0007 0.0008 0.0048
* HDV2B
0.0316 0.0527 0.0903 0.0757 0.1019 0.1013 0.0762 0.0740 0.0656 0.0569
0.0266 0.0396 0.0262 0.0335 0.0203 0.0131 0.0107 0.0066 0.0101 0.0104
0.0086 0.0055 0.0070 0.0056 0.0500
* HDV3
0.0444 0.0502 0.1242 0.1006 0.0844 0.0754 0.0632 0.0651 0.0656 0.0550
0.0282 0.0333 0.0159 0.0265 0.0219 0.0116 0.0081 0.0069 0.0128 0.0122
0.0190 0.0127 0.0081 0.0061 0.0487
* HDV4
0.0237 0.0608 0.0773 0.0762 0.0691 0.0638 0.0758 0.0608 0.0845 0.0848
0.0285 0.0777 0.0267 0.0372 0.0357 0.0165 0.0161 0.0135 0.0109 0.0139
0.0101 0.0064 0.0049 0.0038 0.0213
* HDV5
0.0432 0.0833 0.1160 0.0917 0.1023 0.0949 0.0738 0.0569 0.0960 0.0833
0.0148 0.0390 0.0169 0.0285 0.0127 0.0032 0.0042 0.0042 0.0063 0.0032
0.0084 0.0042 0.0021 0.0011 0.0098
* HDV6
0.0213 0.0977 0.0786 0.0816 0.0852 0.0353 0.0523 0.0732 0.0764 0.0628
0.0425 0.0452 0.0248 0.0692 0.0144 0.0145 0.0105 0.0081 0.0152 0.0115
0.0097 0.0090 0.0067 0.0101 0.0441
* HDV7
0.0151 0.0429 0.0324 0.0498 0.0510 0.0266 0.0348 0.0718 0.0765 0.0533
0.0487 0.0197 0.0266 0.0440 0.0336 0.0185 0.0290 0.0127 0.0452 0.0336
0.0359 0.0382 0.0209 0.0185 0.1208
* HDV8A
0.0201 0.0726 0.0659 0.0944 0.0815 0.0648 0.0430 0.0787 0.0921 0.0475
0.0480 0.0436 0.0352 0.0324 0.0296 0.0179 0.0117 0.0151 0.0128 0.0140
0.0145 0.0084 0.0089 0.0028 0.0447
* HDV8B
0.0193 0.0740 0.0675 0.0932 0.0804 0.0643 0.0418 0.0804 0.0932 0.0482
0.0482 0.0418 0.0354 0.0322 0.0289 0.0161 0.0129 0.0161 0.0129 0.0129
0.0129 0.0096 0.0096 0.0032 0.0450
* HDBS
0.0876 0.0537 0.0407 0.0093 0.0860 0.0416 0.0644 0.0658 0.0618 0.0723
0.0604 0.0450 0.0197 0.0325 0.0241 0.0139 0.0117 0.0236 0.0415 0.0404
0.0111 0.0179 0.0089 0.0042 0.0618
* HDBT
0.0564 0.0312 0.0839 0.1056 0.0594 0.0545 0.0651 0.0641 0.0947 0.0426
0.0634 0.0756 0.0156 0.0208 0.0179 0.0096 0.0166 0.0096 0.0085 0.0259
0.0190 0.0216 0.0015 0.0063 0.0306
* MC
0.0452 0.1023 0.1040 0.0971 0.0780 0.0953 0.0727 0.0617 0.0550 0.0383
0.0287 0.0214 0.0215 0.0171 0.0150 0.0128 0.0098 0.0066 0.0061 0.0054
0.0050 0.0054 0.0089 0.0088 0.0779

Loudoun County, VA—2008 Registration Data

* LDV									
0.0581	0.0808	0.0796	0.0797	0.0781	0.0791	0.0756	0.0706	0.0716	0.0596
0.0486	0.0414	0.0327	0.0316	0.0240	0.0186	0.0143	0.0108	0.0088	0.0056
0.0040	0.0034	0.0026	0.0018	0.0189					
* LDT1									
0.0406	0.0901	0.0736	0.0840	0.0317	0.0977	0.1097	0.0824	0.0514	0.0590
0.0438	0.0425	0.0520	0.0089	0.0082	0.0051	0.0095	0.0108	0.0089	0.0120
0.0141	0.0146	0.0054	0.0038	0.0403					
* LDT2									
0.0490	0.0871	0.0929	0.1090	0.1100	0.0886	0.0860	0.0726	0.0660	0.0482
0.0417	0.0352	0.0245	0.0192	0.0170	0.0105	0.0068	0.0063	0.0040	0.0042
0.0033	0.0027	0.0018	0.0013	0.0120					
* LDT3									
0.0614	0.0814	0.1124	0.1060	0.1237	0.1032	0.0795	0.0668	0.0568	0.0460
0.0264	0.0206	0.0185	0.0204	0.0151	0.0099	0.0067	0.0032	0.0058	0.0055
0.0044	0.0033	0.0033	0.0019	0.0176					
* LDT4									
0.0564	0.1720	0.0817	0.1237	0.1514	0.1078	0.0579	0.0526	0.0427	0.0486
0.0328	0.0232	0.0081	0.0088	0.0088	0.0042	0.0029	0.0007	0.0028	0.0020
0.0035	0.0017	0.0003	0.0007	0.0048					
* HDV2B									
0.0325	0.0499	0.0869	0.0771	0.1000	0.0990	0.0731	0.0769	0.0798	0.0534
0.0218	0.0431	0.0316	0.0296	0.0193	0.0143	0.0091	0.0059	0.0082	0.0119
0.0062	0.0056	0.0074	0.0074	0.0500					
* HDV3									
0.0488	0.0540	0.1275	0.1196	0.0930	0.0721	0.0617	0.0663	0.0632	0.0634
0.0177	0.0305	0.0200	0.0182	0.0178	0.0107	0.0073	0.0061	0.0069	0.0142
0.0135	0.0106	0.0056	0.0028	0.0487					
* HDV4									
0.0397	0.0659	0.1047	0.0605	0.0831	0.0686	0.0596	0.0524	0.0876	0.0921
0.0244	0.0722	0.0289	0.0334	0.0370	0.0117	0.0108	0.0108	0.0090	0.0099
0.0108	0.0036	0.0018	0.0000	0.0213					
* HDV5									
0.0497	0.0644	0.1693	0.1141	0.1307	0.0939	0.0718	0.0626	0.0644	0.0736
0.0074	0.0129	0.0000	0.0147	0.0129	0.0129	0.0037	0.0018	0.0110	0.0018
0.0055	0.0074	0.0018	0.0018	0.0098					
* HDV6									
0.0277	0.0868	0.0649	0.1084	0.0926	0.0358	0.0489	0.0640	0.0940	0.0565
0.0560	0.0372	0.0282	0.0441	0.0148	0.0199	0.0145	0.0073	0.0145	0.0108
0.0134	0.0039	0.0073	0.0046	0.0441					
* HDV7									
0.0221	0.0258	0.0331	0.0497	0.0478	0.0294	0.0166	0.0533	0.0920	0.0515
0.0533	0.0478	0.0294	0.0405	0.0497	0.0239	0.0313	0.0184	0.0349	0.0129
0.0441	0.0386	0.0166	0.0166	0.1208					
* HDV8A									
0.0161	0.1001	0.0784	0.0784	0.0557	0.0642	0.0491	0.0746	0.0689	0.0548
0.0453	0.0415	0.0189	0.0463	0.0434	0.0198	0.0085	0.0066	0.0161	0.0189
0.0198	0.0094	0.0170	0.0057	0.0425					
* HDV8B									
0.0180	0.1007	0.0791	0.0791	0.0540	0.0647	0.0504	0.0719	0.0683	0.0540
0.0468	0.0432	0.0180	0.0468	0.0432	0.0180	0.0072	0.0072	0.0144	0.0180
0.0180	0.0108	0.0180	0.0072	0.0432					
* HDBS									
0.0876	0.0537	0.0407	0.0093	0.0860	0.0416	0.0644	0.0658	0.0618	0.0723
0.0604	0.0450	0.0197	0.0325	0.0241	0.0139	0.0117	0.0236	0.0415	0.0404
0.0111	0.0179	0.0089	0.0042	0.0618					
* HDBT									
0.0564	0.0312	0.0839	0.1056	0.0594	0.0545	0.0651	0.0641	0.0947	0.0426
0.0634	0.0756	0.0156	0.0208	0.0179	0.0096	0.0166	0.0096	0.0085	0.0259
0.0190	0.0216	0.0015	0.0063	0.0306					
* MC									
0.0472	0.1071	0.1076	0.0983	0.0710	0.0995	0.0742	0.0606	0.0469	0.0388
0.0255	0.0240	0.0226	0.0185	0.0139	0.0122	0.0093	0.0065	0.0079	0.0076
0.0041	0.0041	0.0063	0.0085	0.0779					

Montgomery County, MD--2008 Registration Data

* LDV
0.0646 0.0753 0.0684 0.0702 0.0709 0.0768 0.0754 0.0702 0.0714 0.0596
0.0514 0.0455 0.0360 0.0358 0.0264 0.0196 0.0154 0.0117 0.0100 0.0066
0.0050 0.0043 0.0030 0.0023 0.0241
* LDT1
0.0434 0.0716 0.0603 0.0529 0.0193 0.1035 0.1246 0.1091 0.0563 0.0621
0.0527 0.0625 0.0496 0.0090 0.0054 0.0042 0.0092 0.0052 0.0054 0.0044
0.0080 0.0077 0.0060 0.0016 0.0660
* LDT2
0.0650 0.0857 0.0862 0.0953 0.1028 0.0861 0.0841 0.0712 0.0674 0.0516
0.0440 0.0355 0.0266 0.0231 0.0168 0.0117 0.0066 0.0057 0.0042 0.0031
0.0030 0.0024 0.0017 0.0010 0.0190
* LDT3
0.0941 0.0743 0.0985 0.0867 0.1075 0.0931 0.0814 0.0685 0.0596 0.0515
0.0277 0.0243 0.0205 0.0214 0.0179 0.0094 0.0068 0.0050 0.0065 0.0060
0.0045 0.0036 0.0029 0.0016 0.0264
* LDT4
0.0650 0.1398 0.0837 0.1020 0.1293 0.0980 0.0608 0.0611 0.0515 0.0664
0.0386 0.0333 0.0131 0.0125 0.0098 0.0046 0.0032 0.0020 0.0049 0.0038
0.0052 0.0023 0.0011 0.0006 0.0074
* HDV2B
0.0485 0.0596 0.0958 0.0799 0.0916 0.0935 0.0766 0.0755 0.0674 0.0527
0.0262 0.0383 0.0266 0.0284 0.0156 0.0112 0.0080 0.0065 0.0080 0.0088
0.0063 0.0045 0.0055 0.0044 0.0608
* HDV3
0.0386 0.0579 0.1198 0.0996 0.0815 0.0716 0.0727 0.0626 0.0574 0.0637
0.0206 0.0263 0.0162 0.0293 0.0182 0.0144 0.0069 0.0091 0.0138 0.0095
0.0126 0.0087 0.0125 0.0056 0.0709
* HDV4
0.0370 0.0441 0.0957 0.0542 0.0714 0.0644 0.0683 0.0741 0.0793 0.0723
0.0309 0.0688 0.0216 0.0397 0.0384 0.0176 0.0119 0.0119 0.0194 0.0132
0.0115 0.0053 0.0026 0.0040 0.0425
* HDV5
0.0679 0.0761 0.1077 0.1288 0.1382 0.1077 0.0761 0.0515 0.0550 0.0621
0.0199 0.0211 0.0117 0.0129 0.0141 0.0105 0.0059 0.0047 0.0047 0.0023
0.0023 0.0035 0.0000 0.0000 0.0152
* HDV6
0.0202 0.1068 0.0672 0.0860 0.0830 0.0462 0.0604 0.0686 0.0760 0.0698
0.0479 0.0530 0.0247 0.0354 0.0134 0.0216 0.0108 0.0089 0.0183 0.0095
0.0082 0.0095 0.0032 0.0038 0.0474
* HDV7
0.0393 0.0328 0.0508 0.0524 0.0393 0.0311 0.0229 0.0590 0.0508 0.0475
0.0393 0.0393 0.0377 0.0311 0.0131 0.0295 0.0344 0.0279 0.0524 0.0279
0.0377 0.0279 0.0197 0.0180 0.1382
* HDV8A
0.0376 0.0716 0.0615 0.0781 0.0701 0.0441 0.0542 0.0463 0.0875 0.0557
0.0499 0.0347 0.0275 0.0304 0.0202 0.0217 0.0123 0.0275 0.0181 0.0210
0.0130 0.0217 0.0123 0.0116 0.0716
* HDV8B
0.0387 0.0718 0.0608 0.0773 0.0691 0.0442 0.0552 0.0470 0.0884 0.0552
0.0497 0.0359 0.0276 0.0304 0.0193 0.0221 0.0110 0.0276 0.0166 0.0221
0.0138 0.0221 0.0110 0.0110 0.0718
* HDBS
0.0876 0.0537 0.0407 0.0093 0.0860 0.0416 0.0644 0.0658 0.0618 0.0723
0.0604 0.0450 0.0197 0.0325 0.0241 0.0139 0.0117 0.0236 0.0415 0.0404
0.0111 0.0179 0.0089 0.0042 0.0618
* HDBT
0.0564 0.0312 0.0839 0.1056 0.0594 0.0545 0.0651 0.0641 0.0947 0.0426
0.0634 0.0756 0.0156 0.0208 0.0179 0.0096 0.0166 0.0096 0.0085 0.0259
0.0190 0.0216 0.0015 0.0063 0.0306
* MC
0.0429 0.1078 0.1038 0.0971 0.0725 0.0888 0.0652 0.0601 0.0453 0.0326
0.0293 0.0206 0.0196 0.0176 0.0147 0.0138 0.0111 0.0083 0.0069 0.0074
0.0084 0.0081 0.0101 0.0102 0.0981

Prince George's County, MD—2008 Registration Data

* LDV									
0.0363	0.0609	0.0652	0.0683	0.0661	0.0727	0.0715	0.0664	0.0733	0.0605
0.0543	0.0514	0.0431	0.0441	0.0348	0.0270	0.0209	0.0158	0.0135	0.0094
0.0071	0.0057	0.0043	0.0032	0.0241					
* LDT1									
0.0257	0.0559	0.0427	0.0518	0.0230	0.0907	0.1057	0.1137	0.0512	0.0575
0.0490	0.0575	0.0640	0.0160	0.0070	0.0102	0.0083	0.0106	0.0075	0.0186
0.0263	0.0155	0.0173	0.0081	0.0660					
* LDT2									
0.0330	0.0615	0.0697	0.0856	0.0915	0.0802	0.0819	0.0707	0.0723	0.0585
0.0547	0.0483	0.0383	0.0340	0.0282	0.0182	0.0120	0.0104	0.0080	0.0069
0.0064	0.0048	0.0039	0.0021	0.0190					
* LDT3									
0.0349	0.0572	0.0853	0.0836	0.1073	0.0979	0.0870	0.0662	0.0651	0.0641
0.0359	0.0318	0.0279	0.0303	0.0247	0.0161	0.0107	0.0078	0.0108	0.0086
0.0068	0.0055	0.0047	0.0034	0.0264					
* LDT4									
0.0454	0.1278	0.0760	0.0936	0.1278	0.1029	0.0540	0.0672	0.0640	0.0719
0.0584	0.0408	0.0135	0.0103	0.0098	0.0065	0.0023	0.0022	0.0036	0.0046
0.0055	0.0028	0.0010	0.0007	0.0074					
* HDV2B									
0.0397	0.0494	0.0999	0.0680	0.0777	0.0863	0.0640	0.0699	0.0724	0.0495
0.0307	0.0461	0.0295	0.0349	0.0213	0.0141	0.0118	0.0084	0.0110	0.0127
0.0126	0.0083	0.0104	0.0104	0.0608					
* HDV3									
0.0550	0.0502	0.1228	0.0835	0.0705	0.0651	0.0604	0.0583	0.0615	0.0633
0.0275	0.0323	0.0155	0.0272	0.0235	0.0089	0.0089	0.0073	0.0131	0.0130
0.0179	0.0203	0.0118	0.0111	0.0709					
* HDV4									
0.0378	0.0703	0.0789	0.0546	0.0506	0.0687	0.0506	0.0595	0.0891	0.0841
0.0325	0.0516	0.0276	0.0365	0.0509	0.0171	0.0164	0.0125	0.0174	0.0174
0.0171	0.0062	0.0039	0.0059	0.0425					
* HDV5									
0.0473	0.0946	0.1164	0.0880	0.1230	0.0861	0.0473	0.0549	0.0634	0.0643
0.0161	0.0710	0.0359	0.0237	0.0170	0.0076	0.0085	0.0019	0.0028	0.0057
0.0019	0.0028	0.0019	0.0028	0.0152					
* HDV6									
0.0426	0.1203	0.1095	0.1059	0.0599	0.0489	0.0537	0.0514	0.0620	0.0520
0.0447	0.0379	0.0299	0.0457	0.0131	0.0144	0.0099	0.0114	0.0115	0.0054
0.0051	0.0063	0.0065	0.0046	0.0474					
* HDV7									
0.0318	0.0457	0.0498	0.0579	0.0318	0.0416	0.0433	0.0465	0.0579	0.0612
0.0433	0.0277	0.0228	0.0433	0.0212	0.0253	0.0188	0.0367	0.0481	0.0269
0.0318	0.0245	0.0106	0.0131	0.1382					
* HDV8A									
0.0500	0.0741	0.0887	0.0949	0.0470	0.0587	0.0441	0.0649	0.0587	0.0545
0.0516	0.0250	0.0304	0.0354	0.0221	0.0137	0.0125	0.0121	0.0175	0.0200
0.0158	0.0154	0.0079	0.0083	0.0766					
* HDV8B									
0.0508	0.0733	0.0883	0.0959	0.0470	0.0583	0.0451	0.0658	0.0583	0.0545
0.0508	0.0244	0.0301	0.0357	0.0226	0.0132	0.0132	0.0132	0.0169	0.0207
0.0150	0.0150	0.0075	0.0075	0.0771					
* HDBS									
0.0876	0.0537	0.0407	0.0093	0.0860	0.0416	0.0644	0.0658	0.0618	0.0723
0.0604	0.0450	0.0197	0.0325	0.0241	0.0139	0.0117	0.0236	0.0415	0.0404
0.0111	0.0179	0.0089	0.0042	0.0618					
* HDBT									
0.0564	0.0312	0.0839	0.1056	0.0594	0.0545	0.0651	0.0641	0.0947	0.0426
0.0634	0.0756	0.0156	0.0208	0.0179	0.0096	0.0166	0.0096	0.0085	0.0259
0.0190	0.0216	0.0015	0.0063	0.0306					
* MC									
0.0453	0.1243	0.1154	0.0976	0.0734	0.0864	0.0691	0.0628	0.0476	0.0346
0.0210	0.0183	0.0186	0.0173	0.0113	0.0085	0.0092	0.0060	0.0058	0.0052
0.0048	0.0047	0.0085	0.0062	0.0981					

Prince William, VA—2008 Registration Data

* LDV
0.0485 0.0754 0.0752 0.0782 0.0734 0.0765 0.0697 0.0648 0.0690 0.0567
0.0507 0.0461 0.0380 0.0370 0.0297 0.0236 0.0185 0.0149 0.0118 0.0078
0.0055 0.0045 0.0032 0.0024 0.0189
* LDT1
0.0486 0.0967 0.0680 0.0753 0.0224 0.0899 0.0937 0.0760 0.0541 0.0515
0.0372 0.0456 0.0532 0.0119 0.0084 0.0106 0.0097 0.0080 0.0101 0.0186
0.0253 0.0249 0.0154 0.0044 0.0403
* LDT2
0.0380 0.0754 0.0836 0.0963 0.0992 0.0847 0.0823 0.0673 0.0689 0.0522
0.0493 0.0423 0.0312 0.0296 0.0243 0.0166 0.0103 0.0093 0.0071 0.0065
0.0050 0.0038 0.0028 0.0018 0.0120
* LDT3
0.0398 0.0692 0.0968 0.0980 0.1142 0.1022 0.0879 0.0675 0.0639 0.0573
0.0318 0.0266 0.0250 0.0259 0.0197 0.0123 0.0102 0.0051 0.0072 0.0067
0.0056 0.0045 0.0027 0.0023 0.0176
* LDT4
0.0403 0.1263 0.0946 0.1283 0.1487 0.1001 0.0571 0.0557 0.0505 0.0688
0.0432 0.0317 0.0118 0.0090 0.0083 0.0039 0.0025 0.0013 0.0032 0.0034
0.0040 0.0018 0.0005 0.0003 0.0048
* HDV2B
0.0198 0.0402 0.0857 0.0794 0.1047 0.0977 0.0744 0.0794 0.0736 0.0606
0.0301 0.0432 0.0273 0.0281 0.0223 0.0131 0.0096 0.0060 0.0089 0.0127
0.0094 0.0076 0.0085 0.0076 0.0500
* HDV3
0.0380 0.0468 0.1215 0.1343 0.0885 0.0774 0.0684 0.0690 0.0607 0.0659
0.0191 0.0245 0.0134 0.0230 0.0162 0.0096 0.0085 0.0040 0.0110 0.0076
0.0170 0.0101 0.0093 0.0074 0.0487
* HDV4
0.0295 0.0403 0.0869 0.0915 0.0729 0.0636 0.0558 0.0574 0.0737 0.0861
0.0326 0.0512 0.0279 0.0372 0.0458 0.0209 0.0163 0.0093 0.0240 0.0302
0.0202 0.0016 0.0008 0.0031 0.0213
* HDV5
0.0269 0.0688 0.1225 0.0890 0.1427 0.0940 0.0587 0.0688 0.0789 0.0957
0.0050 0.0504 0.0168 0.0101 0.0084 0.0101 0.0067 0.0000 0.0134 0.0134
0.0034 0.0067 0.0000 0.0000 0.0098
* HDV6
0.0284 0.0766 0.1006 0.1021 0.0993 0.0538 0.0637 0.0566 0.0740 0.0659
0.0393 0.0229 0.0236 0.0422 0.0212 0.0159 0.0090 0.0109 0.0133 0.0113
0.0020 0.0100 0.0102 0.0032 0.0441
* HDV7
0.0259 0.0628 0.0499 0.0813 0.0462 0.0462 0.0351 0.0425 0.0646 0.0536
0.0277 0.0425 0.0296 0.0369 0.0166 0.0166 0.0296 0.0148 0.0388 0.0222
0.0222 0.0296 0.0240 0.0203 0.1208
* HDV8A
0.0082 0.0686 0.0890 0.0955 0.0710 0.0620 0.0522 0.0555 0.0694 0.0718
0.0449 0.0384 0.0376 0.0473 0.0310 0.0220 0.0106 0.0073 0.0114 0.0188
0.0212 0.0090 0.0082 0.0049 0.0441
* HDV8B
0.0067 0.0705 0.0906 0.0940 0.0705 0.0604 0.0537 0.0570 0.0705 0.0705
0.0470 0.0403 0.0369 0.0470 0.0302 0.0201 0.0101 0.0067 0.0101 0.0201
0.0201 0.0101 0.0067 0.0067 0.0436
* HDBS
0.0876 0.0537 0.0407 0.0093 0.0860 0.0416 0.0644 0.0658 0.0618 0.0723
0.0604 0.0450 0.0197 0.0325 0.0241 0.0139 0.0117 0.0236 0.0415 0.0404
0.0111 0.0179 0.0089 0.0042 0.0618
* HDBT
0.0564 0.0312 0.0839 0.1056 0.0594 0.0545 0.0651 0.0641 0.0947 0.0426
0.0634 0.0756 0.0156 0.0208 0.0179 0.0096 0.0166 0.0096 0.0085 0.0259
0.0190 0.0216 0.0015 0.0063 0.0306
* MC
0.0445 0.1182 0.1112 0.1094 0.0798 0.0924 0.0706 0.0615 0.0491 0.0368
0.0249 0.0202 0.0209 0.0124 0.0137 0.0096 0.0078 0.0058 0.0049 0.0056
0.0034 0.0053 0.0076 0.0065 0.0779

District of Columbia--2008 Diesel Sales Fractions

*LDV
0.0000 0.0000 0.0057 0.0057 0.0025 0.0022 0.0031 0.0020 0.0017 0.0027
0.0021 0.0017 0.0021 0.0021 0.0004 0.0018 0.0027 0.0071 0.0014 0.0009
0.0009 0.0342 0.0197 0.1269 0.1269
*LDT1
0.0000 0.0000 0.0127 0.0136 0.0000 0.0000 0.0002 0.0000 0.0000 0.0000
0.0002 0.0000 0.0007 0.0011 0.0040 0.0000 0.0022 0.0013 0.0000 0.0039
0.0014 0.0054 0.0074 0.0115 0.0115
*LDT2
0.0000 0.0000 0.0010 0.0009 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0002 0.0000 0.0002 0.0000 0.0003 0.0002 0.0000 0.0013
0.0006 0.0023 0.0037 0.0034 0.0034
*LDT3
0.0066 0.0038 0.0005 0.0000 0.0004 0.0000 0.0002 0.0002 0.0001 0.0007
0.0013 0.0024 0.0021 0.0069 0.0037 0.0034 0.0009 0.0071 0.0053 0.0058
0.0085 0.0153 0.0144 0.0302 0.0302
*LDT4
0.0092 0.0024 0.0008 0.0000 0.0005 0.0000 0.0003 0.0002 0.0002 0.0007
0.0010 0.0022 0.0044 0.0192 0.0094 0.0091 0.0040 0.0276 0.0140 0.0130
0.0129 0.0355 0.0595 0.1294 0.1294
*HDV2B
0.1827 0.1813 0.2401 0.2472 0.2263 0.1824 0.1887 0.1809 0.1688 0.2256
0.2031 0.2563 0.2171 0.1831 0.1962 0.2278 0.1777 0.1917 0.2028 0.1914
0.1282 0.2577 0.2331 0.1586 0.1586
*HDV3
0.5873 0.5419 0.5403 0.5479 0.3985 0.5310 0.4618 0.4162 0.5045 0.5776
0.3933 0.4257 0.4710 0.3796 0.3563 0.5035 0.3854 0.4647 0.5669 0.4169
0.5132 0.4741 0.4139 0.1761 0.1761
*HDV4
0.7659 0.7298 0.8404 0.7818 0.7713 0.6388 0.5366 0.4719 0.5624 0.5561
0.6060 0.4581 0.4138 0.5246 0.3365 0.6453 0.2857 0.2803 0.3333 0.3659
0.2443 0.0896 0.0238 0.0204 0.0204
*HDV5
0.9442 0.9686 0.9316 0.9305 0.9263 0.8974 0.9324 0.9379 0.8904 0.8911
0.8039 0.6950 0.7606 0.5294 0.8000 0.9565 0.7391 0.5000 0.7500 0.6429
0.3333 0.6316 0.7692 0.0000 0.0000
*HDV6
0.9309 0.8810 0.8980 0.9633 0.8973 0.8906 0.9035 0.8921 0.9134 0.8581
0.8766 0.9027 0.8965 0.9151 0.8156 0.8920 0.7168 0.7483 0.7354 0.7290
0.5872 0.6115 0.5407 0.6127 0.6127
*HDV7
1.0000 1.0000 1.0000 1.0000 1.0000 0.9914 0.9922 0.9887 0.9752 0.9565
0.9786 0.9070 0.9762 0.9867 1.0000 0.9770 0.9623 0.9091 0.8933 0.9082
0.8889 0.8224 0.7692 0.7963 0.7963
*HDV8A
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 0.9940 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 0.9910
0.9833 1.0000 0.9677 1.0000 1.0000
*HDV8B
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 0.9900 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
*HDBS
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
*HDBT
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000

Maryland--2008 Diesel Sales Fractions

*LDV
0.0001 0.0000 0.0072 0.0065 0.0030 0.0028 0.0039 0.0025 0.0023 0.0033
0.0024 0.0015 0.0022 0.0022 0.0005 0.0018 0.0025 0.0092 0.0014 0.0015
0.0011 0.0356 0.0213 0.1174 0.1174
*LDT1
0.0004 0.0000 0.0137 0.0113 0.0000 0.0002 0.0006 0.0000 0.0000 0.0003
0.0003 0.0000 0.0008 0.0000 0.0093 0.0043 0.0034 0.0020 0.0021 0.0074
0.0021 0.0061 0.0095 0.0106 0.0106
*LDT2
0.0000 0.0000 0.0013 0.0009 0.0000 0.0000 0.0001 0.0000 0.0000 0.0000
0.0000 0.0000 0.0002 0.0000 0.0004 0.0003 0.0004 0.0002 0.0003 0.0021
0.0011 0.0029 0.0048 0.0041 0.0041
*LDT3
0.0050 0.0032 0.0005 0.0001 0.0002 0.0001 0.0001 0.0004 0.0001 0.0006
0.0021 0.0020 0.0036 0.0090 0.0034 0.0034 0.0016 0.0046 0.0062 0.0053
0.0105 0.0135 0.0142 0.0283 0.0283
*LDT4
0.0058 0.0017 0.0006 0.0001 0.0002 0.0001 0.0002 0.0005 0.0001 0.0006
0.0016 0.0018 0.0081 0.0254 0.0090 0.0091 0.0057 0.0146 0.0136 0.0096
0.0119 0.0239 0.0663 0.1156 0.1156
*HDV2B
0.2489 0.2799 0.3226 0.3024 0.3018 0.2465 0.2574 0.2273 0.2142 0.2780
0.1759 0.3466 0.3010 0.2688 0.2802 0.3135 0.2249 0.2684 0.2284 0.1576
0.1451 0.1966 0.2637 0.1867 0.1867
*HDV3
0.7295 0.6937 0.6385 0.6512 0.5498 0.6095 0.5424 0.5236 0.6010 0.6499
0.4335 0.4679 0.5568 0.4406 0.3695 0.5414 0.4535 0.4405 0.5072 0.4088
0.4464 0.4861 0.3768 0.1739 0.1739
*HDV4
0.7909 0.7538 0.7521 0.7392 0.7381 0.6108 0.6000 0.5000 0.6163 0.5696
0.4602 0.5439 0.4740 0.6007 0.3858 0.6454 0.3333 0.3107 0.3704 0.4444
0.3361 0.0000 0.0000 0.0476 0.0476
*HDV5
0.9242 0.9569 0.9126 0.9405 0.8964 0.8912 0.8476 0.9098 0.8289 0.7977
0.6000 0.5317 0.6230 0.3443 0.6429 0.9091 0.7368 0.5000 0.5833 0.8000
0.7143 0.5455 1.0000 0.2000 0.2000
*HDV6
0.9316 0.8757 0.8770 0.9450 0.8068 0.8317 0.8559 0.8795 0.8739 0.8325
0.8966 0.9438 0.9464 0.9586 0.8876 0.9417 0.7353 0.7612 0.8295 0.7308
0.6596 0.6667 0.6042 0.6129 0.6129
*HDV7
1.0000 1.0000 1.0000 0.9935 1.0000 1.0000 0.9891 0.9845 0.9868 0.9771
0.9813 0.9091 0.9722 1.0000 0.9500 0.9577 0.9315 0.9417 0.9111 0.9186
0.8942 0.8723 0.8525 0.7895 0.7895
*HDV8A
1.0000 1.0000 1.0000 0.9980 1.0000 1.0000 1.0000 1.0000 0.9975 1.0000
1.0000 1.0000 0.9946 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
0.9911 1.0000 0.9846 1.0000 1.0000
*HDV8B
1.0000 1.0000 1.0000 0.9919 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 0.9815 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
*HDBS
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
*HDBT
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000

Virginia--2008 Diesel Sales Fractions

*LDV
0.0000 0.0000 0.0068 0.0067 0.0032 0.0024 0.0033 0.0022 0.0020 0.0027
0.0021 0.0017 0.0019 0.0019 0.0003 0.0024 0.0025 0.0055 0.0017 0.0012
0.0002 0.0324 0.0175 0.1350 0.1350
*LDT1
0.0000 0.0000 0.0160 0.0180 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0003 0.0035 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0024 0.0012 0.0127 0.0210 0.0210
*LDT2
0.0000 0.0000 0.0011 0.0012 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0001 0.0001 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0010 0.0006 0.0057 0.0052 0.0052
*LDT3
0.0069 0.0032 0.0008 0.0000 0.0005 0.0000 0.0001 0.0001 0.0001 0.0011
0.0035 0.0032 0.0037 0.0077 0.0057 0.0029 0.0016 0.0076 0.0065 0.0027
0.0102 0.0098 0.0185 0.0212 0.0212
*LDT4
0.0099 0.0023 0.0013 0.0000 0.0005 0.0000 0.0001 0.0001 0.0002 0.0012
0.0034 0.0035 0.0090 0.0251 0.0144 0.0090 0.0069 0.0360 0.0181 0.0074
0.0189 0.0250 0.1038 0.1000 0.1000
*HDV2B
0.2244 0.2015 0.2735 0.3024 0.2835 0.2364 0.2169 0.2321 0.2146 0.2567
0.1356 0.2791 0.2887 0.2108 0.2491 0.2957 0.2366 0.2623 0.2062 0.2299
0.1474 0.1680 0.2313 0.2231 0.2231
*HDV3
0.6152 0.5965 0.6516 0.6250 0.4485 0.5224 0.5456 0.5118 0.5369 0.5917
0.3981 0.5286 0.5172 0.4000 0.4022 0.5567 0.4167 0.5614 0.5102 0.5000
0.5394 0.5000 0.4304 0.1481 0.1481
*HDV4
0.8280 0.7461 0.7872 0.7749 0.7892 0.6648 0.5658 0.5271 0.5501 0.5496
0.4773 0.4439 0.4667 0.5592 0.3868 0.5684 0.3837 0.3529 0.3836 0.4316
0.2500 0.0769 0.0556 0.0000 0.0000
*HDV5
0.9545 0.9758 0.9228 0.9346 0.8804 0.9095 0.9384 0.8929 0.8962 0.8653
0.7391 0.4634 0.5938 0.5349 0.6000 0.8889 0.6364 0.6667 0.7273 0.8462
0.2308 0.5882 0.0000 0.0000 0.0000
&HDV6
0.9108 0.8445 0.8244 0.9495 0.8416 0.8284 0.8340 0.8966 0.8782 0.8251
0.8802 0.8783 0.8651 0.8745 0.8642 0.8571 0.7593 0.8095 0.7206 0.7736
0.5500 0.6047 0.4634 0.5294 0.5294
*HDV7
1.0000 1.0000 0.9875 1.0000 1.0000 0.9701 0.9839 1.0000 0.9524 0.9167
0.9700 0.8784 0.9194 0.9677 0.9706 0.9778 0.9848 0.9459 0.9405 0.8596
0.8356 0.8026 0.6818 0.7143 0.7143
*HDV8A
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 0.9947 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 0.9870
1.0000 1.0000 1.0000 1.0000 1.0000
*HDV8B
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 0.9865 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
*HDBS
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
*HDBT
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000

Region--2008 Diesel Sales Fractions for Bus

*LDV
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
*LDT1
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
*LDT2
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
*LDT3
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
*LDT4
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
*HDV2B
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
*HDV3
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
*HDV4
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
*HDV5
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
*HDV6
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
*HDV7
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
*HDV8A
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
*HDV8B
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000
*HDBS
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
*HDBT
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000