April 13, 2010
Revised May 14, 2010

Memorandum

To: MOVES Task Force

From: Daivamani Sivasailam

Subject: Development of Local Transportation Data Inputs for MOVES2010 Model

At the April 20th MOVES Task Force meeting it was pointed out that the urban/rural split shown in exhibit 3C for Calvert County, Maryland, used in the development of **"Vehicle VMT Percentage by Facility Type"** appeared to be incorrect. Staff reviewed the data source and discovered that three Maryland jurisdictions (Calvert, Charles and Frederick Counties) had their urban/rural splits reversed. The error has been fixed and new "Vehicle VMT percentage by facility type" has been prepared and MOVES2010 model has been rerun with the new data. Members had also requested staff to investigate whether the urban/rural splits for 2030 can be changed to reflect growth in the rural portions of the region. An agenda item to discuss this issue with the Planning Directors Technical Advisory Committee meeting in June is being scheduled. The only change in this memorandum as compared to April 13, 2010 memo is exhibit 3-C.

Background

During April 2009 EPA released a draft version of the MOVES model. The input data needed to execute the MOVES model are different from the Mobile 6.2 model. Along with the draft MOVES model EPA released a convertor to develop local age distribution in MOVES format. In addition EPA released a Mobile 6.2 vehicle type to MOVES vehicle type equivalency table called source type fractions. A convertor is a spreadsheet program in which the user will input local data either in Mobile 6.2 format or other readily available format and the convertor will provide an output of local data in MOVES format. My memorandum to MOVES Task Force dated November 17, 2009 discusses staff-developed methodologies to prepare local data for four transportation inputs, namely, 1) Vehicle Population, 2) Vehicle Age Distribution, 3) Annual VMT by Vehicle Type, and 4) VMT percentage by MOVES facility type.

On December 23, 2009, EPA released the official version of the MOVES model called MOVES2010 along with two convertors. Of the four transportation inputs, convertors are now available for developing vehicle age distribution (revised version) and annual VMT by MOVES vehicle type. This memorandum discusses the development of the local data at the jurisdictional level either using a convertor or our own methodology for three of the four local inputs, 1) Vehicle Population, and 2) Vehicle Age Distribution, and 3) VMT percentage by MOVES facility type. The development of annual VMT along with the development of local data at the "custom domain" level possibly using the new convertor will be discussed in a separate memorandum.

All the examples provided in this memorandum are for base year 2005. It is assumed that all the factors used in the development of the local data will remain the same for analysis 2030 with the exception of vehicle population data, for which 2008 vehicle registration data were used to forecast 2030 vehicle population data.

Vehicle Population

The MOVES2010 model requires vehicle population by MOVES vehicle types (six types) which are not weight based as in Mobile 6.2. As part of the exercise in developing vehicle age distribution for Mobile 6.2, staff obtained vehicle data by (VIN numbers) from the departments of motor vehicles in the District of Columbia, Maryland and Virginia and, using commercially available VIN decoder software, decoded the VIN data to develop vehicle population by Mobile 6.2 vehicle types.

EPA did not provide any guidance to develop this local input data. Given the availability of local vehicle population data by Mobile 6.2 vehicle types, staff developed a methodology for this MOVES input using the Mobile 6.2 to MOVES source type vehicle fractions referenced above and the Mobile 6.2 vehicle poulation to develop MOVES vehicle type population estimates.

As the first step, a simple spreadsheet program converts the Mobile 6.2 vehicle population to the 13 MOVES vehicle type population using the vehicle equivalencies (source type fractions). The next step consolidates the 13 MOVES vehicle types to 6 MOVES vehicle types which is the required input. Table 1-A show the 28 Mobile 6.2 vehicle types, Table 1-B shows the 13 MOVES vehicle types, and Table 1-C shows the equivalency table used to convert the Mobile 6.2 vehicle population to MOVES vehicle population. Results of the tabulation process for Montgomery County, Maryland are shown in Table 1-D by 13 vehicle types and Table 1-E by 6 vehicle types. The new source type fractions released along with MOVES2010 eliminated the previously documented issues that existed in the equivalencies for intercity buses and motor homes in the older version of the source type fractions. Therefore, staff is of the opinion that the above methodology is sound and can be used now and in the future.

Recommendation: Staff recommends that we apply the source type vehicle fractions found in the newer version of MOVES convertors along with the local vehicle population in Mobile 6.2 format to develop this required local input.

Vehicle Age Distribution

The Mobile 6.2 model required age distribution input as percentage of vehicles by Mobile 6.2 vehicle type and for ages 1 through 25+ years for a total of 25 years. Similarly, the MOVES model requires percentage of vehicles by MOVES vehicle type and for ages 0 (less than 1 year old) through 30+ years for a total of 31 years. For Mobile 6.2, staff decoded the VIN numbers to obtain the Mobile 6.2 vehicle type and the year of manufacture, and these two data sets were used to develop the age distribution.

For MOVES, an EPA-provided convertor which converts the Mobile 6.2 vehicle age fractions (1 through 25+ years) to MOVES2010 vehicle type age fractions was used. The convertor uses the Mobile 6.2-to- MOVES vehicle type equivalencies shown in Table 1-C and uses the same age distribution percentages for years 1 through 24 (applied to MOVES years 0-23). For years 24 through 30+ it uses the 25th year and redistributes using internal factors.

The attached charts 2-A, 2-B, and 2-C, show the comparison between the Mobile 6.2 age distribution percentages 1 through 25+ against MOVES age distribution percentages 0 through 30+ years for light duty vehicles, transit buses and heavy duty vehicles (HDDV8B for Mobile 6.2 against combination trucks for MOVES). As can be seen from the charts the convertor maintains the same percentage for ages through 1 through 24 in Mobile 6.2 and ages 0 through 23 in MOVES, and the 25+ year spike in Mobile 6.2 is carried over to MOVES final year 30+. Since the vehicle equivalency for light duty and transit buses are one to one between Mobile 6.2 and MOVES they are identical, whereas the combination truck vehicle type for MOVES is made up of multiple Mobile 6.2 vehicles and their age distribution is a weighted average age distribution of the Mobile 6.2 vehicle types.

Recommendation: Staff recommends that we use the new convertor to develop age distribution fractions from Mobile 6 age distribution fractions.

Vehicle VMT Percentage by Facility Type

This input to the MOVES model requires the user to identify how the percentages of vehicle VMT, for each of the 13 MOVES vehicle types, are distributed among the four MOVES facility types. The four facility types are urban restricted (freeways and expressways), urban unrestricted (arterial, collector and local), rural restricted and rural unrestricted.

What we have available from the regional travel demand model (TDM) to assist us in the preparation of this input are percentages of VMT for three vehicle types, namely passenger vehicles, light commercial vehicles, heavy duty vehicles and bus (school and transit), stratified by facility types (freeways, expressways, arterials and collectors). Since motorcycles, passenger cars, and passenger trucks are passenger vehicles, we applied the percentage of VMT by facility types for passenger vehicles to motorcycles, passenger cars, and passenger trucks. Similarly, for light commercial trucks we applied the light commercial vehicle percentages by facility type and for single unit shourthaul trucks, single unit longhaul trucks, combination shorthaul trucks, and combination longhaul trucks we applied heavy duty VMT percentages by facility type. For school buses and transit buses we used locally collected information from the operators and used in the regional periodic emissions inventory development. For the remaining three vehicle types, namely intercity bus, refuse trucks, and motor homes we used the MOVES default VMT percentages by facility types.

Using the above mentioned sources staff was able to develop vehicle VMT percentage by facility type for the 13 MOVES vehicle types. For Jurisdictions which have a rural component an urban/rural factor is applied to split the VMT percentages further. The urban/rural split percentages were developed form HPMS disaggregations for each county and developed during the periodic emissions inventory (PEI)/national emissions inventory (NEI) which are EPA required SIP submissions. Table 3-A shows the relevant data sources used in developing this input for the 13 MOVES vehicle types. Table 3-B shows the relevant local inputs, Table 3-C shows the relevant default inputs, Table 3-D shows the urban/rural split for all the jurisdictions and Table 3-E shows the final input table developed for Montgomery County (illustration purpose only), Maryland.

Recommendation: Staff recommends that we use the methodology described here for developing this input.

Next Steps

- Continue testing the MOVES2010 model with these recommended data sets.

- Finalize the methodology and recommend the approach to develop VMT by vehicle type.

- Review the methodology and the results with the MOVES Task Force at the April 20, 2010 meeting.

- Finalize all inputs including Department of Environmental Programs-developed inputs and complete testing the model as recommended in the work program.

Table 1-A MOBILE6 Vehicle Types

MOBILE6 V.Class	Abbreviation	Description
1	LDGV	Light-Duty Gasoline Vehicles (Passenger Cars)
2	LDGT1	Light-Duty Gasoline Trucks 1 (0 - 6,000 lbs. GVWR, 0 - 3,750 lbs. LVW)
3	LDGT2	Light-Duty Gasoline Trucks 2 (0 - 6,000 lbs. GVWR, 3,751 - 5,750 lbs. LVW)
4	LDGT3	Light-Duty Gasoline Trucks 3 (6,001 - 8,500 lbs. GVWR, 0 - 5,750 lbs. ALVW)
5	LDGT4	Light-Duty Gasoline Trucks 4 (6,001 - 8,500 lbs. GVWR, greater than 5,751 lbs. ALVW)
6	HDGV2b	Class 2b Heavy-Duty Gasoline Vehicles (8,501 - 10,000 lbs. GVWR)
7	HDGV3	Class 3 Heavy-Duty Gasoline Vehicles (10,001 - 14,000 lbs. GVWR)
8	HDGV4	Class 4 Heavy-Duty Gasoline Vehicles (14,001 - 16,000 lbs. GVWR)
9	HDGV5	Class 5 Heavy-Duty Gasoline Vehicles (16,001 - 19,500 lbs. GVWR)
10	HDGV6	Class 6 Heavy-Duty Gasoline Vehicles (19,501 - 26,000 lbs. GVWR)
11	HDGV7	Class 7 Heavy-Duty Gasoline Vehicles (26,001 - 33,000 lbs. GVWR)
12	HDGV8a	Class 8a Heavy-Duty Gasoline Vehicles (33,001 - 60,000 lbs. GVWR)
13	HDGV8b	Class 8b Heavy-Duty Gasoline Vehicles (>60,000 lbs. GVWR)
14	LDDV	Light-Duty Diesel Vehicles (Passenger Cars)
15	LDDT12	Light-Duty Diesel Trucks 1 and 2 (0 - 6,000 lbs. GVWR)
16	HDDV2b	Class 2b Heavy-Duty Diesel Vehicles (8,501 - 10,000 lbs. GVWR)
17	HDDV3	Class 3 Heavy-Duty Diesel Vehicles (10,001 - 14,000 lbs. GVWR)
18	HDDV4	Class 4 Heavy-Duty Diesel Vehicles (14,001 - 16,000 lbs. GVWR)
19	HDDV5	Class 5 Heavy-Duty Diesel Vehicles (16,001 - 19,500 lbs. GVWR)
20	HDDV6	Class 6 Heavy-Duty Diesel Vehicles (19,501 - 26,000 lbs. GVWR)
21	HDDV7	Class 7 Heavy-Duty Diesel Vehicles (26,001 - 33,000 lbs. GVWR)
22	HDDV8a	Class 8a Heavy-Duty Diesel Vehicles (33,001 - 60,000 lbs. GVWR)
23	HDDV8b	Class 8b Heavy-Duty Diesel Vehicles (>60,000 lbs. GVWR)
24	MC	Motorcycles (All)
25	HDGB	Gasoline Buses (School, Transit, and Urban)
26	HDDBT	Diesel Transit and Urban Buses
27	HDDBS	Diesel School Buses
28	LDDT34	Light-Duty Diesel Trucks 3 and 4 (6,001 - 8,500 lbs. GVWR)

Table 1-B MOVES Vehicle Types (6 and 13)

MOVES SourceUseType Vehicle Categories(6&13)				
Number	MOVES V.Class	Abbreviation	SourceTypeName	HPMS ID (6 vehicle types)
1	11	MC	Motorcycle	10
2	21	PC	Passenger Car	20
3·	31	PT	Passenger Truck	30
4	32	LCT	Light Commercial Truck	
5	41	IB	Intercity Bus	40
6	42	TB	Transit Bus	
7	43	SB	School Bus	
8	51	RT	Refuse Truck	50
9	52	SUST	Single Unit Short-Haul Truck	
10	53	SULT	Single Unit Long-Haul Truck	
11	54	MH	Motorhome	
12	61	CST	Combination Short-Haul Truck	60
13	62	CLT	Combination Long-Haul Truck	

Table 1-C. MOBILE 6.2 to MOVES EQUIVALENCY TABLE

Mobile 6 Vehicle Type		1 11 MC	2 21 PC	3 31 PT	4 32 LCT	5 41 IB	6 42 TB	7 43 SB	8 51 RT	9 52 SUST	10 53 SULT	11 54 MH	12 61 CST	13 62 CLT	TOTAL
1	LDGV	0	1	0	0	0	0	0	0	0	0	0	0	0	1.00
2	LDGT1	0	0	0.78	0.22	0	0	0	0	0	0	0	0	0	1.00
3	LDGT2	0	0	0.78	0.22	0	0	0	0	0	0	0	0	0	1.00
4	LDGT3	0	0	0.78	0.22	0	0	0	0	0	0	0	0	0	1.00
5	LDGT4	0	0	0.78	0.22	0	0	0	0	0	0	0	0	0	1.00
6	HDGV2B	0	0	0.63	0.37	0	0	0	0	0	0	0	0	0	1.00
7	HDGV3	0	0	0.63	0.37	0	0	0	0	0	0	0	0	0	1.00
8	HDGV4	0	0	0.06	0.94	0	0	0	0	0	0	0	0	0	1.00
9	HDGV5	0	0	0.06	0.94	0	0	0	0	0	0	0	0	0	1.00
10	HDGV6	0	0	0	0	0	0	0.04	0	0.69	0.03	0.23	0.01	0	1.00
11	HDGV7	0	0	0	0	0	0	0.04	0	0.69	0.03	0.23	0.01	0	1.00
12	HDGV8A	0	0	0	0	0	0	0	0	0.9	0.08	0	0.02	0	1.00
13	HDGV8B	0	0	0	0	0	0	0	0	0.9	0.08	0	0.02	0	1.00
14	LDDV	0	1	0	0	0	0	0	0	0	0	0	0	0	1.00
15	LDDT12	0	0	0.42	0.58	0	0	0	0	0	0	0	0	0	1.00
16	HDDV2B	0	0	0.43	0.57	0	0	0	0	0	0	0	0	0	1.00
17	HDDV3	0	0	0.43	0.57	0	0	0	0	0	0	0	0	0	1.00
18	HDDV4	0	0	0.1	0.9	0	0	0	0	0	0	0	0	0	1.00
19	HDDV5	0	0	0.1	0.9	0	0	0	0	0	0	0	0	0	1.00
20	HDDV6	0	0	0	0	0	0	0	0.01	0.72	0.06	0.07	0.11	0.03	1.00
21	HDDV7	0	0	0	0	0	0	0	0.01	0.72	0.06	0.07	0.11	0.03	1.00
22	HDDV8A	0	0	0	0	0	0	0	0.02	0.3	0.02	0	0.35	0.31	1.00
23	HDDV8B	0	0	0	0	0	0	0	0.02	0.3	0.02	0	0.35	0.31	1.00
24	MC	1	0	0	0	0	0	0	0	0	0	0	0	0	1.00
25	HDGB	0	0	0	0	0	0	1	0	0	0	0	0	0	1.00
26	HDDBT	0	0	0	0	0.25	0.75	0	0	0	0	0	0	0	1.00
27	HDDBS	0	0	0	0	0	0	1	0	0	0	0	0	0	1.00
28	LDDT34	0	0	0.42	0.58	0	0	0	0	0	0	0	0	0	1.00

Column group heading: MOVES Vehicle Type
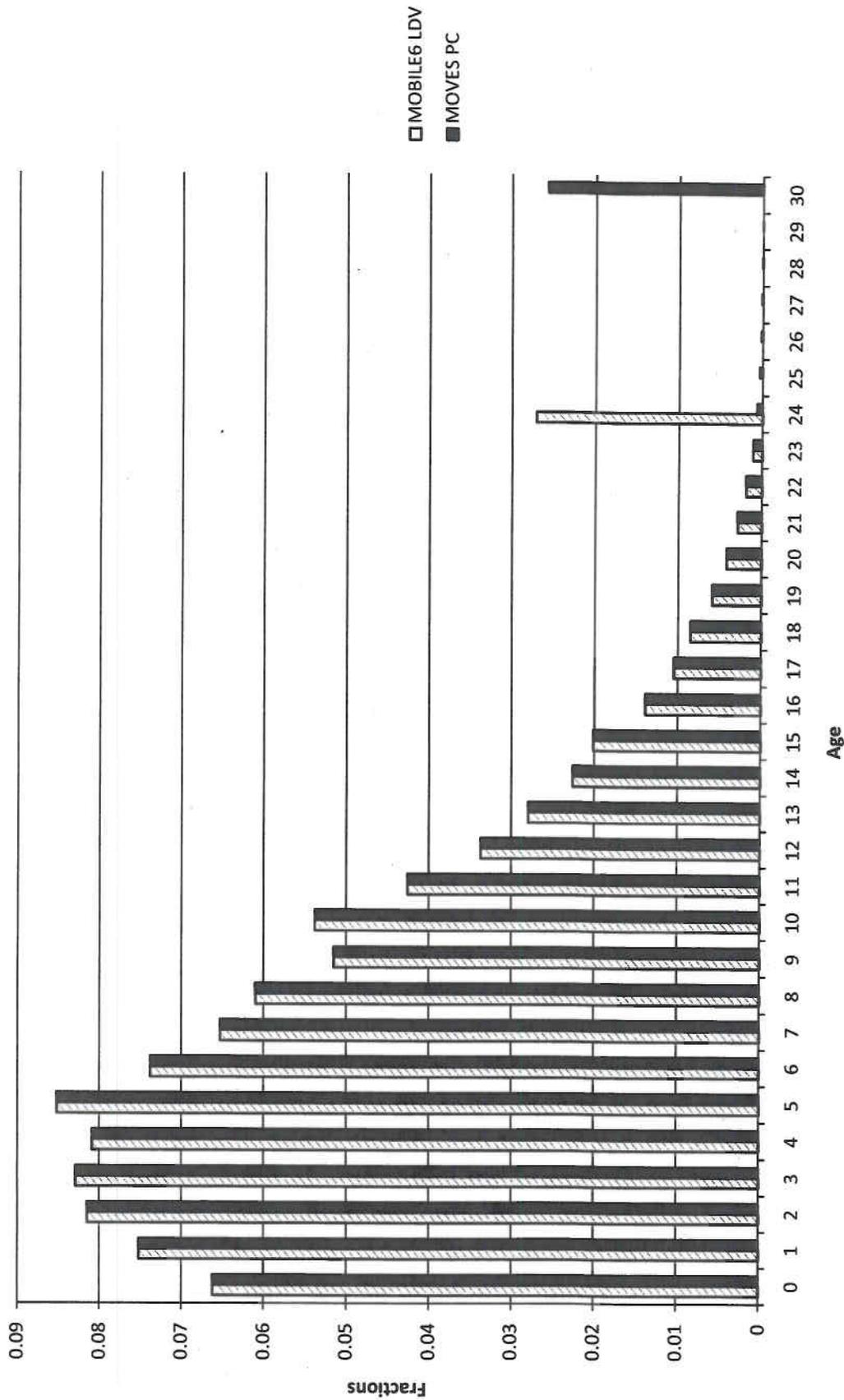
* Based on EPA's MOVES Vehicle Type Fraction Table

Table 1-D. 2005 MTG VEHICLE POPULATION FROM MOBILE6 TO MOVES

Mobile 6 Vehicle Type		Population	1 11 MC	2 21 PC	3 31 PT	4 32 LCT	5 41 IB	6 42 TB	7 43 SB	8 51 RT	9 52 SUST	10 53 SULT	11 54 MH	12 61 CST	13 62 CLT	TOTAL
1	LDGV	413398	-	413,398	-	-	-	-	-	-	-	-	-	-	-	413,398
2	LDGT1	4939	-	-	3,853	1,087	-	-	-	-	-	-	-	-	-	4,939
3	LDGT2	171177	-	-	133,518	37,659	-	-	-	-	-	-	-	-	-	171,177
4	LDGT3	40289	-	-	31,425	8,863	-	-	-	-	-	-	-	-	-	40,289
5	LDGT4	12376	-	-	9,654	2,723	-	-	-	-	-	-	-	-	-	12,376
6	HDGV2B	11785	-	-	7,425	4,361	-	-	-	-	-	-	-	-	-	11,785
7	HDGV3	1383	-	-	871	512	-	-	-	-	-	-	-	-	-	1,383
8	HDGV4	1042	-	-	63	979	-	-	-	-	-	-	-	-	-	1,042
9	HDGV5	97	-	-	6	91	-	-	-	-	-	-	-	-	-	97
10	HDGV6	198	-	-	-	-	-	-	8	-	137	6	46	2	-	198
11	HDGV7	48	-	-	-	-	-	-	2	-	33	1	11	0	-	48
12	HDGV8A	4	-	-	-	-	-	-	-	-	4	0	-	0	-	4
13	HDGV8B	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	LDDV	2053	-	2,053	-	-	-	-	-	-	-	-	-	-	-	2,053
15	LDDT12	58	-	-	24	34	-	-	-	-	-	-	-	-	-	58
16	HDDV2B	3101	-	-	1,334	1,768	-	-	-	-	-	-	-	-	-	3,101
17	HDDV3	1448	-	-	623	826	-	-	-	-	-	-	-	-	-	1,448
18	HDDV4	1241	-	-	124	1,117	-	-	-	-	-	-	-	-	-	1,241
19	HDDV5	666	-	-	67	599	-	-	-	-	-	-	-	-	-	666
20	HDDV6	1274	-	-	-	-	-	-	-	13	917	76	89	140	38	1,274
21	HDDV7	697	-	-	-	-	-	-	-	7	502	42	49	77	21	697
22	HDDV8A	490	-	-	-	-	-	-	-	10	147	10	-	171	152	490
23	HDDV8B	1237	-	-	-	-	-	-	-	25	371	25	-	433	384	1,237
24	MC	8902	8,902	-	-	-	-	-	-	-	-	-	-	-	-	8,902
25	HDGB	1221	-	-	-	-	-	-	1,221	-	-	-	-	-	-	1,221
26	HDDBT	1067	-	-	-	-	267	800	-	-	-	-	-	-	-	1,067
27	HDDBS	1244	-	-	-	-	-	-	1,244	-	-	-	-	-	-	1,244
28	LDDT34	99	-	-	42	58	-	-	-	-	-	-	-	-	-	99
TOTAL		681537	8,902	415,452	189,027	60,676	267	800	2,475	54	2,111	161	195	824	595	681,537

Table 1-E. 2005 MTG Vehicle Population in HPMS

HPMS ID	10	20	30	40	50	60
	11 MC	21 PC	31 PT 32 LCT	41 IB 42 TB 43 SB	51 RT 52 SUST 53 SULT 54 MH	61 CST 62 CLT
Population	8,902	415,452	249,703	3,542	2,520	1,418

Chart 2-A 2005 Age Distribution Comparison
## MOBILE6 Light Duty Vehicle vs. MOVES Passenger Car
Jurisdiction = Montgomery County

Legend:
- ☐ MOBILE6 LDV
- ■ MOVES PC

Y-axis: Fractions (0, 0.01, 0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.08, 0.09)

X-axis: Age (0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30)

Chart 2-B 2005 Age Distribution Comparison
MOBILE6 Heavy Duty Diesel Transit Bus vs. MOVES Intercity/Transit Bus
Jurisdiction = Montgomery County

□ MOBILE6 HDDBT

■ MOVES IB/TB

Fractions

0.14   0.12   0.1   0.08   0.06   0.04   0.02   0

Age

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
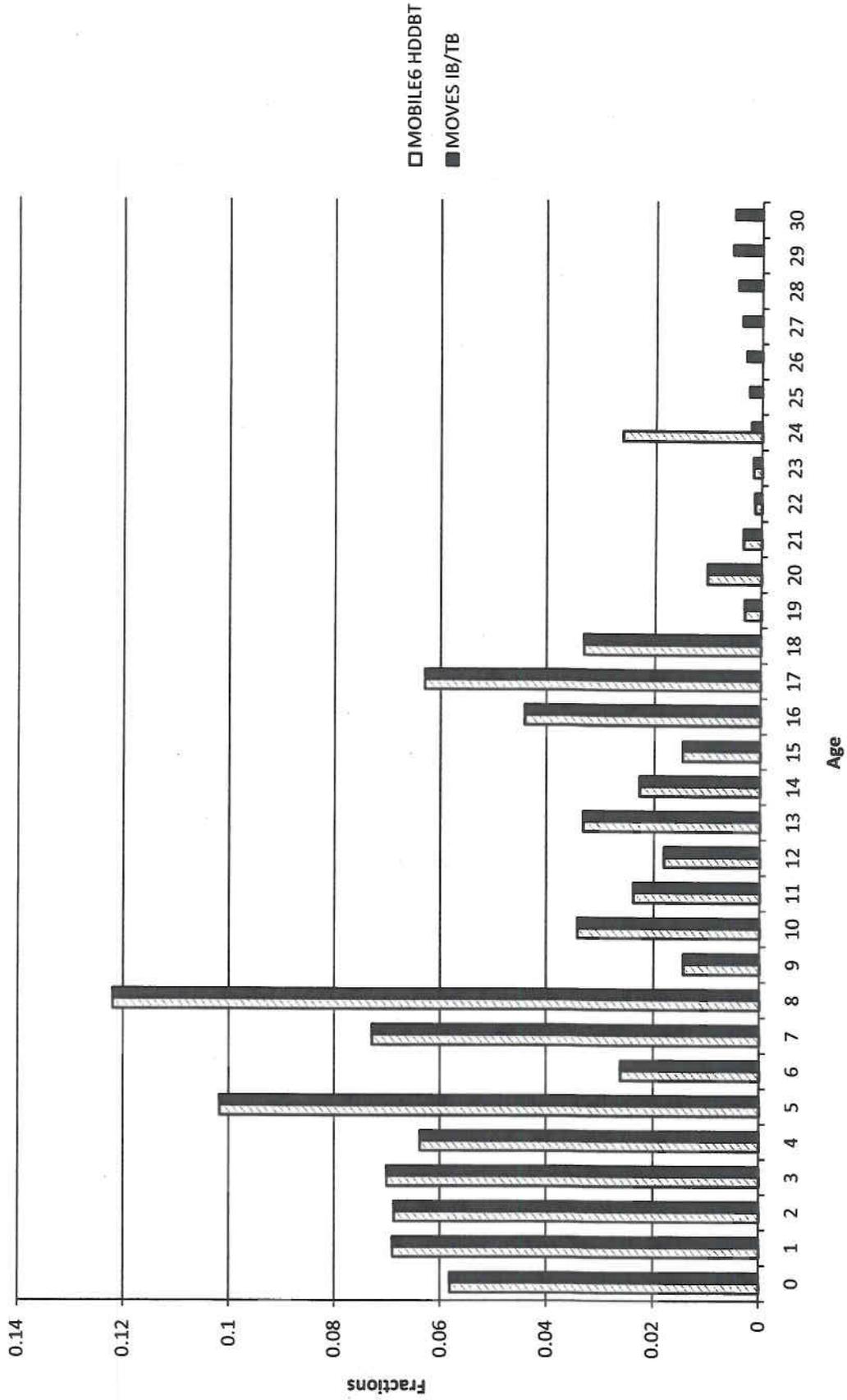
Chart 2-C 2005 Age Distribution Comparison

MOBILE6 Class 8B Heavy Duty Diesel Vehicle vs. MOVES Combination Short-Haul Truck

Jurisdiction = Montgomery County
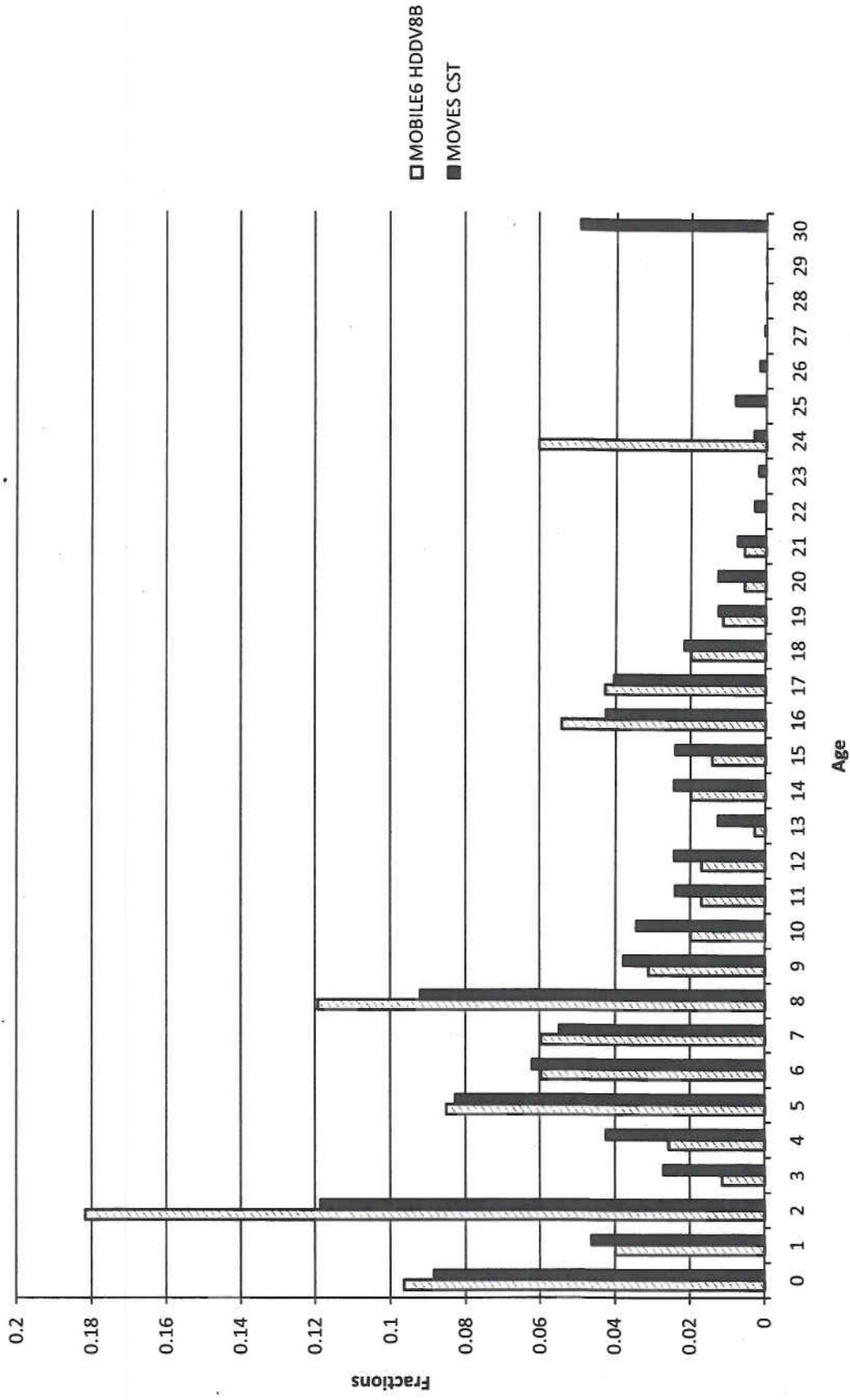
Table 3-A. Sources of MOVES VMT Fractions by Vehicle Type

Source	Available	Used by MOVES Vehicle Type
Network	Passenger Vehicle	Motorcycle
		Passenger Car
		Passenger Truck
	Light Commercial Truck	Light Commercial Truck
	Heavy Vehicle	Single-Unit Short Haul
		Single-Unit Long Haul
		Combination Short Haul
		Combination Long Haul
Off-Network PEI	School Bus	School Bus
	Transit Bus	Transit Bus
	Intercity Bus	Transit Bus
PEI/MOVES Default	Refuse Truck	Refuse Truck
	Motor Home	Motor Home

Table 3-B. 2005 Montgomery County MD Annual VMT and VMT Fractions by Facility Type and Vehicle Type

	Network Based			Off-Network	Total
	Passenger Vehicles	Light Commercial Trucks	Heavy Vehicles	School/Transit Buses	
Freeway+Exp.Way	2,366,713,098	91,146,698	245,169,673	574,092	2,703,603,561
Arterial	4,202,876,866	248,869,034	167,550,952	57,035,522	4,676,332,374
Total	6,569,589,964	340,015,732	412,720,625	57,609,614	7,379,935,935

*Source: Network and off-line VMT from Oct 2009 air quality amendment conformity assessment

VMT Fractions

	Network Based			Off-Network	Total
	Passenger Vehicles	Light Commercial Trucks	Heavy Vehicles	School/Transit Buses	
Freeway+Exp.Way	0.3603	0.2681	0.5940	0.0100	0.3663
Arterial	0.6397	0.7319	0.4060	0.9900	0.6337
Total	1.0000	1.0000	1.0000	1.0000	1.0000

Table 3-C. Urban/Rural Split in Washington Area

	Urban	Rural	Total
Maryland			
Montgomery	0.90	0.10	1.00
Prince George's	0.93	0.07	1.00
Frederick	0.28	0.72	1.00
Charles	0.35	0.65	1.00
Calvert	0.05	0.95	1.00
Virginia			
Loudoun	0.38	0.62	1.00
Prince William	0.49	0.51	1.00
Fairfax	1.00	0.00	1.00
Arlington	1.00	0.00	1.00
Alexandria	1.00	0.00	1.00
District of Columbia			
District of Columbia	1.00	0.00	1.00

Table 3-D. PEI/MOVES Default VMT Fractions Value for Montgomery County

	Road Types	Refuse Truck	Motor Home
Step 1	Aggregated MOVES Default Restricted	0.2863	0.2863
	Aggregated MOVES Default Unrestricted	0.7137	0.7137
Step 2	Rural Restricted Access	0.0286	0.0286
	Rural Unrestricted Access	0.0714	0.0714
	Urban Restricted Access	0.2577	0.2577
	Urban Unrestricted Access	0.6423	0.6423

Table 3-E. 2005 Montgomery County MOVES VMT Fractions by Vehicle and Road Type

	11 MC	21 PC	31 PT	32 LCT	41 IB	42 TB	43 SB	51 RT	52 SUSH	53 SUSH	54 MH	61 CS	62 CS
Rural Restricted	0.0360	0.0360	0.0360	0.0268	0.0000	0.0000	0.0000	0.0286	0.0594	0.0594	0.0286	0.0594	0.0594
Rural Unrestricted	0.0640	0.0640	0.0640	0.0732	0.0000	0.0000	0.0953	0.0714	0.0406	0.0406	0.0714	0.0406	0.0406
Urban Restricted	0.3242	0.3242	0.3242	0.2413	0.0271	0.0271	0.0000	0.2577	0.5346	0.5346	0.2577	0.5346	0.5346
Urban Unrestricted	0.5758	0.5758	0.5758	0.6587	0.9729	0.9729	0.9047	0.6423	0.3654	0.3654	0.6423	0.3654	0.3654
Total	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

TDM Passenger Car
TDM Commercial
MOVES default
NEI
TDM Med/Heavy Truck