2002 PERIODIC EMISSIONS INVENTORY
OF OZONE PRECURSOR EMISSIONS

FOR THE
WASHINGTON DC-MD-VA
OZONE NONATTAINMENT AREA

Prepared by:

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Maryland Department of the Environment,
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and
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on behalf of the
Metropolitan Washington Air Quality Committee

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Chapter 1

Executive Summary

1.0 EXECUTIVE SUMMARY

This document presents the 2002 inventory of ozone precursor emissions for the Washington DC-MD-VA Ozone Nonattainment area. This inventory has been prepared to meet the requirements of the Clean Air Act (CAA). The CAA (under Section 187(a)) requires that state and local agencies develop periodic emission inventories for ozone nonattainment areas classified as marginal and above. The 2002 periodic emissions inventory (PEI) is required to be submitted to EPA no later than June 1, 2004. EPA requests that states submit the inventory by June 1, 2004, to be used in the national emissions trends report. In addition to this inventory, the CAA requires several additional air quality planning documents, most important of which is the State Implementation Plan.

The Clean Air Act Amendments of 1990 (CAAA or Act) represent an unprecedented commitment to protecting public health and the environment. Title I of the Act classifies areas that exceed national health-based air quality standards based upon the severity of their pollution problem (marginal, moderate, serious, severe, and extreme) and, accordingly, prescribes increasingly stringent measures that must be implemented and sets new deadlines for achieving the standards. The Act also establishes specific emissions reduction requirements to ensure continual progress toward attainment.

Why is it so important to achieve the standards for ozone? High levels of ozone are a health problem. When it is breathed into the lungs, ozone reacts with lung tissue. It can harm breathing passages, decrease the lungs' working ability, and cause

- coughing and chest pains;
- eye and throat irritation;
- breathing difficulties even for healthy individuals, but especially for those with respiratory problems (allergies, asthma, bronchitis, emphysema); and
- greater susceptibility to respiratory infection.

Ozone poses not only a threat to human health, but also a threat to the health of natural ecosystems. Scientific evidence suggests that air pollution weakens the immune systems of many types of vegetation and can cause significant crop damage. In addition, rain and snow wash air pollution deposited on vegetation and architectural surfaces into the streams and rivers of the region and finally into the Chesapeake Bay.

The emissions inventory provides quantitative air emissions information needed by decision makers in determining the magnitude of emissions reductions that must be achieved in order to reach attainment of federal ozone standards. Hence, considerable coordination among the District of Columbia, Maryland, and Virginia ("the states"), local governments and COG has occurred to ensure the accuracy and integrity of the computations.

The following jurisdictions and all independent municipalities which they encompass are included in the MSA and, therefore, in the emissions inventory:

- District of Columbia
- Calvert County, Maryland
- Charles County, Maryland
- Frederick County, Maryland
- Montgomery County, Maryland
- Prince George's County, Maryland
- Arlington County, Virginia
- Alexandria, Virginia
- Fairfax County, Virginia
- Loudoun County, Virginia
- Prince William County, Virginia
- Stafford County, Virginia

No attempt is made in this document to address sources outside of the nonattainment area. In accordance with federal ozone attainment planning requirements under the Clean Air Act Amendments of 1990 (CAAA), this document provides jurisdictional estimates of volatile organic compounds (VOCs), oxides of nitrogen (NOx), ozone precursors, and CO for a typical summer day in 2002 in the MSA.

1.1 The Ozone Problem

Of the six major air pollutants for which ambient air quality standards have been established under the Clean Air Act, the pollutant that has posed the most prevalent and perplexing problem for the Washington metropolitan area, and for many other American urban areas, is ozone, a principal component of "smog."

Why has the ozone problem been so difficult to solve? First, ozone is not discharged directly. It is formed in, and downwind of, urban areas when sunlight and high temperatures cause complex photochemical reactions to occur between emissions of volatile organic compounds (VOCs) and emissions of oxides of nitrogen (NOx). In urban areas especially, a number of diverse sources emit these ozone precursors. Major sources of VOC emissions include, but are not limited to, gasoline storage facilities, bakeries, gasoline refueling stations, printing facilities, motor vehicles, lawnmowers, consumer products, and boats. In addition, many species of plants emit VOCs. Principal sources of NOx, which is produced by combustion, include motor vehicles, construction equipment, fossil fuel-fired power plants, and open burning.

Second, the ozone problem is further complicated by the fact that weather conditions play a major role in the formation of ozone and in the severity of the problem. Solar energy drives the reactions that create ozone. When a warm air mass stays in one spot, and winds are calm, smog may stay in place for several days at a time creating severe ozone conditions. While it is not always possible to predict weather conditions that create severe ozone problems, more severe and prolonged episodes can be forecast.

Third, scientists are still learning how weather conditions, topography, and ozone precursors interact to create ozone. Originally, ozone control strategies focused on reducing VOCs. However, evidence shows that NOx control is also necessary and, in fact, achieving attainment

of the standards may be impossible without it. The complexity of the reactions that cause ozone requires reliance upon computer models of ozone formation to guide the region to the correct mix of VOC and NOx controls.

Fourth, given that smog travels across county and state lines, the ozone problem is regional. Therefore, solving the problem requires considerable coordination and consensus building on the part of local and state governments to develop regional emission control strategies. On the East Coast, governments from Maine to Washington, D.C. and Virginia were required under the Act to form the Ozone Transport Commission (OTC) in order to develop ozone control strategies on a regional basis. The OTC has developed additional point source NOx standards, low-emissions vehicle standards and new standards for a variety of area sources, all of which are intended to reduce ozone levels from Virginia to Maine. The Ozone Transport Assessment Group (OTAG) worked to quantify and reduce the amount of ozone and its precursors, which moves from one state to the next within the 37 eastern states. EPA's NO_X SIP Rule, promulgated in 1997, requires states in a 23-state region to adopt controls reducing NO_X emissions state-wide by as much as 85 percent. In most of the 23-state region states require these NO_X controls to be implemented in 2004; in the Washington, DC-MD-VA nonattainment area, states implemented NO_X SIP controls in 2003.

1.2 SIP and Periodic Emission Inventories

The Act requires states to develop and implement ozone reduction strategies in the form of a State Implementation Plan (SIP). The SIP is the state's "master plan" for attaining and maintaining the National Ambient Air Quality Standards (NAAQS). The SIP contains emission inventories from point, area, nonroad, onroad, and biogenic sources. Periodic Emission Inventories (PEI), on the other hand, are required for various purposes by EPA, such as examining the national emissions trend, providing inputs for photochemical modeling necessary for devising air quality attainment strategies, etc. Though the emission inventories in the SIP and PEI documents might belong to the same year, the two could be different as SIP inventories could be projected emissions while PEI are actual emissions in that year.

1.3 1990, 1996, 1999 and 2002 Periodic Emissions Inventories

The Washington, D.C. region developed a 1990 baseline inventory as required by the Act. This document, titled *1990 Base Year Inventory for Stationary Anthropogenic, Biogenic Sources and Highway Vehicle Emissions of Ozone Precursors in the Washington, DC-MD-VA Ozone Nonattainment Area,* was prepared for the region and approved by MWAQC on September 22, 1993. The 1990 inventory has been used as the basis for SIP planning purposes and modified as necessary since its development. Washington DC-MD-VA Severe Area SIP dated February 19, 2004 contains the recent revisions of the 1990 base year inventories.

The 1996 PEI were developed by MWCOG in consultation with the state air agencies and approved by MWAQC on September 25, 1998. The 1996 inventories were developed by projecting the 1990 base year emissions using the changes in population, employment, household, and other demographic growth factors between 1990 and 1996 as surrogates.

Unlike 1996 PEI, the 1999 PEI were developed mostly by the state air agencies by using the latest methods and activity data specific to 1999. Many emission and activity factors for several emission categories were updated for the 1999 inventory based on new information and/or methods developed since the 1990 inventory. The 1990 and 1999 inventories are more comparable because they both were developed by incorporating the year specific emissions and activity factors.

The methodologies for the area and point source sector in the 2002 PEI are very much similar to the ones used in developing the 1999 PEI. However, the non-road emission inventory in the 2002 PEI was prepared using EPA's draft NONROAD2004 model (May 2004), whereas the 1999 non-road inventory was prepared by projecting the 1990 base year emissions using the growth factors between 1990 and 1999. Also note that the 1990 base year non-road inventories were based on survey data (NEVES report by EEA) Similarly, the on-road inventory contained in the 2002 PEI was prepared using MOBILE 6.2, while the 1999 PEI used MOBILE 5b. Significant differences in the assumptions contained in these EPA's models resulted in a significant increase in mobile emissions using MOBILE6.2.

1.4 Comparison of the 2002 Periodic Inventory and the 1990 Base Year Inventory

Table 1-1 presents the ozone season day emissions in 2002 by source sector. Table 1-2 presents a comparison of the 1990 base year VOC inventory with the 2002 periodic VOC emissions inventory documented in this report, by source category. The table presents the change from 1990 to 2002 in absolute numbers and also by the percentage increase/decrease in emissions. Note that a comparison is not made for biogenic emissions. This is because the model and assumptions used to estimate biogenic emissions in the base year (1990) are different than those for 2002. Tables 1-3 and 1-4 present similar information for NOx and CO. Note that there are no NOx or CO emissions from biogenic sources.

As shown in the following charts and tables, VOC and NOx emissions have fallen for point, on-road mobile and area sources over this time period. These reductions occurred despite the rapid growth in population, households, and employment that has taken place in the region since 1990. This provides further evidence that the control measures put into place in the region over the past several years are achieving reductions. Emissions from non-road sources have grown slightly during this time period. Additional controls for these sources have been passed by EPA and will result in emission reductions from these sources in the near future.

As noted in Chapter 4, the on-road mobile emissions for 2002 are calculated with Mobile6.2 model.

Table 1-1
2002 Emission Inventories - Ozone Season Day Emissions (tons/day)
Washington Metropolitan Area

Source Category	VOC	NOx	CO
Point	5.1	184.2	77.2
Area	167.4	35.4	46.3
Non-road	99.1	74.9	1306.9
On-road	125.5	290.8	1757.0
Anthropogenic Subtotal	397.1	585.3	3187.4
Biogenic Emissions	427.1	37.9	3.4
Grand Total	824.2	623.2	3190.8

Figure 1: 2002 PEI Anthropogenic Emissions by Source Sector

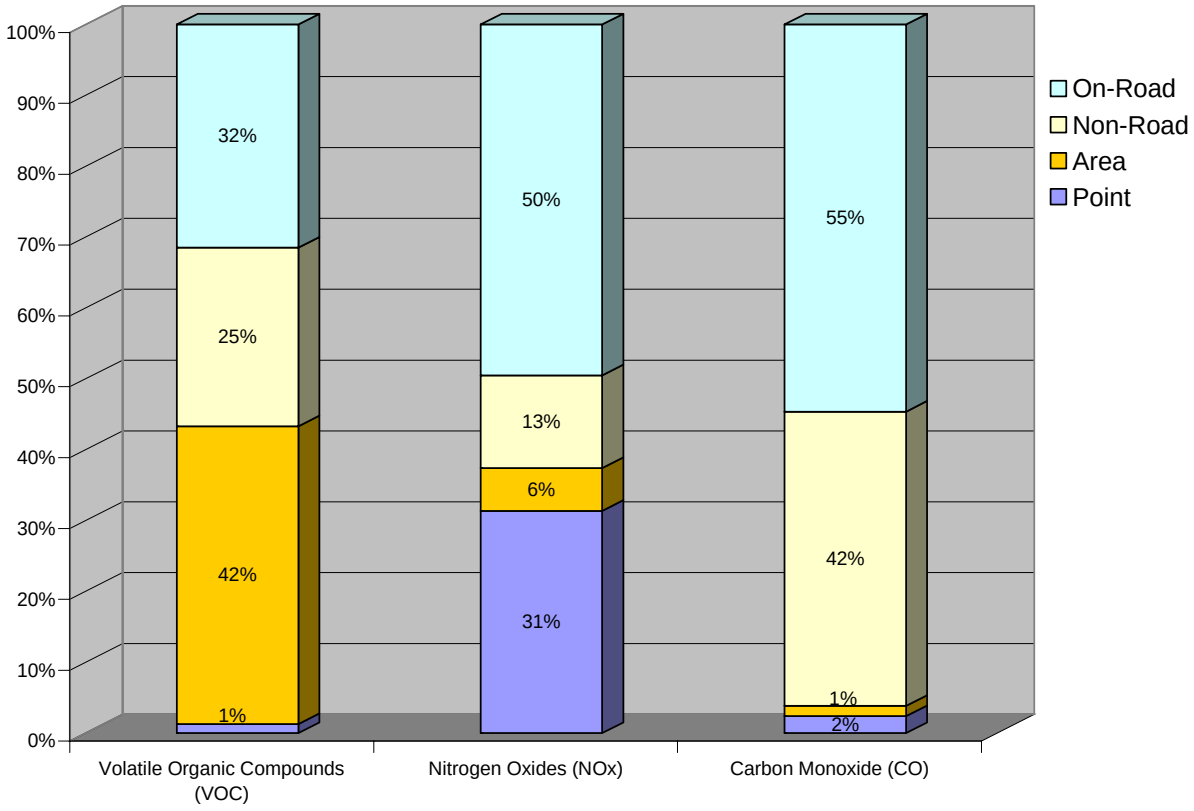


Table 1-2
Changes in VOC Emissions by Source Category. 1990-2002
Washington Metropolitan Area

	1990* t/d	2002 t/d	Change 1990-2002 t/d	Change 1990-2002 % Change
Point	15.0	5.1	-9.9	-66
Area	191.1	167.4	-23.7	-12
Non-road**	73.4	99.1	27	+37
On-road***	299.2	125.5	-173.7	-58
Anthropogenic Subtotal	578.7	397.1	-181.6	-31
Biogenic Emissions+**	376.5	427.1	+50.6	+13
Grand Total	955.2	824.2	-131.0	-14

* The 1990 emissions match the base year inventory contained in the Washington DC-MD-VA Severe Area SIP dated February 19, 2004.
** Non-road mobile emissions for 1990 was based on EPA's NEVES database, while 2002 inventory is based on NONROAD2004 nonroad model.
** On-road mobile emissions for 1990 and 2002 are calculated using MOBILE6.2 emissions factor model.
+ 2002 Biogenic emissions were estimated using a different model and assumptions than those for 1990. Therefore, a comparison between 1990 and 2002 emissions cannot accurately be made.

Figure 2: Comparison of 1990 and 2002 VOC Emissions by Source Sector

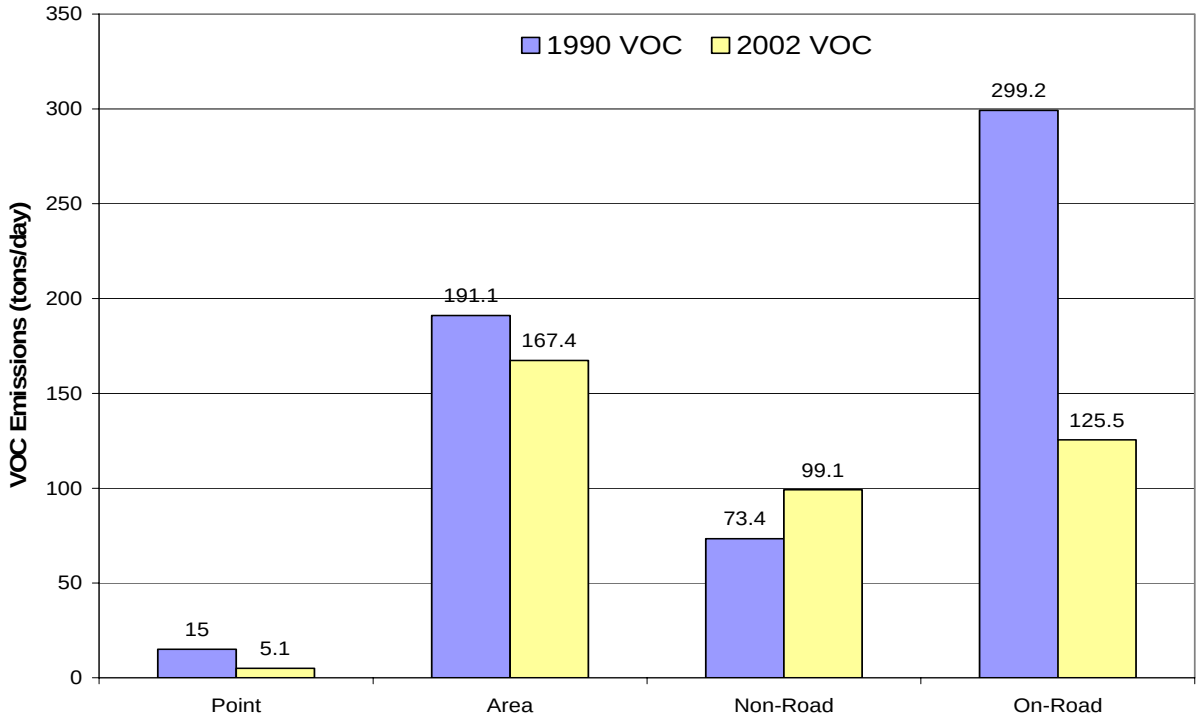


Table 1-3
Changes in NOx Emissions by Source Category. 1990-2002
Washington Metropolitan Area

	1990* t/d	2002 t/d	Change 1990-2002 t/d	Change 1990-2002 % Change
Point	361.4	184.2	-177.2	-49
Area	47.7	35.4	-12.3	-26
Non-road**	79.5	74.9	-2.6	-3
On-road***	380.8	290.8	-90	-24
Grand Total	869.4	585.3	-284.1	-33

* The 1990 emissions match the base year inventory contained in the Washington DC-MD-VA Severe Area SIP dated February 19, 2004.
** Non-road mobile emissions for 1990 was based on EPA's NEVES database, while 2002 inventory is based on NONROAD2004 nonroad model.
*** On-road mobile emissions for 1990 and 2002 are calculated using MOBILE6.2 emissions factor model.

Figure 3: Comparison of 1990 and 2002 NOx Emissions by Source Sector

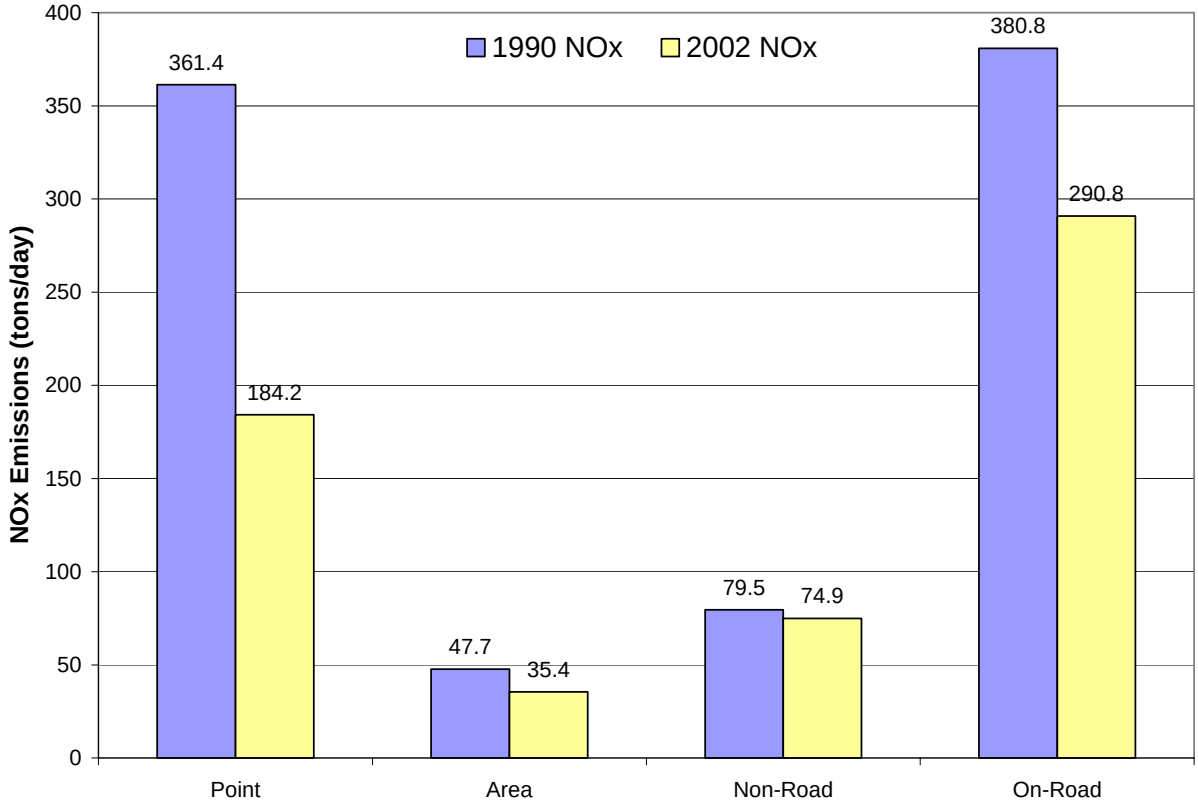
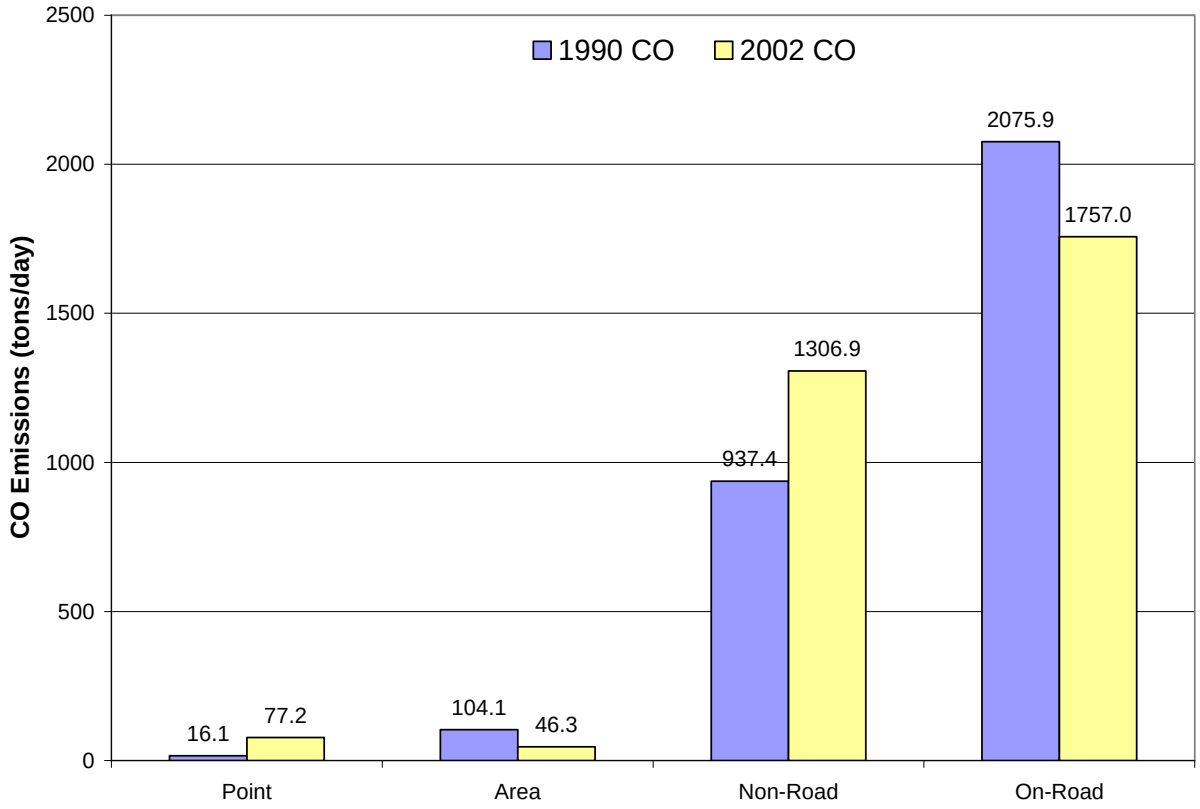


Table 1-4
Changes in CO Emissions by Source Category. 1990-2002
Washington Metropolitan Area

	1990 t/d	2002 t/d	Change 1990-2002 t/d	Change 1990-2002 % Change
Point	16.1	77.2	+61.1	+380
Area	104.1	46.3	-57.8	-56
Non-road*	937.4	1306.9	+369.5	+39
On-road**	2075.9	1757.0	-318.9	-15
Grand Total	3133.5	3187.4	+53.9	+2

* Non-road mobile emission for 1990 was based on EPA's NEVES database, while 2002 inventory is based on NONROAD2004 nonroad model.
** The 1990 on-road emissions were as reported in the 1996 Periodic Emissions Inventory document. On-road mobile emissions for 2002 are calculated using MOBILE6.2 emissions factor model.

Figure 4: Comparison of 1990 and 2002 CO Emissions by Source Sector



1.5 Relationship of this Document to the State Implementation Plan

It is important to note that the 2002 inventory of VOC and NOx emissions contained in this document will not precisely match the 2002 emission forecasts contained in the region's 1999-2002 and 2002-2005 rate-of-progress (ROP) plans. This is partly because the 2002 inventories contained in the ROP plans are projected inventories, as discussed in Section 1.2. Additionally, because the 1999-2002 and 2002-2005 ROP plans were prepared as a result of a court decision rendered after 2002, EPA guidance for developing these ROP plans permitted the Washington region to take credit for certain measures that were not effective in 2002 but would contribute toward the 2002 and 2005 ROP requirements. Even though some regulations were not in place by 2002, EPA allowed states to take credit for these programs in the 2002 inventory with the expectation that they would be fully functioning by January 2005. Thus, the 2002 emissions inventory contained in the ROP Plans is not an actual emissions inventory as of 2002.

In contrast, this Periodic Emissions Inventory has been developed to reflect actual emissions that occurred in 2002. Only emission reductions from actual control programs in place and operating in 2002 are included in this inventory. Thus, this inventory cannot be compared directly with the 2002 emission inventory contained in the 1999-2002 and 2002-2005 ROP Plans or used to measure progress for the ROP plans.

1.6 Document Contents

Chapter 2 presents the methodology for determining 2002 ozone precursor emissions from point sources.

Chapter 3 presents the methodology for determining 2002 ozone precursor emissions from area and non-road sources.

Chapter 4 discusses the methodology for determining 2002 ozone precursor emissions from on-road mobile sources.

The detailed emissions tables and mobile emissions analysis input assumptions are presented in appendices A through D of this document.

Chapter 2

Point Sources

2.0 Point Sources

2.1 Introduction and Scope

This section documents the development of the Washington, D.C. MSA nonattainment area stationary point source emissions inventory and serves to characterize the point source component of the emissions inventory by describing the 2002 summer day emission estimation techniques. The point source inventory consists of actual emissions for typical ozone season day in the year 2002, and includes sources in the geographic area of the Washington DC-MD-VA MSA nonattainment area.

The Virginia Department of Environmental Quality, Maryland Department of Environment and the District of Columbia Department of Health are the responsible state air agencies for developing emission inventories and maintaining the data. MWCOG compiled the ozone season day emissions data provided by the state agencies for inclusion in this periodic emissions inventories document.

2.2 Summary of Point Source Emissions

Table below gives the 2002 ozone season day point source sector emissions for the counties in the nonattainment area. Full documentation on point sources and emissions in individual states are maintained by the District of Columbia Department of Health's Environmental Health Science and Regulation Administration, the Maryland Air and Radiation Management Administration, and the Virginia Department of Environmental Quality.

Appendix B provides a detailed description of the total point source emissions for the Washington region.

Point Source Emissions - 2002 Periodic Emission Inventory

Metropolitan Washington NAA

Tons per ozone season day

Pollutant	Calvert County	Charles County	Fredrck County	Montg County	P.G. County	Arlington County	City of Alxndria	Fairfax County	Loudoun County	P. Willm County	Stafford County	Dist. Of Columbia	MD Total	VA Total	NAA Total
VOC	0.03	0.31	0.83	0.36	0.80	0.05	0.18	0.78	0.45	0.84	0.19	**0.26**	**2.33**	**2.49**	**5.08**
NOx	0.31	48.71	5.32	23.76	43.85	0.20	21.31	8.81	0.78	26.32	0.08	**4.71**	**121.95**	**57.5**	**184.16**
CO	0.08	1.87	60.49	1.47	2.74	0.19	1.30	3.17	0.66	3.70	0.02	**1.51**	**66.64**	**9.04**	**77.2**

Chapter 3

Area and Non-Road Sources

3.0 Area and Non -Road Sources

3.1 Introduction and Scope

This document contains a detailed explanation of how the 2002 emissions inventory for area sources of ozone precursors of carbon monoxide, volatile organic compounds, and nitrogen oxides was developed. The area source sector inventories for a typical ozone season day in 2002 were prepared by the state air agencies. The MWCOG staff compiled the states' data for including in this PEI document. Unless mentioned otherwise, "Staff" in this section is referred specifically to the staff at State Air Agencies of Maryland, Virginia, and the District of Columbia.

Area sources include stationary sources not included in the states' point source inventories, as well as "quasi" stationary sources such as facilities, operations or processes whose activities produce emissions and non-road vehicles such as airport activities, lawn and garden equipment, construction equipment and recreational boating.

Although every attempt has been made to utilize the most appropriate estimation techniques and recently available data, state air agencies will continue to investigate ways to enhance the inventory and make adjustments, which may materially change the information provided herein. All questions or comments regarding the contents of this document should be directed to the respective state/District air agency in the metropolitan area.

3.2 Methodology and Approach

The inventory is broken down by pollutant source, and each source is broken down into the following parts:

- Description - explains what the source is and why it is relevant to the inventory.
- Methods and data sources - provides all data sources and a narrative on exactly how the emissions were computed.
- Factors - provides all the necessary inputs for a computation, excluding the surrogate activity data, which is provided in the appendices.
- Equation - enables the user to reproduce the estimates once all the necessary parameters are obtained.
- Summary of jurisdictional estimates - provides a summary table listing emissions estimates for the source by county and pollutant.

Jurisdictional estimates are provided for summertime conditions for all three pollutants, where appropriate. Wintertime CO is not specifically addressed in this document; however, in some of the source category write-ups these emissions have been computed. In most cases, summertime CO estimates can be employed in the wintertime CO inventory because daily emissions are uniform throughout the year.

Tables at the end of area source methods section list the activity, control, and emission factors applied by the staff in compiling emissions estimates. In an effort to reduce clutter, data is presented in columns, with the indicated value prevailing down the length of the column until another value is encountered.

3.2.1 Source and Category Identification

All of the area source categories contained in the EPA Procedures document (EPA-450/4-91-016) were evaluated for emission estimates for the Washington, D.C. MSA ozone nonattainment area. Where sources were not estimated to produce emissions during the summer ozone season, the estimate is equal to zero.

3.2.2 Emission Estimation Approach

Area source estimates were generally calculated using the recommended guidance in the EPA Procedures document. Exceptions to the recommended approaches, and selection of the approach, are detailed in the individual source category discussions.

3.3 Summary of Emission Results for Area Sources

A detailed breakout of pollutant type by source category and jurisdiction can be found in the appendix of this document.

3.4 Discussion of Area Source Categories

3.4.1 Gasoline and Diesel Distribution

3.4.1.1 Tank Truck Unloading (Stage I)

Most gasoline dispensing outlets emit less than 10 tons VOC per year and therefore are generally inventoried using area source methods. One of the sources of such VOC emissions at gasoline dispensing outlets is the vapor lost during tank truck unloading into underground storage tanks. The amount of vapor lost is dependent upon the filling method used for the storage tank in question.

METHOD AND DATA SOURCES:

Staff followed the procedures and methods set forth in Procedures Volume I, section 4.2.2.1.

Data for fuel sales were obtained from state fuel sale data (gallons) and were apportioned to each county in the nonattainment area. In Maryland, fuel use was apportioned using the percentage of motor vehicles registered in the county from the total of all vehicles registered in the state. In Virginia, apportionment by county was done by using county retail fuel sales, obtained from 1997 Census of Retail Trade, as a percentage of states retail fuel sales. These percentages were applied to statewide fuel sales data to obtain the county estimates.

After apportionment by county/city, the data were further broken down according to filling methods: submerged, balanced submerged, and splash. Since "balanced submerged" is the only controlled filling method, it was the only method for which control efficiency, rule penetration and rule effectiveness were calculated.

Emissions factors taken from AP-42, Table 4.4-7, were adjusted based upon a regional measured gasoline RVP of 6.8 psi and a study temperature of 82 degrees F. A 365 days/year (30.42 days/month) activity period was used based on the recommendation of DC-MD-VA air management staff. See the 1990 Inventory for a detailed explanation of these calculations in Attachment A beginning on Page 3-5.

Factors:

Filling Method	Filling Method Apportionment (Nonattainment area)			Filling Losses (lbs/kgal)
	DC	MD Core	VA	
Balanced Submerged	100%	100%	100%	6.0

Emission Controls	Rule Penetration	Control Efficiency	Rule Effectiveness
Stage I Vapor Recovery	(Balanced Submerged only)		
-- District	100%	95%	80%
-- Maryland	100%	90%	91%
-- Virginia	100%	90%	70%
Unit Conversion Factor	0.0005 tons/lb		
Activity Days per Period	30.42 days/month		

Equation:

SFS x (CRS/SRS) x [(FM1 x EF1) + {[1 - (CP x CE x RE)] x (FM2 x EF2)}
+ (FM3 x EF3)] x CF / AD = E

SFS State Fuel Sales
CRS County Service Station Retail Sales
SRS State Service Station Retail Sales
CP Control Penetration
CE Control Efficiency
RE Rule Effectiveness
FM1 Submerged Filling Method Apportionment Factor
FM2 Balanced Submerged Filling Method Apportionment Factor
FM3 Splash Filling Method Apportionment Factor
EF1 Submerged Filling Emissions Factor
EF2 Balanced Submerged Filling Emissions Factor
EF3 Splash Filling Emissions Factor
CF Units Conversion Factor
AD Activity Days Per Period
E Total Emissions

Summary of Jurisdictional Estimates, Tank Truck Unloading (tons/day):

Jurisdiction	VOC
District of Columbia	0.058
Calvert County	0.050
Charles County	0.070
Frederick County	0.130
Montgomery County	0.470
Prince George's County	0.400
Arlington County	0.317
Alexandria	0.223
Fairfax County	1.690
Loudoun County	0.290
Prince William County	0.660
Stafford County	0.269
Region Total	4.627

3.4.1.2 Vehicle Fueling (Stage II) and Underground Tank Breathing

VOC emissions from gasoline dispensing outlets are typically less than 10 tons per year, and therefore are inventoried with area sources. Much of the VOC emissions at a gasoline dispensing outlet come from vehicle fueling and underground tank breathing. Vehicle fueling displaces vapors from the vehicle's tank into the atmosphere, and also results in drip and spit-back spillage. Tank breathing results when gasoline is drawn out of the tanks (and into the pump lines), and air moves into the tank, evaporating gasoline and emitting vapors in the process.

METHOD AND DATA SOURCES:

Staff followed the methods detailed in Procedures, Volume I, section 4.2.2.2. The emissions from vehicle fueling (stage II) and underground tank breathing were calculated separately.

Data for fuel sales were obtained from state fuel sale data (gallons) and were apportioned to each county in the nonattainment area. In Maryland, fuel use was apportioned using the percentage of motor vehicles registered in the county from the total of all vehicles registered in the state. In Virginia, apportionment by county was done by using county retail fuel sales, obtained from 1997 Census of Retail Trade, as a percentage of states retail fuel sales. These percentages were applied to statewide fuel sales data to obtain the county estimates.

State regulations were consulted for data on tank breathing, refueling vapor displacement and refueling spillage, and information on control efficiency, rule penetration and rule effectiveness. Staff used a 30.42-day (365/12) activity month. Emissions factors were taken from AP-42 for underground tank breathing, Table 4.4-7, and were adjusted based upon a measured regional gasoline RVP of 6.8 psi and a study temperature of 82 degrees F. Emission factors used in the estimation of emissions from vehicle fueling was determined by running MOBILE6.2. These factors were multiplied by gallons of gasoline by county for the District and Virginia and by total VMT for Maryland and summed for the region.

Factors:

Emissions	
Underground Tank Breathing	0.8 lbs VOC/kgal – DC 0.717 lbs VOC/kgal - VA 1.0 lbs VOC/kgal - MD

Emission Controls	Rule Penetration	Control Efficiency	Rule Effectiveness
Stage II Vapor Recovery			
-- District	100%	90%	80%
-- Virginia	100%	70%	80%

-- Maryland	100%	70%	80%
Unit Conversion Factor			0.0005 tons/lb
Activity Days per Period			30.42 days/month

Equation:

District of Columbia

$$SFS \times (CRS/SRS) \times (EF1 + [EF2 \times (1 - (RP \times CE \times RE))]) \times CF / AD = E$$

All Other Jurisdictions

$$SFS \times (CRS/SRS) \times (EF1 + EF2) \times CF / AD = E$$

SFS State Fuel Sales
CRS County Service Station Retail Sales
SRS State Service Station Retail Sales
EF1 Underground Tank Breathing Emissions Factor
EF2 Uncontrolled Refueling Displacement Emissions Factor
RP Rule Penetration
CE Control Efficiency
RE Rule Effectiveness
CF Units Conversion Factor
AD Activity Days Per Period
E Total Emissions

Summary of Jurisdictional Estimates (tons/day) For Vehicle Fueling (Stage II):

Jurisdiction	VOC
District of Columbia	0.378
Calvert County	0.110
Charles County	0.190
Frederick County	0.430
Montgomery County	1.160
Prince George's County	1.380
Arlington County	0.221
Alexandria	0.121
Fairfax County	1.388
Loudoun County	0.281
Prince William County	0.399
Stafford County	0.193
Region Total	6.251

Summary of Jurisdictional Estimates (tons/day) For Underground Tank Breathing:

Jurisdiction	VOC
District of Columbia	0.018
Calvert County	0.052
Charles County	0.080
Frederick County	0.137
Montgomery County	0.503
Prince George's County	0.424
Arlington County	0.146
Alexandria	0.103
Fairfax County	0.781
Loudoun County	0.134
Prince William County	0.305
Stafford County	0.124
Region Total	2.807

3.4.1.3 Losses from Gasoline Tank Trucks in Transit

DESCRIPTION:

Breathing losses from tank trucks during the transport of gasoline are caused by leaking delivery trucks, pressure in the tanks, and thermal effects on the vapor and on the liquid. A worst case situation arises if a poorly sealed tank has been loaded with gasoline and pure air becomes saturated. During the vaporization process, pressure increases and venting occurs.

METHOD AND DATA SOURCES:

Staff followed the methods detailed in Procedures Volume I, section 4.2.2.3.

Data for fuel sales were obtained from state fuel sale data (gallons) and were apportioned to each county in the nonattainment area. In Maryland, fuel use was apportioned using the percentage of motor vehicles registered in the county from the total of all vehicles registered in the state. In Virginia, apportionment by county was done by using county retail fuel sales, obtained from 1997 Census of Retail Trade, as a percentage of states retail fuel sales. These percentages were applied to statewide fuel sales data to obtain the county estimates.

County/city distributions were then multiplied by 1.25, to reflect an EPA estimate (Procedures, Volume I, section 4.2.2.3) that nationally 25% of all gasoline consumed goes through bulk facilities.

For an activity period, a 30.42-day (365/12) month was used as recommended assumed. Emissions factors taken from AP-42, Table 4.4-5, were adjusted based upon a regional measured RVP of 6.8 psi and a study temperature of 82 degrees F. State/District data on control efficiencies, rule penetration and rule effectiveness were used in the calculations.

Factors:

Tank Truck Emissions	
Loaded	0.005 lbs VOC/kgal Maryland 0.007 lbs VOC /kgal Virginia 0.005 lbs VOC/kgal District
Unloaded	0.055 lbs VOC /kgal Maryland 0.079 lbs VOC/kgal Virginia 0.055 lbs VOC/kgal District
Bulk Facility Throughput Factor	1.25
Units Conversion Factor	0.0005 tons/lb
Activity Days Per Period	26.0 days/month

Emission Controls	Rule Penetration	Control Efficiency	Rule Effectiveness
Vapor Recovery Systems			
-- District	100%	95%	80%
-- Maryland	100%	90%	91%
-- Virginia	80%	90%	80%

Equation:

$$[SFS \times (CRS/SRS)] \times TAF \times (EF1 + EF2) \times [1 - (CE \times RP \times RE)] \times CF / AD = F$$

SFS State Fuel Sales
CRS County Service Station Retail Sales
SRS State Service Station Retail Sales
TAF Bulk Facility Throughput Adjustment Factor
EF1 Loaded Tank Truck Emissions Factor
EF2 Empty Tank Truck Emissions Factor
RP Rule Penetration
CE Control Efficiency
RE Rule Effectiveness
CF Units Conversion Factor
AD Activity Days Per Period
E Total Emissions

Summary of Jurisdictional Estimates, Losses from Gasoline Tank Trucks in Transit (tons/day)

Jurisdiction	VOC
District of Columbia	0.017
Calvert County	0.005
Charles County	0.008
Frederick County	0.014
Montgomery County	0.051
Prince George's County	0.042
Arlington County	0.005
Alexandria	0.004
Fairfax County	0.029
Loudoun County	0.005
Prince William County	0.011
Stafford County	0.005
Region Total	0.196

3.4.1.4 Aircraft Refueling

DESCRIPTION:

Jet kerosene, jet naphtha and aviation gasoline are the three most common types of aircraft fuels used in the United States. Emissions occur when the aircraft's tank is refilled, as vapor-laden air in the fuel tank is displaced to the atmosphere.

METHOD AND DATA SOURCES:

Staff followed the methods detailed in Procedures, section 4.2.3.

Virginia's emissions were grown from 1990 data using an employment-based growth factor (Round 6.3) for each jurisdiction. See the 1990 Inventory for additional details for 1990 emissions.

Maryland obtained aircraft fuel sales from 1999 State Energy Data Report, Table 141 -Transportation Energy Consumption Estimates Preliminary Data. Operations counts were based on information provided by airport managers/personnel, military refueling contractors, or taken from the 1990 Inventory.

Refueling emissions factors were computed from AP-42, page 4.4-5, Equation 1. The splash loading saturation factor was taken from AP-42, Table 4.4-1. True vapor pressure and molecular weight data based upon a regional measured gasoline RVP of 8.2 were extrapolated from AP-42, Table 4.3-2. The assumed study temperature was 83 degrees Fahrenheit. For the activity period, a 365-day year was assumed.

Factors:

Fuel Type	True Vapor Pressure 83 Degrees F (psia)	Molecular Weight 83 Degrees F (lbs/lbmol)
a-Jet Kerosene (JP-5)	0.017 – VA 0.0085 – MD	130 – VA 130 – MD
b-Aviation Gasoline	5.2 – VA 6.9 – MD	67 – VA 62 – MD
c-Jet Naptha (JP-4)	2.1 – VA 1.3 – MD	80 – VA 80 – MD
Splash Loading Saturation Factor	1.45 VA and MD	
Study Temperature	543 degrees R – VA 530 degrees R - MD	

$$EF = 12.46 \times S \times P_i \times M_i / T$$

i Fuel Type
EF Refueling Emissions Factor (lbs VOC/kgal)

S Splash Loading Saturation Factor
P True Vapor Pressure
M Molecular Weight
T Study Temperature

Units Conversion Factor	0.0005 tons/lb
Activity Days per Period	365 days/year

Equation:

$$SFS_a \times (PTA_c / STA_c) \times (CTA_c / MTA_c) \times EF_a \times CF / AD = E_a$$

$$SFS_b \times (PTA_d / STA_d) \times (CTA_d / MTA_d) \times EF_b \times CF / AD = E_b$$

$$E_a - E_b = E$$

c Air Carriers/Air Taxis/Military
d General Aviation
SFS State Aircraft Fuel Sales
PTA MSA's Pardon of State Aircraft Activity (FAA Air Traffic Activity)
STA State Aircraft Activity (FAA Air Traffic Activity)
CTA County Aircraft Activity (Airport Activity Statistics and States)
MTA MSA Aircraft Activity (Airport Activity Statistics and States)
EF Refueling Emissions Factor
CF Units Conversion Factor
AD ActivIty Days Per Period
E Total Emissions

Summary of Jurisdictional Estimates, Aircraft Refueling (tons/day)

Jurisdiction	VOC
District of Columbia	0
Calvert County	0
Charles County	0.001
Frederick County	0.004
Montgomery County	0.003
Prince George's County	0.005
Arlington County	0.023
Alexandria	0
Fairfax County	0.018
Loudoun County	0.034
Prince William County	0.014
Stafford County	0
Region Total	0.102

3.4.1.5 Petroleum Vessel Loading and Unloading Losses

DESCRIPTION:

Evaporative VOC emissions from oceanic ships and barges carrying petroleum liquids result from loading losses, ballasting losses and transit losses. Loading losses are the primary source of evaporative emissions from marine vessel operations. However, it was assumed that very little loading activity occurred in the region and that most emissions resulted from ballasting activities associated with fuel delivery. Ballasting emissions occur as vapors inside empty cargo tanks are displaced by ballast water pumped into the tanks to provide stability for the departing vessel.

METHOD AND DATA SOURCES:

Staff followed the methods detailed in Procedures, section 4.2.4.

Vessel fuel payload data were taken from the U.S. Army Corps of Engineers' 1989 Waterborne Commerce of the United States using sites that are known to be in the MSA.

True vapor pressures were extrapolated from AP-42, Table 4.3-2, based upon a measured regional gasoline RVP of 6.8 and a study temperature of 82 degrees F. It was assumed that vessels arrived full (arrival ullage = 2ft) and that they were ballasted to 20 percent of capacity when emptied. Emission were computed from AP-42, page 4.4-10, Equation 4. For an activity period, a 365-day year was assumed.

Factors:

Fuel Type	True Vapor Pressure at 83 Degrees F (psia)
a-Jet Kerosene	0.017
b-Distillate Fuel Oil	0.013
c-Residual Fuel Oil	0.0001
d-Gasoline	6.2
Arrival Ullage	2 feet

$$EF_i = 0.31 + (0.20 \times P_i) + (0.01 \times P_i \times U)$$

i Fuel Type
P True Vapor Pressure at 83 Degrees F
U Arrival Wage
EF Tanker Ballasting Emissions Factor In lbs VOC/kgal

Vessel Capacity Ballasted	20%
Units Conversion Factor	0.0005 tons/lb
Activity Days per Period	365 days/year
Units Conversion Factor (1/Density)	
CFa Jet Kerosene	0.29
CFb Distillate Fuel Oil	0.28
CFc Residual Fuel Oil	0.25
CFd Discharged Gasoline	0.36

Equation:

$$(DC_a \text{ X } EF_a \text{ x } CP_a) + (DC_b \text{ x } EF_b \text{ x } CF_b) + (DC_c \text{ x } EF_c \text{ x } CF_c) + (DC_d \text{ x } EF_d \text{ x } CF_d)] \text{ x VCB x CF1 x CF2 / AD = E}$$

DC Discharged Cargo in Tons
EF Ballasting Emissions Factor
VCB Vessel Capacity Ballasted
CF Units Conversion Factor (kgal/ton)
CF2 Units Conversion Factor (.0005 tons/lb)
AD Activity Days Per Period
E Total Emissions

Summary of Jurisdictional Estimates, Petroleum Vessel Loading and Unloading Losses (tons/day)

Jurisdiction	VOC
District of Columbia	0.013
Calvert County	0
Charles County	0.201
Frederick County	0
Montgomery County	0
Prince George's County	0
Arlington County	0
Alexandria	0
Fairfax County	0
Loudoun County	0
Prince William County	0
Stafford County	0
Region Total	0.214

3.4.2 Stationary Source Solvent Evaporation

3.4.2.1 Dry Cleaning

Dry cleaning facilities are no longer accounted for in the inventory, per EPA guidance. Emissions are negligible due to controls required in the period since the 1990 inventory. These controls virtually eliminate perchloroethlyene emissions from dry cleaning machines by recapturing vapors.

3.4.2.2 Surface Cleaning

DESCRIPTION:

In the area source category, there are two types of surface cleaning: cold cleaning and small-scale vapor cleaning. Cold cleaning is seen primarily at auto repair stations or manufacturing facilities, where solvents at room temperature (or slightly warmed) are used to clean parts via immersion or rinsing. Vapor cleaning involves heating the solvent, which is sprayed onto the part to be cleaned in order to dissolve the foreign material.

METHOD AND DATA SOURCES:

Staff followed the methods detailed in Procedures, section 4.3.2.2 and other methods developed since the 1990 Inventory. Virginia applied emission factors from Procedures, on an employment basis. Maryland and District applied EEIP population-based factors.

In Virginia, employment data for automobile repair (SIC codes 417,423,551-2,554-6 and 753), manufacturing (SIC codes 25 and 33-39), and electronics/technical operations (SIC code 36) were used. Staff assumed that no solvents were destroyed or removed as waste, and that there had been no solvent recycling. Staff also assumed that the surface cleaning sources were uncontrolled. For an activity period, a 312-day year was assumed.

Employment figures for facilities included in the point source inventory were subtracted from the County Business Patterns employment figures to prevent double-counting of emissions.

Factors:

Virginia	
Automobile Repair – Cold Cleaning	270.0 lbs/employee
Manufacturing – Open Top Vapor	24.0 lbs/employee
Electronics – In-Line Vapor	29.0 lbs/employee
Maryland	
Combined	4.03 lbs/capita
District of Columbia	
Combined	4.03 lbs/capita

Emission Controls	Rule Penetration	Control Efficiency	Rule Effectiveness
Vapor Recovery			
-- District	0%	0%	0%
-- Maryland	100%	67%	80%
-- Virginia	0%	0%	0%
Solvents Removed as Waste			0%
Units Conversion Factor			0.0005 tons/lb
Activity Days Per Period			312 days/year

Equation:

$$\{[(EM1 - PE1) \times (EF1 + EF4)] + [(EM2 - PE2) \times (EF2 + EF4)]$$

$$+ [(EM3 – PE3) \times EF3]\} \times (1 - SR) \times [1 – (RP \times CE \times RE)]$$

$$\times CF / AD = E$$

EM1 Auto Repair Employment (SIC Codes 417, 423, 551-2, 554-6, 753)
PE1 Point Source Auto Repair Employment
EM2 Manufacturing Employment (SIC Codes 25, 33-39)
PE2 Point Source Manufacturing Employment
EM3 Electronics Employment (SIC Code 36)
PE3 Point Source Electronics Employment
EF1 Automobile Repair Cold Cleaning Emissions Factor
EF2 Manufacturing Cold Cleaning Emissions Factor
EF3 Electronics Vapor and In-Line Cleaning Emissions Factor
EF4 Automobile Repair and Manufacturing Vapor and in-Line Cleaning Emissions Factor
SR Solvent Removed as Waste or Destroyed
CE Vapor Recovery Control Efficiency
RP Rule Penetration
RE Rule Effectiveness
CF Units Conversion Factor
AD Activity Days Per Period
E Total Emissions

Summary of Jurisdictional Estimates, Surface Cleaning (tons/day):

Jurisdiction	VOC
District of Columbia	0.606
Calvert County	0.259
Charles County	0.413
Frederick County	0.669
Montgomery County	2.910
Prince George's County	2.664
Arlington County	0.027
Alexandria	0.019
Fairfax County	0.258
Loudoun County	0.073
Prince William County	0.117
Stafford County	0.015
Region Total	8.030

3.4.2.3 Surface Coating

DESCRIPTION:

Surface coating includes paints, enamels, varnishes, lacquers and other product finishes. Same of those coatings contain a solvent-based liquid carrier; others use a water-based liquid carrier but still contain a small portion of solvents. Solvents are also used to clean up painting equipment.

The primary types of surface coating applications are architectural coatings, automobile refinishing and traffic paints.

METHOD AND DATA SOURCES:

Staff followed the methods detailed in Procedures, section 4.3.3.2 and EIIP.

For auto refinishing and industrial coating, employment data were used with the emission factors listed in Procedures Table 4.3-6. For architectural coating and traffic paints, population data were used. As an activity period, a 365-day year was used for architectural surface coating, and a 260-day year was used for all other surface coatings.

Employment figures for facilities included in the point source inventory were subtracted from the County Business Patterns employment figures for automobile refinishing and all manufacturing activities to prevent double-counting of emissions.

Because architectural coatings are used more heavily in the ozone season than in the rest of the year, staff applied a seasonal adjustment factor of 1.3 (Procedures Table 5.8.1) to architectural coatings. A consumption-based emission factor was applied, using national consumption data from 1998 apportioned to the county level.

Factors:

Surface Coating Emissions	
Architectural	3.87 lbs VOC/gal – Solvent-based 0.74 lbs VOC/gal – Water-based
Painting of Traffic Markings	0.5 lbs VOC/capita/year – VA Various - MD
Automobile Refinishing	3519 lbs VOC/employee/year – VA 719.1 lbs VOC/employee/year – MD and DC
Wood Furniture & Fixtures	944 lbs VOC/employee/year – VA-MD-DC
Metal Furniture & Fixtures	944 lbs VOC/employee/year – VA-MD-DC
Metal Containers	6029 lbs VOC/employee/year – VA-MD-DC
Motor Vehicles	794 lbs VOC/employee/year – VA-MD-DC
Machinery and Equipment	77 lbs VOC/employee/year – VA-MD-DC
Large Appliances	463 lbs VOC/employee/year – VA-MD-DC
Marine Coatings	308 lbs VOC/employee/year – VA-MD-DC
Rail Coatings	424 lbs VOC/employee/year – VA-MD-DC
Other Coatings	35 lbs VOC/employee/year – VA-MD-DC
Miscellaneous Metal	2877 lbs VOC/employee/year – VA-MD-DC
Factory Finished Wood	131 lbs VOC/employee/year – VA-MD-DC
Electric Insulation	290 lbs VOC/employee/year – VA-MD-DC
Other Product Coatings	0.6 lbs VOC/capita/year – VA-MD-DC
High-Performance Maintenance	0.8 lbs VOC/capita/year – VA-MD-DC
Other Special Purpose Coatings	0.8 lbs VOC/capita/year - VA-MD-DC

Emission Controls	Rule Penetration	Control Efficiency	Rule Effectiveness
Automobile Refinishing			
-- District	100%	80%	100%
-- Maryland	100%	8%	100%
-- Virginia	36%	100%	100%
Industrial Product Coating			
-- District	0%	0%	0%
-- Maryland	100%	20%	100%
-- Virginia	0%	0%	0%

	Seasonal Adjustment Factor	Activity Days Per Period
Architectural Surface Coating	1.3	365 days/year
All Other Sources		260 days/year
Units Conversion Factor		0.0005 tons/lb

Equation:

The 1990 Inventory presents equations for each surface coatings subcategory.

Summary of Jurisdictional Estimates, Surface Coating (tons/day):

Jurisdiction	Arch. Coatings	Highway Marking	Auto Refinishing	Industrial	Special Industry	Total
District of Columbia	2.694	0.369	0.319	0.147	1.236	4.764
Calvert	0.372	0.019	0.072	0.786	0.100	1.349
Charles	0.593	0.022	0.213	0.994	0.159	1.981
Frederick	0.961	0.029	0.307	1.760	0.257	3.314
Montgomery	4.184	0.031	1.029	7.168	1.120	13.532
Prince George's	3.830	0.024	0.818	6.890	1.025	12.587
Arlington	0.901	0.185	0.629	0.066	0.756	2.538
Alexandria	0.616	0.127	0.833	0.093	0.516	2.184
Fairfax	4.834	0.994	3.149	1.014	4.054	14.045
Loudoun	0.924	0.190	1.177	0.255	0.775	3.320
Prince William	1.647	0.339	2.008	0.412	1.381	5.787
Stafford	0.460	0.095	0.219	0.045	0.386	1.204
Total	22.016	2.424	10.773	19.630	11.765	66.605

3.4.2.4 Graphic Arts

DESCRIPTION:

Graphic arts include operations that are involved in the printing of newspapers, magazines, books and other printed materials. In 1989, nationwide graphic arts solvent consumption exceeded 550 million pounds; the majority of those solvents are consumed in printing ink formulations.

There are six basic operations used in graphic arts: lithography, gravure, letterpress, flexography, screen printing and metal decorating. Lithography accounts for nearly half of all graphic arts operations.

METHOD AND DATA SOURCES:

Staff followed the methods detailed in Procedures, Volume I, section 4.3.4.2.

Population data were used with the emission factors listed in Procedures Table 4.3-9. For an activity period, a 260-day year was assumed. Total emissions from facilities included in the point source inventory with annual emissions of less than 100 tons per year were subtracted from the area source inventory.

Factors:

Graphic Arts Emissions		1.3 lbs VOC/capita/year	
Emission Controls	Rule Penetration	Control Efficiency	Rule Effectiveness
Vapor Recovery Systems			
- District	0%	0%	0%
- Maryland	64%	75%	80%
- Virginia	0%	0%	0%
Units Conversion Factor			0.0005 tons/lb
Activity Days Per Period			260 days/year

Equation:

$$(POP \times EF \times [1 - (RP \times CE \times RE)] \times CF / AD) - PE = E$$

POP Population
EF Graphic Arts Emissions Factor
CE Control Efficiency
RP Rule Penetration
RE Rule Effectiveness
CF Units Conversion Factor
AD Activity Days Per Period
PE Point Source Emissions
E Total Emissions

Summary of Jurisdictional Estimates, Graphic Arts (tons/day):

Jurisdiction	VOC
District of Columbia	0.490
Calvert County	0.088
Charles County	0.116
Frederick County	0.204
Montgomery County	0.720
Prince George's County	0.539
Arlington County	0.482
Alexandria	0.329
Fairfax County	2.584
Loudoun County	0.494
Prince William County	0.880
Stafford County	0.246
Region Total	7.172

3.4.2.5 Asphalt Paving

DESCRIPTION:

There are three basic types of asphalt used for paving and roofing. The first, cutback asphalt, is a liquefied road surface prepared by blending (or "cutting back") asphalt cement wit different petroleum distillates. The second type, emulsified asphalt, is also a liquefied road surface, but Is prepared with a water/soap mixture instead of petroleum distillates and relies upon ionic bonding. The third, hot-mix asphalt is heated at a central facility and delivered to a construction site for immediate application. Since cutback asphalt emits large amounts of VOCs, its use has been limited in many areas to "non-ozone season" use (i.e., October through March). Although very few emissions occur on-site from emulsified asphalt use, significant emissions do occur as hot-mix asphalt cools after application.

METHOD AND DATA SOURCES:

Staff followed the methods detailed in Procedures, section 4.3.5.

In Maryland, population data were gathered and used with the emission factor contained in Procedures Table 4.3-10. For an activity period, a 260 day year was assumed.

Virginia uses a consumption-based emission factor and applies that to county asphalt consumption.

Maryland and DC prohibit the use of cutback asphalt in the ozone season. Virginia has minor emissions from cutback asphalt during the ozone season.

Factors:

Emulsified Asphalt Paving Emissions	0.004 lbs VOC/capita – MD and DC 0.219 lbs/ton – VA
Cutback Asphalt Emissions	2.095 lbs/ton – VA
Units Conversion Factor	0.0005 tons/lb
Activity Days	260 days/year

Equation:

$$POP \times EF \times CF / AD = E$$

POP Population
EF Hot-Mix Asphalt Emissions Factor
CF Units Conversion Factor
AD Activity Days Per Period
E Total Emissions

Summary of Jurisdictional Estimates, Asphalt Paving (tons/day):

Jurisdiction	VOC
District of Columbia	0.005
Calvert County	0.001
Charles County	0.001
Frederick County	0.002
Montgomery County	0.000
Prince George's County	0.006
Arlington County	0
Alexandria	0
Fairfax County	0.002
Loudoun County	0
Prince William County	0
Stafford County	0.008
Region Total	0.025

3.4.2.6 Pesticide Application

DESCRIPTION:

Pesticides broadly include any substances used to kill or retard the growth of insects, rodents, fungi, weeds, or microorganisms. The pest-killing compounds in pesticide formulations are labeled as "active" Ingredients, and the solvents acting as carriers or diluents for the ingredients are labeled as "inert'. Both the active and the inert ingredients of the pesticides are considered reactive in the formation of tropospheric ozone.

The pesticide usage can be broadly divided into agricultural and non-agricultural. The non agricultural use of pesticide is to control mosquitoes, insects that threaten trees, and weed growth in shallow lakes or marches.

Herbicide application has been included based on the presumption that herbicides are applied during the peak growing season, which is concurrent with the peak ozone season.

METHOD AND DATA SOURCES:

Staff followed the methods detailed in Procedures, section 4.3.6.

Pesticide application data were gathered for the categories of agriculture, industrial/commercial/governmental, and residential (home and garden). The amount (pounds) of active ingredients applied per county was determined. The vapor pressure, percentage of inert ingredients, and application method were considered.

As recommended in Procedures, active ingredient application figures were multiplied by 2.45 to estimate usage figures reflecting both the active ingredients and the photochemically reactive "inert" ingredients of the pesticides. For an activity period, a 312-day year was assumed.

Procedures notes that 100 percent of the organic components evaporate suggesting that the emission factor should be 1 lb of VOC per pound.

Emissions in DC were based on 1990 emissions assuming no growth.

Factors:

Organic Content Adjustment Factor	2.45 lbs/lb active ingredient
Pesticide Emissions Factor	1.0 lbs VOC/lb
Seasonal Adjustment Factor	1.3
Units Conversion Factor	0.0005 tons/lb
Activity Days Per Period	312 days/year

Equation:

$$CPA \times OCF \times EF \times SAF \times CF / AD = E$$

CPA County Annual Pesticide Use (lbs active ingredient)
OCF Organic Content Adjustment Factor
EF Emissions Factor
SAF Seasonal Adjustment Factor
CF Units Conversion Factor
AD Activity Days Per Period
E Emissions (tons per day)

Summary of Jurisdictional Estimates, Pesticide Application (tons/day):

Jurisdiction	VOC
District of Columbia	0.015
Calvert County	0.141
Charles County	0.135
Frederick County	1.765
Montgomery County	1.400
Prince George's County	0.645
Arlington County	0.892
Alexandria	0.583
Fairfax County	5.106
Loudoun County	1.577
Prince William County	1.800
Stafford County	0.537
Region Total	14.596

3.4.2.7 Commercial/Consumer Solvent Use

DESCRIPTION:

Certain commercial/consumer uses of products containing volatile organics cannot easily be identified by usual inventory procedures yielding locale-specific emission estimates. This category includes the following commercial/consumer subcategories: household products, toiletries, aerosol products, rubbing compounds, windshield washing fluids, polishes and waxes, non-industrial adhesives, space deodorants, moth control, and laundry detergents and treatments.

This category does not include the following subcategories: small cold cleaning degreasing operations; dry cleaning plants; auto refinishing shops; architectural surface coating applications; graphics arts plants; cutback asphalt paving applications; and agricultural and municipal pesticide applications.

METHOD AND DATA SOURCES:

Staff followed the methods detailed in Procedures, section 4.3.7.

Population data were gathered and used with the emission factors contained in Procedures section 4.3.7 and AP-42, Appendix A conversion tables. For an activity period, a 365-day year was assumed. A conversion factor of 0.005 was used.

Virginia applied a factor of 6.2 lbs/capita, with:

- reactivity = 100%
- control efficiency = 20%
- rule effectiveness = 100%
- rule penetration = 100%

Maryland and District applied a factor of 7.84 lbs per person to determine uncontrolled emissions and subtracted a controlled subset of consumer solvent use of 20% that has an emission factor of 3.9 lbs/capita.

Equation:

Virginia:

$$POP \times EF \times CF / AD = E$$

Maryland and DC:

$$(POP \times EF_U \times CF / AD) + (POP \times EF_C \times CF \times 0.20 / AD) = E$$

POP Population
EF Comm./Cons. Solvent Use Emissions Factor
EF_U Uncontrolled Comm./Cons. Solvent Use Emissions Factor

EF_C Controlled Comm./Cons. Solvent Use Emissions Factor
CF Units Conversion Factor
AD Activity Days Per Period
E Total Emissions

Summary of Jurisdictional Estimates, Commercial/Consumer Solvent Use (tons/day):

Jurisdiction	VOC
District of Columbia	5.668
Calvert County	0.782
Charles County	1.248
Frederick County	2.022
Montgomery County	8.802
Prince George's County	8.057
Arlington County	1.863
Alexandria	1.273
Fairfax County	9.995
Loudoun County	1.910
Prince William County	3.405
Stafford County	0.951
Region Total	45.976

3.4.2.8 Synthetic Organic Chemical Storage Tanks

DESCRIPTION:

Chemical manufacturers make organic chemicals for a variety of end-users. Manufacturers of such chemicals are generally located around industrialized areas, or anywhere else that base chemicals are readily available. End-users may be more concentrated in industrialized areas. The synthesized chemicals may be stored by the manufacturer before distribution, by chemical wholesalers or intermediaries, or by the final consumer.

VOCs are emitted during the manufacture process, upon decanting to storage tanks, upon decanting to transport vessels, and during storage. Individual storage tanks generally emit negligible amounts of VOCs, and thus are inventoried as area sources. However, these tanks are often located in facilities containing many such tanks. When these facilities emit 25 tons VOCs/year or more, they are inventoried as point sources.

METHOD AND DATA SOURCES:

It was determined in the 1990 Inventory that there are no synthetic organic chemical manufacturers in the Washington, DC MSA. It was also observed that most of the end-users in the MSA are dry cleaners, printers, automobile refinishers, surface cleaners and surface coaters. Storage at these end-users will generally be in drums rather than tanks. Thus, it was concluded that any emissions at these end-users will be captured as their source-specific area sources.

Hence, Synthetic Organic Chemical Storage Tanks were not inventoried as an independent area source.

3.4.2.9 Barge, Tank, Tank Truck, Rail Car and Drum Cleaning

DESCRIPTION:

Barges, tanks, tank trucks, rail cars and drums are used to transport a broad range of commodities. Rail tank cars and most tank trucks and drums are in dedicated service (carrying one commodity only) and, unless contaminated, are cleaned only prior to repair or testing. Non-dedicated tank trucks and drums are cleaned after every trip.
Cleaning activities may be interrupted due to extreme weather conditions when the ambient temperature is either higher than the flash point or below the freezing point of either the compound or the cleaning agent. Cleaning agents include water, steam, detergents, bases, adds and solvents.

The cleaning of these transport vessels may result in emissions of VOC, NOx and PM1O. Emissions types and levels depend on the commodity transported, the cleaning agent and the management of chemical residues. Emissions associated with the chemical residue depend on the compound and the quantity remaining in the container. They may be affected both by viscosity and vapor pressure. Emissions associated with cleaning agents used to dean the vessels depend primarily on the type of agent used, quantity, ambient temperature and recovery method.

METHOD AND DATA SOURCES:

This category is accounted for in Publicly Owned Treatment Works.

3.4.3 Bioprocess Sources

3.4.3.1 Bakeries

DESCRIPTION:

Bakeries emit VOCs, primarily ethanol formed by yeast fermentation of bread or dough, during the baking process. Ethanol is emitted through a vent, along with any combustion gases. Large commercial bakeries are typically inventoried as point sources. Smaller in-store and neighborhood bakeries have lower emissions, and thus are considered area sources.

METHOD AND DATA SOURCES:

Staff followed the methods detailed In an April 24, 1992 Memorandum from Lucy Adams of Radian.

Virginia used per capita emission factors (shown in the table below) and multiplied these by population per county. Maryland and DC used an employment-based emission factor from Table 3 of the above source. For each county, Maryland compiled the number of employees in SIC codes 5460 (or 5461) - Retail Bakeries, and 2050 (or 2051) - Commercial Bakeries.

Factors:

Emissions Factor	0.31 lbs VOC/capita – VA 0.11 tons VOC/employee – MD and DC
Activity Days Per Period	312 days/year – VA 260 days/year – MD and DC
Units Conversion Factor	0.0005 tons/lb

Equation:

Virginia:

$$POP \times EF \times UF / AD = E$$

Maryland and DC:

$$EMP \times EF \times UF / AD = E$$

POP County Population
EF Emission Factor
EMP Employees
UF Units Conversion Factor
AD Activity Days Per Period
E Emissions

Summary of Jurisdictional Estimates, Bakeries (tons/day):

Jurisdiction	VOC
District of Columbia	0.178
Calvert County	0.000
Charles County	0.010
Frederick County	0.000
Montgomery County	0.367
Prince George's County	0.036
Arlington County	0.096
Alexandria	0.065
Fairfax County	0.513
Loudoun County	0.098
Prince William County	0.175
Stafford County	0.049
Region Total	1.587

3.4.3.2 Breweries

DESCRIPTION:

During the fermentation process, breweries will emit ethanol and other VOCs. Because of their relatively large emissions, large-scale commercial breweries will be inventoried as point sources. Microbreweries and brewpubs will emit lower levels of VOCs, however, and thus must be inventoried as area sources.

METHOD AND DATA SOURCES:

Staff followed guidance provided in a February 5, 1992 Memorandum from Lucy Adams at Radian. The guidance requires inquiries into a brewery's annual production and the types of brewing process structures it uses.

In Maryland and Virginia, gallons of beer brewed per county were obtained and multiplied by the emission factors used in each jurisdiction. In the District, emissions were grown from the 1990 Inventory.

Factors:

Emissions	0.0043656 lbs VOC/barrel – VA 0.0018303 lbs VOC/barrel– MD 0.001982 kg VOC/barrel
Activity Days Per Period	156 days/ozone season – VA and DC 120 days/ozone season – MD
Units Conversion Factor	0.0005 tons/lb

Equation:

$$CBP \times EF \times UF / AD = E$$

CBP Ozone Season County Beer Production (barrels)
EF Emission Factor
UF Units Conversion Factor
AD Activity Days Per Period
E Emissions

Summary of Jurisdictional Estimates, Breweries (tons/day):

Jurisdiction	VOC
District of Columbia	0
Calvert County	0
Charles County	0
Frederick County	0.004
Montgomery County	0
Prince George's County	0
Arlington County	0
Alexandria	0
Fairfax County	0
Loudoun County	0
Prince William County	0
Stafford County	0
Region Total	0.004

3.4.3.3 Wineries

DESCRIPTION:

Like beer, wine will emit ethanol during its fermentation. The emissions vary, depending upon the type of wine (red vs. white), the fermentation temperature and the sugar content of the grape(s) used.

METHOD AND DATA SOURCES:

Staff followed the methods detailed in the 3/10/92 Memorandum from Lucy Adams of Radian. The Memorandum requires inquiries into the gallons and types of wine produced at each winery (red vs. white), and the fermentation period for each type.

Emissions from the 1990 Inventory were grown. Staff assumed that there are no wineries in the District of Columbia. Daily emissions for this category were insignificant. Thus, no emissions are reported.

Factors:

Fermentation Emissions	
- White Wine	0.00176 lb/VOC/gal
- Red Wine	0.00552 lb VOC/gal
Activity Days Per Period	61 days/season
Units Conversion Factor	0.0005 tons/lb

Equation:

$$[(CWP_a \times EF_a) + (CWP_b \times EF_b)] \times UF / AD = E$$

a White Wine
b Red Wine
CWP Ozone Season County Wine Production (gallons)
EF Emission Factor
UP Units Conversion Factor
AD Activity Days Per Period
E Emissions

Summary of Jurisdictional Estimates, Wineries (tons/day):

Jurisdiction	VOC
District of Columbia	0
Calvert County	0
Charles County	0
Frederick County	0
Montgomery County	0
Prince George's County	0
Arlington County	0
Alexandria	0
Fairfax County	0
Loudoun County	0
Prince William County	0
Stafford County	0
Region Total	0

3.4.3.4 Distilleries

DESCRIPTION:

Ethanol emissions are the largest component of the VOCs emitted from distilleries. Distilleries produce both grain alcohol for industrial and fuel purposes, and distilled spirits such as whiskey and brandy for consumption purposes. The emissions points In the distilled spirits manufacturing process are likely to be the same as in breweries and wineries, with the aging process as an additional source of emissions.

METHOD AND DATA SOURCES:

No distilleries operated in the Washington, DC-MD-VA MSA during 2002.

3.4.4 Waste Management Practices

3.4.4.1 Publicly Owned Wastewater Treatment Works (POTWs)

DESCRIPTION:

Research indicates that when a POTW's influent is heavily laden with chemicals, nearly 85% of those chemical pollutants will be stripped to the ambient air. Hence, POTW's VOC emissions are directly related to the amount of industrial contribution to POTW Influent.

METHOD AND DATA SOURCES:

The 1990 Inventory relied upon the work of a contractor to inventory POTW emissions. The contractor first compared the accuracy of the Surface Impoundment Modeling System (SIMS) against estimates based on total industrial flow per POTW, multiplied by an EPA emissions factor. The SIMS method was found to be more accurate, as the emissions factor estimation system was seen as overestimating actual emissions. Thus, the SIMS data was used for Washington, DC MSA POTW emissions.

The contractor attempted to use source-specific data wherever possible, contacting each POTW in the area. When data could not be obtained directly from a POTW, average industrial contribution was applied, along with device parameters (or, treatments) from a typical POTW collection and treatment scheme, as described in AP-42. The contractor also relied upon approximate impoundment surface areas found in EPA's Background Information Document for Industrial Wastewater (1990).

Because of the direct relation between industrial influent and VOC emissions, and because the Washington, DC MSA is a relatively non-industrial area, the VOC emissions from POTWs in this MSA are fairly minor. The largest POTW facility, and the majority of the regions flow rate, has an industrial flow component of approximately 2 percent and produces total VOC emission well below a point source threshold.

In Virginia, 1990 emissions were grown using employment-based growth factors for developing the 2002 emissions for this category. In Maryland, and EPA-derived emission factor was applied to industrial flow. Maryland used an emission factor of 0.00011 lbs VOC/gallon of wastewater. Daily industrial flow to POTW was obtained. In areas where industrial flow was not known, Maryland used an EPA estimate of 16% of total annual flow. The Waste and Sewer Authority in Washington, DC provided the 2002 emissions data for POTWs in the District.

Summary of Jurisdictional Estimates, POTWs (tons/day)

Jurisdiction	VOC
District of Columbia	0.031
Calvert County	0
Charles County	0
Frederick County	0.079
Montgomery County	0.078
Prince George's County	0.235
Arlington County	0.001
Alexandria	0.006
Fairfax County	0.002
Loudoun County	0
Prince William County	0
Stafford County	0
Region Total	0.432

3.4.4.2 Industrial Wastewater Treatment

Research was conducted to determine the number of larger VOC-emitting facilities from the SAMS inventory likely to produce industrial wastewater. All of the facilities contacted reported that industrial wastewater was shipped to a treatment facility without pretreatment. This validates the assumption that emissions from industrial wastewater were included in the emissions from publicly owned treatment works. Therefore, there is no need to inventory this source separately.

3.4.4.3 Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDFs)

In the 1990 Inventory, a list of TSDFs in the region was compiled from the RCRIS database. These facilities are primarily involved in temporary storage. Consequently, it was determined that TSDFs are not a significant source of VOC emissions in the Washington DC MSA. This also applies for the 2002 Inventory.

3.4.4.4 Municipal Solid Waste Landfills

DESCRIPTION:

Solid waste landfills generate ozone precursor emissions - primarily nonmethane organic compounds (NMOCs) - in one of three ways: (1) volatilization; (2) chemical reaction; and (3) biological decomposition of liquid and solid compounds into other chemical species. Volatilization is affected by partial pressure of the volatile substance, substance concentration at the air/liquid interface, temperature, and confining pressure. Chemical reaction is affected by temperature, waste composition, moisture content, and whether different waste types are disposed of in different areas. Decomposition is affected by nutrient and oxygen availability, refuse composition, landfill age, moisture content, temperature, Ph, and waste that are toxic to bacteria.

METHOD AND DATA SOURCES:

Maryland and Virginia used the Landfill Air Emissions Estimation Model to estimate emissions from the area's solid waste landfills. The model requires landfill-specific data on landfill capacity, landfill age, and total refuse deposited in the study year. The model is more accurate if provided with the rate of refuse deposit, but it can generate that variable if needed. The model will supply defaults for other, more difficult to obtain variables (i.e., chemical composition and air toxics in the landfill, methane generation rate, cellulose content of refuse, and atmospheric factors). There are no landfills in the District of Columbia.

Summary of Jurisdictional Estimates, Municipal Solid Waste Landfills (tons/day)

Jurisdiction	VOC
District of Columbia	0
Calvert County	0.008
Charles County	0.014
Frederick County	0.014
Montgomery County	0.018
Prince George's County	0
Arlington County	0
Alexandria	0
Fairfax County	0.002
Loudoun County	0.003
Prince William County	0.001
Stafford County	0.023
Region Total	0.083

3.4.4.5 Solid Waste Burning

3.4.4.5.1 On-Site Incineration

DESCRIPTION:

Here many jurisdictions allow waste burning in small-scale on-site incinerators. Typically, such incinerators are found at hospitals, nursing homes, veterinarians' offices, funeral homes, biomedical/biotechnological laboratories, and other laboratories. Emissions result from waste combustion.

METHOD AND DATA SOURCES

Staff followed the methods detailed in Procedures, section 4.6.1.

All sources less than 10 tons VOC per year were included. Sources above 10 tons VOC per year will be included in point source inventory.

For the Virginia counties, employment and population data were used with EPA emission factors (AP- 42, Table 2.1-1; Procedures Table 4.6-1) relating to small-scale industrial and commercial on-site incinerators.

For the District of Columbia, there are no registered on-site incineration activities below 10 tons/yr that are not held in the point source category.

A 365-day activity year was assumed.

Factors (Virginia):

Sector	Incinerated Waste	Emission Factors (lbs/ton)	
		VOC	NOx
a-Residential	0.004 tons/capita	15.00	2.00
b-Commercial	0.054 tons/capita	5.94	2.89
c-Industrial	0.560 tons/employee	7.44	2.90
Units Conversion Factor			0.0005 tons/lb
Activity Days Per Period			365 days/year

Equation:

Virginia

$$POP \times [(IC_a \times EF_a) + (IC_b \times EF_b) + (IC_c \times EF_c] \times UF / AD = E$$

POP County Population
IC Incinerated Waste Factor
EF Emissions Factor
UF Units Conversion Factor
AD Activity Days Per Period
E Emissions

Summary of Jurisdictional Estimates, On-Site Incineration (tons/day):

Jurisdiction	VOC	CO	NOx
District of Columbia	0	0	0
Calvert County	0	0	0.001
Charles County	0	0.002	0.001
Frederick County	0.001	0.006	0.016
Montgomery County	0.007	0.156	2.569
Prince George's County	0.003	0.019	0.049
Arlington County	0.117	0.226	0.050
Alexandria	0.079	0.153	0.034
Fairfax County	0.622	1.203	0.264
Loudoun County	0.129	0.248	0.055
Prince William County	0.210	0.406	0.089
Stafford County	0.056	0.109	0.024
Region Total	1.224	2.528	3.152

3.4.4.5.2 Open Burning

DESCRIPTION:

Open burning includes the incineration of solid materials such as wood and leaves as a waste management practice. Emissions result from the materials' combustion.

METHOD AND DATA SOURCES:

Staff followed the methods detailed in Procedures, section 4.6.2.

Open burning permit issuance data were obtained from the county governments in each jurisdiction. There are no emissions from open burning in the District of Columbia for the summer season. Some jurisdictions also provided information on the materials and/or the acreage burned in the permitted fires. Maryland assumed four acres are burned for each permit issued.

Emission factors were taken from AP-42 (Table 2.4.5). A 365-day activity year was assumed.

Factors:

Fuel Loading Factor	70 tons/acre
Emission Factor (lbs/ton)	
-VOC	19
- NOx	4
Activity Days Per Period	365 days/year
Units Conversion Factor	0.0005 tons/lb

Equation:

$$CPI \times ABP \times FLF \times EF \times UF / AD = E$$

CPI County Open Bum Permits Issued
ABP Acres Burned Per Permit
FLF Fuel Loading Factor
EF Emission Factor
UF Units Conversion Factor
AD Activity Days Per Period
E Emissions

Summary of Jurisdictional Estimates, Open Burning (tons/day)

Jurisdiction	VOC	CO	NOx
District of Columbia	0	0	0
Calvert County	0.036	0.261	0.014
Charles County	0.036	0.298	0.017
Frederick County	0.062	0.505	0.029
Montgomery County	0.033	0.215	0.011
Prince George's County	0.001	0.003	0
Arlington County	0	0	0
Alexandria	0	0	0
Fairfax County	0.367	2.704	0.077
Loudoun County	0.208	1.530	0.044
Prince William County	0.090	0.663	0.019
Stafford County	0	0	0
Region Total	0.833	6.179	0.211

3.4.5 Small Stationary Source – Residential/Commercial/Industrial Fuel Combustion

3.4.5.1 Fuel Oil Consumption

DESCRIPTION:

Data collection for fuel oil consumption covers the use of both distillate and residual oil. Distillate oil includes fuel oil grades 1, 2 and 4. Diesel fuel and kerosene also can be considered distillate oils. Nationwide, residential and commercial/institutional sources are the largest consumers of distillate oil. Residual oil includes fuel oil grades 5 and 6. In most areas, residual oil is not used by residential sources, but significant amounts may be consumed by industrial and commercial/institutional users.

METHOD AND DATA SOURCES:

Staff followed the methods detailed in Procedures, section 4.7.1.

Fuel consumption data were obtained and apportioned to the counties by population. For activity periods, a 365-day year was assumed for residential consumption and a 312-day year was assumed for both commercial and industrial consumption. Emissions factors were taken from AP-42 (Table 1.3.1).

Total emissions from sources included in point source files are subtracted from the area source inventory.

Factors:

	Emissions Factor (lbs/kgal)		
Market Sector	**NOx**	**VOC**	**CO**
a-Residential			
Distillate	18 – VA 20 – MD, DC	0.713	5
Residual			
b-Commercial			
Distillate	20	0.34	5
Residual	55	1.13	5
c-Industrial			
Distillate	20	0.2	5
Residual	55	0.25	5

	Seasonal Adjustment Factor (Summer)	Seasonal Adjustment Factor (winter)	Activity Days Per Period (days/year)
Residential	0.3	1.7	365
Commercial	0.6	1.4	312
Industrial	Uniform	Uniform	312
Units Conversion Factor		42 gal/bbl	
Units Conversion Factor		0.0005 tons/lb	

Equation:

$$\{[(((DFC_i + OFC_i) \times (CP / SP)) - PDC_i) \times EF1_i] + [((RFC_i \times (CP / SP)) - PRC_i) \times EF2_i]\} \times SAF_i \times CF1 \times CF2 / AD_i = E_i$$

$$E_a + E_b + E_c = E$$

DFC State Distiliate Fuel Oil Consumption (Grades 1, 2, and 4)
OFC State Diesel Fuel and Kerosene Consumption
PDC Point Source Distillate, Diesel, and Kerosine Fuel ConAunip.
RFC State Residual Fuel Oil Consumption (Grades 5 and 6)
PRC Point Source Residual Fuel Oil Consumption
I Market Sector
SP State Population
CP County Population
EF1 Distillate Fuel Oil Emissions Factor
EF2 Residual Fuel Oil Emissions Factor
SAF Seasonal Adjustment Factor
CF1 Units Conversion Factor (gal/bbl)
CF2 Units Conversion Factor (tons/lb)
AD Activity Days Per Period
E Total Emissions

Summary of Jurisdictional Estimates (tons/day)

Jurisdiction	VOC	CO	NOx
District of Columbia	0.007	0.011	0.044
Calvert County	0.001	0.013	0.059
Charles County	0.003	0.026	0.113
Frederick County	0.004	0.032	0.159
Montgomery County	0.006	0.058	0.249
Prince George's County	0.005	0.052	0.222
Arlington County	0.005	0.064	0.293
Alexandria County	0.003	0.039	0.180
Fairfax County	0.022	0.252	1.144
Loudoun County	0.004	0.046	0.214
Prince William County	0.006	0.063	0.285
Stafford County	0.002	0.017	0.078
Region Total	0.068	0.673	3.040

3.4.5.2 Coal Consumption

DESCRIPTION:

Two types of coal are commonly used: anthracite, or hard coal; and bituminous, or soft coal. Anthracite is mined almost exclusively in Pennsylvania, and is consumed primarily in states within easy shipping distance of PA. Bituminous coal mining is more widespread, and is thus consumed in most areas of the country. Subbituminous coal and lignite are also considered as bituminous coal.

METHOD AND DATA SOURCES:

Staff followed the methods detailed in Procedures, Volume I, section 4.7.2.

Fuel consumption data were obtained and apportioned to the counties by population. For activity periods, a 365-day year was assumed for residential consumption and a 312-day year was assumed for both commercial and industrial consumption. Emissions factors were taken from AP-42 (Table 1.1.1).

Total emissions from sources included in point source files are subtracted from the area source inventory.

Factors:

	Emissions Factor (lbs/ton)		
	VOC	**NOx**	**CO**
Residential			
-Bituminous	10.0	9.1	275
-Anthracite	10.0	9.1	275
Commercial			
-Bituminous	1.3 – VA 0.0675 – MD, DC	9.5 – VA 8.5 – MD, DC	11.0 – VA 8.5 – MD, DC
-Anthracite	1.3 – VA 0.0675 – MD, DC	9.5 – VA 8.5 – MD, DC	11.0 – VA 8.5 – MD, DC
Industrial			
-Bituminous	0.0675	8.5	8.5
-Anthracite	0.0675	8.5	8.5

Market Sector	Seasonal Adjustment Factor (Summer)*	Activity Days Per Period (days/year)
a-Residential	0.3	365
b-Commercial	0.6	312
c-Industrial	Uniform	312
Units Conversion Factor	0.0005 tons/lb	

* MD methodology is based on heating degree days.

Equation:

$$\{[(BCC_i + ACC_i) \times (CP / SP)] - (PBC + PAC)\} \times EF \times SAF \times CF / AD = E_i$$

$$E_a + E_b + E_c = E$$

BCC State Bituminous Coal Consumption
ACC State Anthracite Coal Consumption
PBC Point Source Bituminous Coal Consumption
PAC Point Source Anthracite Coal Consumption
i Market Sector
EF Emissions Factor
CP County Population
SP State Population
SAF Seasonal Adjustment Factor
CF Units Conversion Factor
AD Activity Days Per Period
E Total Emissions

Summary of Jurisdictional Estimates, Coal Consumption (tons/day):

Jurisdiction	VOC	CO	NOx
District of Columbia	0.014	0.396	0.054
Calvert County	0	0	0
Charles County	0	0	0
Frederick County	0	0.006	0.006
Montgomery County	0.001	0.014	0.014
Prince George's County	0	0	0
Arlington County	0.050	0.616	0.584
Alexandria	0.034	0.429	0.407
Fairfax County	0.220	2.779	2.617
Loudoun County	0.059	0.748	0.718
Prince William County	0.064	0.822	0.770
Stafford County	0.018	0.229	0.215
Region Total	0.460	6.039	5.385

3.4.5.3 Natural Gas and Liquefied Petroleum Gas (LPG) Consumption

DESCRIPTION:

The LPG use contribution to total emissions is not significant in most areas. Wherever LPG use is considerable, however, it may be reported as "equivalent natural gas" by assuming for emission calculations that each gallon of LPG is equivalent to 100 cubic feet of natural gas.

METHOD AND DATA SOURCES:

Staff followed the methods detailed in Procedures, Volume I, Section 4.7.1.

Fuel consumption data were obtained and apportioned to the counties by population. For activity periods, a 365-day year was assumed for residential consumption and a 312-day year was assumed for both commercial and industrial consumption. Emissions factors were taken from AP-42, Table 1.4-2, 1.4-3, 1.5-1 (8/82), and 1.5-1 (Supplement E, 10/92). Emissions in the district were grown from the 1990 Inventory using population growth as the surrogate.

Total emissions from sources included in point source files are subtracted from the area source inventory.

Factors:

Market Sector	Emission Factors		
	CO	**NOx**	**VOC**
a-residential			
Natural Gas[1]	11 – VA 40 – MD, DC	94	7.3
Liquid Petroleum Gas[2]	1.9	14	0.5
b-Commercial			
Natural Gas[1]	21	100	5.8 – VA 2.8 – MD, DC
Liquid Petroleum Gas[2]	1.9	14	0.5
c-Industrial			
Natural Gas[1]	35 – VA 21 – MD, DC	140 – VA 100 – MD, DC	5.8 – VA 2.8 – MD, DC
Liquid Petroleum Gas[2]	3.2 – VA 1.9 – MD, DC	19 – VA 14 – MD, DC	0.5

1 - pounds per million cubic feet
2 - pounds per kilo gallon

	Seasonal Adjustment Factor (Summer)	Seasonal Adjustment Factor (winter)	Activity Days Per Period (days/year)
Residential	0.3	1.7	365
Commercial	0.6	1.4	312
Industrial	Uniform	Uniform	312
Units Conversion Factor		42 gal/bbl (LPG only)	
Units Conversion Factor		0.0005 tons/lb	

Equation:

$$\{[((NGC_i \times (CP / SP)) - PNC_i) \times EF1_i] + [((LPC_i \times (CP / SP)) - PLC_i) \times EF2_i \times CF1]\} \times SAF_i \times CF2 / AD = E_i$$

$$E_a + E_b + E_c = E$$

NGC State Natural Gas Consumption
LPC State Liquid Petroleum Gas Consumption
PNC Point Source Natural Gas Consumption
PLC Point Source Liquid Petroleum Gas Consumption
i Market Sector
EF1 Natural Gas Emissions Factor
EF2 Liquid Petroleum Gas Emissions Factor
CP County Population
SP State Population
SAF Seasonal Adjustment Factor
CF1 Units Conversion Factor (gal/bbl)
CF2 Units Conversion Factor (tons/Ib)
AD Activity Days Per Period
E Total Emissions

Summary of Jurisdictional Estimates, Natural Gas and LPG Consumption (tons/day):

Jurisdiction	VOC	CO	NOx
District of Columbia	0.100	1.183	1.843
Calvert County	0.001	0.004	0.020
Charles County	0.003	0.025	0.061
Frederick County	0.007	0.059	0.135
Montgomery County	0.079	0.680	1.366
Prince George's County	0.068	0.591	1.183
Arlington County	0.023	0.148	0.618
Alexandria	0.014	0.093	0.380
Fairfax County	0.094	0.606	2.417
Loudoun County	0.016	0.117	0.455
Prince William County	0.024	0.160	0.605
Stafford County	0.007	0.044	0.166
Region Total	0.436	3.710	9.249

3.4.5.4 Other Fuels Consumption (Residential Wood Burning)

DESCRIPTION:

Many households burn wood in fireplaces or wood stoves for heating or other purposes; some households burn wood in cooking stoves. The combustion of wood generates several pollutants, among them carbon monoxide.

METHOD AND DATA SOURCES:

In the 1990 Inventory, staff relied upon the work of their contractor to estimate wood-burning emissions. The contractor apportioned state wood fuel consumption to the county level based upon the number of households using wood for heat. The number of "heating degree days" was used to determine the days on which wood was burned.

A heating degree day occurs when the temperature drops below 65 degrees Fahrenheit; one "heating degree day" is registered for each degree below 65. Hence, a day of 60 degrees Fahrenheit would yield 5 heating degree days.

The emissions calculations are based on a product of the number of houses burning wood, the number of heating degree days, and an emissions factor.

Since wood burning is typically practiced only during the winter months in the metropolitan Washington area, it was assumed that emissions from this source were of significance only for the wintertime CO emissions inventory. The wintertime CO season was assumed to be 151 days in duration (November - March). It is assumed that emissions from the stoves are uncontrolled.

Factors:

Emissions (EIIP Volume III, Chapter 2)	252.6 lbs CO/ton
Activity Days Per Period	151 days/cool season
Units Conversion Factor	.0005

Equation:

$$SWC \times (CHP / SHP) \times (CHD / SHD) \times EF \times UF / AD = E$$

SWC State Wood Fuel Consumption (kilotons)
CHP County Wood Fueled Households
SHP State Wood Fueled Households
CHD County Heating Degree Days
SHD State Heating Degree Days
EF Wood Burning Emissions Factor
UF Units Conversion Factor
AD Activity Days Per Period
E Emissions

Summary of Jurisdictional Estimates, Other Fuels Consumption (Residential Wood Burning) (tons/day)

Jurisdiction	VOC	CO	NOx
District of Columbia	0	0	0
Calvert County	0.016	0.017	0.020
Charles County	0	0	0.027
Frederick County	0.188	0.208	0.074
Montgomery County	0.062	0.069	0.020
Prince George's County	0.046	0.051	0.020
Arlington County	0	0	0
Alexandria	0	0	0
Fairfax County	0	0	0
Loudoun County	0	0	0
Prince William County	0	0	0
Stafford County	0	0	0
Region Total	0.312	0.345	0.161

3.4.5.5 Small Electric Utility Boilers

Emissions from this source were included in the methods used to determine emissions from fuel oil, coal, and natural gas consumption. Therefore, there is no need to inventory this source separately.

3.4.6 Other Area Sources

3.4.6.1 Slash/Prescribed Burning and Forest Fires

DESCRIPTION:

Waste from logging operations is often burned under controlled conditions to reduce the potential fire hazard in forests, and to remove brush that can serve as a host to destructive insects. Prescribed burning is used as a forest management practice to I establish favorable seedbeds, remove competing underbrush, accelerate nutrient recycling, control tree pests and contribute other ecological benefits.

Organic emissions from forest fires certain rural areas may be very large, at if least in the short term.

METHOD AND DATA SOURCES:

Staff followed the methods detailed in Procedure section 4.8.1 and 4.8.2. The data required for slash/prescribed burning emissions calculation were estimates of the area burned and the fuel loading (material burned per acre). The data required for forest fires emissions calculation were acres burned per fire, fuel loading, and types of wood burned per fire. The emissions from Slash/Prescribed and Forest burning were calculated separately.

The Maryland Department of Natural Resources' Forestry Division and the Virginia Department of Forestry provided data on acreage burned in Slash/Prescribed Burning and Forest Fires.

The National Park Service National Capital Region provided data on NPS parkland forest fires, including fuel type, in the District of Columbia and in the MD and Northern VA counties. Staff assumed that the National Park Service forest lands are the only forest lands in the District of Columbia, and would thus be the only places at which slash, prescribed or forest fire burnings would occur.

Emissions factors were taken from **AP-42,** Section 11.1 or Table 13-1.

Factors:

Fuel Loading (tons/acre)	Hardwood	Softwood
DC/Maryland	10	12
Virginia	9	9

Emissions Factors	VOC	CO	NO_X
Forest Fires (lbs/ton)	24	140	4
Slash/Prescribed (g/kg)	1.8 – VA	37 – VA	4 – VA
Marsh Grass (lb/ton)	18 – MD, DC	117 – MD, DC	0 – MD, DC
Pine Slash (lb/ton)	19 – MD, DC	140 – MD, DC	4 – MD, DC

Seasonal Adjustment Factors	Summer
Forest Fires	1
Slash/Prescribed	2.16 - VA

Activity Day Per Period	365 days/year
Units Conversion Factor #2	.0005 tons/lb
Units Conversion Factor #2	.001 kg/g

Equation:

$$[(HFF \times HFL) + (SFF \times SFL) + (GWF \times SFL)] \times EF1 \times SAF \times UF1 - E1$$

$$PB \times SFL \times EF2 \times SAF \times UF2 = E2$$

HFF Hardwood Forest Fires
HFL Hardwood Fuel Loading Factor
SFF Softwood Forest Fires
GWF Grass Wild Fires
PB Prescribed/Slash Burns
SFL Softwood Fuel Loading Factor
EF1 Forest Fire Emissions Factor
EF2 Prescribed/Slash Burn Emissions Factor
SAF Seasonal Adjustment Factor
UF1 Units Conversion Factor #1
UF2 Units Conversion Factor #1
E1 Forest Fire Emissions
E2 Prescribed/Slash Burn Emissions

Summary of Jurisdictional Estimates (tons/day):

Forest Fires:

Jurisdiction	VOC	CO	NOx
District of Columbia	0	0	0
Calvert County	0.004	0.093	0.003
Charles County	0.012	0.283	0.008
Frederick County	0.002	0.056	0.002
Montgomery County	0.008	0.177	0.005
Prince George's County	0.004	0.088	0.003
Arlington County	0	0	0
Alexandria	0	0	0
Fairfax County	0	0	0
Loudoun County	0	0.002	0
Prince William County	0.001	0.012	0
Stafford County	0.004	0.091	0.002
Region Total	0.035	0.802	0.023

Slash/Prescribed:

Jurisdiction	VOC	CO	NOx
District of Columbia	0	0	0
Calvert County	0.000	0.000	0.000
Charles County	0.004	0.027	0.000
Frederick County	0.000	0.000	0.000
Montgomery County	0.000	0.000	0.000
Prince George's County	0.002	0.010	0.000
Arlington County	0	0	0
Alexandria	0	0	0
Fairfax County	0	0.002	0
Loudoun County	0	0	0
Prince William County	0.001	0.018	0.002
Stafford County	0	0	0
Region Total	0.007	0.057	0.002

3.4.6.2 Agricultural Burning

DESCRIPTION:

Agricultural burning is used to clear and/or prepare land for planting. Operations under this category include stubble burning, burning of agricultural crop residues and burning of standing field crops as part of harvesting (i.e., sugar cane).

METHOD AND DATA SOURCES:

The Maryland and Virginia Departments of Agriculture stated that in the MSA counties agricultural burning is not encouraged, is not a procedure, and generally should not exist as an active practice.

Staff assumed that large-scale agriculture is not practiced in the District of Columbia, and thus agricultural burning is also assumed not to be practiced in DC.

3.4.6.3 Structure Fires

DESCRIPTION:

A structural fire is defined as any controlled or accidental burning of a house or any building larger than a house. Emissions result from the combustion of materials which comprise or are contained within the building.

METOOD AND DATA SOURCES:

Staff followed the methods detailed in Procedures section 4.8.4. The data required for structure fire emissions calculations were the numbers of structure fires, which are multiplied by a fuel loading factor, stated in tons of material per fire (Procedures page 4-44, EIIP – Structure Fires).

Where possible, the number of structural fires per county was reported. When this information was unavailable, the recommendations of Procedures were followed using a population surrogate and a default figure of 6 fires/1000 people (see Procedures page 444). Emissions in the District were grown from the 1990 Inventory using population as the growth surrogate.

Emission factors from Procedures page 4-44 were used.

Factors:

Fires Per Capita (when actuals were unavailable)	.006
Fuel Loading Factor	1.15 tons solid material/fire

Emissions	
- VOC	11 lbs/ton solid material burned
- CO	60 lbs/ton solid material burned
- NO_X	1.4 lbs/ton solid material burned

Activity Day Per Period	365
Units Conversion Factor	.0005 tons/lb

Equation:

$$POP \times FPC \times FLF \times EF \times UF / AD = E$$

Or

$$F \times FLF \times EF \times UF / AD = E$$

POP County Population
F Number of Structural Fires Per Jurisdiction
FPC Average Number of Fires Per Capita
FLF Fuel Loading Factor
EF Emission Factor
UF Units Conversion Factor
AD Activity Days Per Period
E Emissions

Summary of Jurisdictional Estimates, Structure Fires (tons/day):

Jurisdiction	VOC	CO	NOx
District of Columbia	0.019	0.102	0.002
Calvert County	0.002	0.009	0
Charles County	0.003	0.016	0
Frederick County	0.004	0.021	0.001
Montgomery County	0.005	0.029	0.001
Prince George's County	0.027	0.147	0.003
Arlington County	0.020	0.108	0.003
Alexandria	0.013	0.071	0.002
Fairfax County	0.016	0.089	0.002
Loudoun County	0.001	0.008	0
Prince William County	0.030	0.163	0.004
Stafford County	0.002	0.010	0
Region Total	0.142	0.773	0.018

3.4.6.4 Orchard Heaters

DESCRIPTION:

Orchard heaters are used in certain climates to prevent frost damage in the colder months. Most heaters are combustion- powered, and thus will emit VOCs during operation.

METHOD AND DATA SOURCES:

The Maryland and Virginia Departments of Agriculture both stated that orchards in the MSA do not useorchard heaters. Staff assumed that there are no orchards in the District of Columbia. This category is therefore irrelevant to the inventory.

3.4.6.5 Leaking Underground Storage Tanks

DESCRIPTION:

Leaking Underground Storage Tanks (LUSTs) are environmentally important because they may result in the contamination of drinking water, subsurface soils, and ground and surface water, and may emit toxic and/or explosive vapors. The contaminated soil and water may also emit VOCs. However, those emissions are negligible until LUST remediation occurs. Upon remediation, the VOCs are vented into the atmosphere.

Remediation of LUSTs may follow several methods, among them soil venting, air stripping of VOCs in ground water, excavation and soil aeration, product recover and carbon adsorption. Each of the respective jurisdictions in the MSA follows one or more of those techniques.

METHOD AND DATA SOURCES:

Staff followed the methods detailed in an April 30, 1992 Memorandum from Glenn Rives and Lauren Elmore of Radian. The Memorandum requires investigating the number of LUST remediations; each remediation is to be multiplied by an emission factor.

Virginia applied an emission factor of 3 lbs VOC/remediation day to the number of leaking underground storage tanks reported by each county. Maryland used actual emissions from permit data. In the 1990 Inventory, the District of Columbia's state agency stated that no excavated soil is aerated within the District's boundaries; it is all trucked to other jurisdictions for land farming or disposal. Because of this, staff assumed that the soil from each excavation spent only one day within the District's boundaries. This still applies for the 2002 Inventory.

Factors:

Emissions	3 lbs VOC/remediation-day
DC Adjustment Factor	.4
Units Conversion Factor	.0005 tons/lb

Equation:

District of Columbia

$$NR \times EF \times AF \times UF = E$$

Virginia Jurisdictions

$$NR \times EF \times UF = E$$

NR Number of Ozone Season Remediations
EF Emission Factor
AF District of Columbia Adjustment Factor
UF Units Conversion Factor

Summary of Jurisdictional Estimates, Leaking Underground Storage Tanks (tons/day):

Jurisdiction	VOC
District of Columbia	0.342
Calvert County	0.001
Charles County	0.060
Frederick County	0.030
Montgomery County	0.105
Prince George's County	0.311
Arlington County	0
Alexandria	0
Fairfax County	0
Loudoun County	0
Prince William County	0
Stafford County	0
Region Total	0.849

3.4.6.6 Oil Spills

DESCRIPTION:

Oil spills involve oil tanker accidents, tanker truck accidents, and spills and blowouts from oil rigs or pipelines in coastal and inland areas. Because a wide range of fuel types may be spilled, the nature and quantity of emissions can vary. Emissions are also influenced by the clean-up procedure and by dispersion and weathering processes.

Oil spill evaporation produces local VOC emissions. If spills catch fire, additional S02, CO, C02, PM, NOx and VOC emissions may result. Other potentially toxic chemical compounds may also be released as a result of chemical cleanup.

METHOD AND DATA SOURCES:

Data on oil spills were obtained from the Virginia State Water Control Board, the Coast Guard National Response Center, and the Maryland Department of the Environment's Hazardous Waste Emergency Response Department.

Staff relied on the emission factor recommended in the 1990 Inventory. This emission factor was based on a California Air Resources Board (CARB) study of air emissions from large oil spills (10,000,000 gallons of oil). Based on the study, a range of evaporation estimates for reactive organic gases was found to be between 5,500 and 13,000 tons. Using this information, an average emission factor is calculated.

Factors:

Emissions (tons VOC/gal oil	0.000093
Activity days per period	365

Summary of Jurisdictional Estimates, Oil Spills (tons/day):

Jurisdiction	VOC
District of Columbia	0
Calvert County	0
Charles County	0.001
Frederick County	0.001
Montgomery County	0.001
Prince George's County	0.001
Arlington County	0
Alexandria	0
Fairfax County	0
Loudoun County	0
Prince William County	0
Stafford County	0
Region Total	0.004

3.4.7 Non-Road Engines and Vehicles

3.4.7.1 Commercial Aviation

DESCRIPTION:

There are two commercial airports in the study area: Ronald Reagan Washington National and Washington-Dulles International Airports. National Airport is located in Arlington County, VA and Dulles is located in both Fairfax and Loudoun Counties, VA. The emissions from the Dulles International airport are split equally between Fairfax County and Loudoun County.

METHOD AND DATA SOURCES:

The Metropolitan Washington Airports Authority (MWAA) performed emission estimates for the two commercial airports, using the Emissions Dispersion and Modeling System (EDMS). MWAA supplied the emission results for inclusion in this PEI document.

Summary of Jurisdictional Estimates, Commercial Aviation (tons/day):

Jurisdiction	VOC	CO	NOx
District of Columbia	0	0	0
Calvert County	0	0	0
Charles County	0	0	0
Frederick County	0	0	0
Montgomery County	0	0	0
Prince George's County	0.039	0.198	0.084
Arlington County	0.168	1.605	1.730
Alexandria	0	0	0
Fairfax County	0.308	2.303	1.773
Loudoun County	0.308	2.303	1.773
Prince William County	0	0	0
Stafford County	0	0	0
Region Total	0.823	6.409	5.360

3.4.7.2 General Aviation

DESCRIPTION:

The Washington metropolitan area contains 12 public-use general aviation airports.

METHOD AND DATA SOURCES:

Maryland performed emission estimates for general aviation airports using the Emissions Dispersion and Modeling System (EDMS). Maryland provided the emission results by county to COG staff. Composite emissions factors for general aviation, as reported in Procedures, table 5-3, were used. Annual emissions were divided by 365 to obtain average daily emissions.

Virginia's 2002 general aviation emission estimates are projected by applying a growth factor to 1990 emissions. Activity estimates for Virginia airports were provided by the Virginia Department of Aviation for the year 1988, which were accepted as nominal 1990 data. The state data were added to the data obtained from FAA Air Traffic Activity 1990.

No general aviation emissions were reported for the District of Columbia.

Factors:

Sector	**VOC**	**CO**	**NO_X**
a – General Aviation	0.382	12.014	0.065
b – Air Taxi	1.223	28.13	0.158
Units Conversion Factor			.0005 tons/lb
Activity Days Per Period			365 days/year

Equation:

$$[(LTO_a \times EL_a) + (LTO_b \times Ef_b)] \times UF / AD = E$$

LTO Landing/Takeoff Cycle
EF Emission Factor
UF Units Conversion Factor
AD Activity Days Per Period
E Emissions

Summary of Jurisdictional Estimates, General Aviation (tons/day):

Jurisdiction	VOC	CO	NOx
District of Columbia	0	0	0
Calvert County	0	0.009	0
Charles County	0.007	0.214	0.001
Frederick County	0.084	2.610	0.014
Montgomery County	0.047	1.411	0.008
Prince George's County	0.046	1.436	0.008
Arlington County	0.075	1.866	0.01
Alexandria	0	0	0
Fairfax County	0.035	0.874	0.005
Loudoun County	0.103	2.825	0.015
Prince William County	0.076	2.290	0.012
Stafford County	0	0	0
Region Total	0.473	13.535	0.073

3.4.7.3 Military Aviation

DESCRIPTION:

There are three Washington area airports that serve military airport traffic: Andrews Air Force Base, Davison Army Airfield at Ft. Belvoir, and Quantico Marine Corps Air Station. All three facilities handle both military and general aviation activity, and Andrews handles a very small number of commercial air carrier operations.

METHOD AND DATA SOURCES:

In Maryland, emissions for Andrews AFB military aviation were calculated using EDMS version 3.2 with the following inputs:

- 2002 LTO data acquired from Andrews AFB
- Total Taxi In and Taxi Out Time = 15.9 minutes (EDMS Default for Military Aircraft)
- Total Taxi In and Taxi Out Time = 26.0 minutes (EDMS Default for Commercial Aircraft)
- Queue Time = 6 minutes

Virginia's 2002 military aviation emissions are assumed to be identical to 1990 emissions (no growth). For the 1990 inventory, Staff followed the methods detailed in Volume IV, section 5.2.5. Data on LTO cycles were obtained from FAA Air Traffic Activity 1990 and were applied to the composite emissions factors listed in Volume IV, section 5.2.5.

No military aviation emissions were reported for the District of Columbia.

Factors:

Emissions	
- VOC	1.234
- CO	28.13
- NO_X	0.158
Activity Day Per Period	365 days/year
Units Conversion Factor	.0005 tons/lb

Equation:

$$LTO \times EF \times UF \times AD = E$$

LTO Military Landing/Takeoff Cycle
EF Emission Factor
UF Units Conversion Factor
AD Activity Days Per Period
E Emissions

Summary of Jurisdictional Estimates, Military Aviation (tons/day):

Jurisdiction	VOC	CO	NOx
District of Columbia	0	0	0
Calvert County	0	0	0
Charles County	0.037	0.067	0.013
Frederick County	0.013	0.024	0.005
Montgomery County	0	0	0
Prince George's County	2.614	4.155	1.498
Arlington County	0	0.01	0
Alexandria	0	0	0
Fairfax County	0	0.03	0
Loudoun County	0	0.03	0
Prince William County	0	0	0
Stafford County	0	0	0
Region Total	2.664	4.316	1.516

3.4.7.4 Railroad Locomotives

DESCRIPTION:

Diesel-powered railroad locomotives generate emissions during fuel combustion and are inventoried as area sources. Electric locomotives are not inventoried under area sources, as they take their locomotive power from electricity supplied by power plants.

METHOD AND DATA SOURCES:

Two types of locomotive categories are inventoried: line haul and yard locomotives. Locomotive emissions calculations are based on the amount of fuel consumed in an inventory area and an emission factor for the pollutant being inventoried. Where specific county-level fuel consumption data is unavailable, two methods can be used. Method one involves obtaining regional locomotive traffic density, and multiplying that density by a fuel consumption index. Method two, which yields a region-specific fuel consumption estimate, involves multiplying a total fuel consumption figure by the quotient of track miles in the region divided by total track miles.

Yard locomotive emissions were calculated by multiplying the number of yard locomotives by an estimate of the fuel consumed per locomotive and by the emissions factor and by unit conversion factors. In most instances, the amount of fuel consumed by the yard locomotives was provided and multiplied by the emission factor.

In some cases, the states obtained raw data by direct inquiry to the railroad companies operating in the MSA. Not all company data were county-specific; for those data, the states estimated fuel consumption through one of the two methods above. District obtained the 2002 data by direct inquiry to the railroad companies operating in DC.

2002 railroad emissions in DC are based on the activity and fuel data information from the operations. Emission factors used in the 1990 inventory were applied in Maryland. In Virginia, locomotive emission factors from a 1997 EPA Technical Memorandum were used (EPA420-F-97-051, available at www.epa.gov/otaq/locomotv.htm).

Factors:

Emission Factors (lbs/gal)	**VOC**	**CO**	**NO_X**
Maryland			
- Line Haul	0.0212	0.0626	0.4931
- Yard	0.0506	0.0894	0.5044
Virginia			
- Line Haul	0.0221	0.0587	0.5954
- Yard	0.0463	0.0840	0.7982
Activity Day Per Period			365 days/year
Units Conversion Factor			.0005 ton/lb

Equation:

$$[(LFC \times EF1) + (YFC \times EF2)] \times UF / AD = E$$

LFC Line Haul Fuel Consumption (gallons)
EF1 Line Haul Emissions Factor
YFC Yard Operations Fuel Consumption (gallons)
EF2 Yard Operations Emissions Factor
UF Units Conversion Factor
AD Activity Days Per Period
E Emissions

Summary of Jurisdictional Estimates, Locomotives (tons/day):

Jurisdiction	VOC	CO	NOx
District of Columbia	0.121	0.250	1.617
Calvert County	0	0	0
Charles County	0	0	0
Frederick County	0.090	0.200	1.400
Montgomery County	0.040	0.110	0.850
Prince George's County	0.030	0.070	0.580
Arlington County	0	0	0
Alexandria	0	0	0.01
Fairfax County	0.01	0.03	0.32
Loudoun County	0	0	0
Prince William County	0.09	0.21	2.07
Stafford County	0.01	0.03	0.32
Region Total	0.391	0.900	7.167

3.4.8 EPA Non-Road Source Estimates

3.4.8.1 DESCRIPTION:

The "Other Non-road Engines and Vehicles" category includes a varied collection of equipment including lawn mowers and chain saws, recreational equipment, farm equipment and construction equipment. Nonroad emissions result from the use of fuel in a diverse collection of vehicles and equipment, including vehicles and equipment in the following categories:

- Recreational vehicles, such as all-terrain vehicles and off-road motorcycles;
- Logging equipment, such as chain saws;
- Agricultural equipment, such as tractors;
- Construction equipment, such as graders and back hoes;
- Industrial equipment, such as fork lifts and sweepers;
- Residential and commercial lawn and garden equipment, such as leaf and snow blowers;
- Recreational and commercial marine vessels, such as power boats and oil tankers;
- Locomotive equipment, such as train engines; and
- Aircraft, such as jets and prop planes.

3.4.8.2 METHOD AND DATA SOURCES:

EPA's draft NONROAD2004 model was used by COG and state air agency staff to calculate 2002 ozone season average weekday emissions. The model includes more than 80 basic and 260 specific types of nonroad equipment, and further stratifies equipment types by horsepower rating. Fuel types include gasoline, diesel, compressed natural gas (CNG), and liquefied petroleum gas (LPG). This model calculates emissions from all equipment categories listed above with the exception of commercial marine, locomotive, and aircraft emissions. The NONROAD model estimates emissions for six exhaust pollutants: hydrocarbons (HC), NO_X, carbon monoxide (CO), carbon dioxide (CO_2), sulfur oxides (SO_X), and PM. For the purpose of PEI, it was run to provide emissions from VOC, NOx, and CO for the Washington, DC-MD-VA nonattainment area.

The NONROAD2004 model estimates emissions for each specific type of nonroad equipment by multiplying the following input data estimates:

- Equipment population for base year (or base year population grown to a future year), distributed by age, power, fuel type, and application;
- Average load factor expressed as average fraction of available power;
- Available power in horsepower;
- Activity in hours of use per year; and
- Emission factor with deterioration and/or new standards.

The emissions are then temporally and geographically allocated using appropriate allocation factors.

There are several input files that provide necessary information to calculate and allocate emissions estimates. These input files correspond to the basic data needed to provide the calculations: emission factors, base year equipment population, activity, load factor, average lifetime, scrappage function, growth estimates, and geographic and temporal allocation. Default values are provided for all input files. The user can replace the default data files when better information becomes available, either from EPA for national defaults or from local sources for locality-specific data. The input files are also modifiable to test control strategies.

Details of this model can be found in its user guide named "User's Guide for the EPA Nonroad Emissions Model Draft NONROAD 2002" (EPA420-P-02-013; December 2002) available from the EPA.

The NONROAD2004 model run was made for the metropolitan Washington region for an average ozone season day. Temperature, fuel, and other parameters used for the run are local and are listed below for each jurisdiction:

District of Columbia

Parameters	Values
Min. Temperature	68.11
Max. Temperature	84.11
Avg. Temperature	76.07
Gas Sulfur (%)	0.0159
Diesel Sulfur (%)	0.2283
CNG/LPG Sulfur (%)	0.003
Fuel Reid Vapor Pressure	6.8
Oxygen Weight (%)	2.1
Stage II Control (%)	0

Virginia

Parameters	Values
Min. Temperature	68.11
Max. Temperature	84.11
Avg. Temperature	76.07
Gas Sulfur (%)	0.0129
Diesel Sulfur (%)	0.2283
CNG/LPG Sulfur (%)	0.003
Fuel Reid Vapor Pressure	6.7
Oxygen Weight (%)	2.1
Stage II Control (%)	0

Maryland

Parameters	Values
Min. Temperature	65.55
Max. Temperature	87.60
Avg. Temperature	76.80
Gas Sulfur (%)	0.0240
Diesel Sulfur (%)	0.2283
CNG/LPG Sulfur (%)	0.003
Fuel Reid Vapor Pressure	6.6
Oxygen Weight (%)	2.0
Stage II Control (%)	0

Temperature data for Virginia and the District was extracted from the EPA's National Mobile Inventory Model (NMIM) input datasets posted on the following web-site: http://www.epa.gov/ttn/chief/net/2002inventory.html#nmim. Minimum, maximum, and average temperatures were computed for six Virginia counties for the period between June through August 2002 and then averaged to obtain one set of these values for the purpose of running the NONRAOD2004 model. The District agreed to use the same set of temperatures for its model run. Maryland provided its own set of minimum, maximum, and average temperatures for the model run, which were based on its own weather monitors located in different counties.
Data on sulfur percent in gas and diesel, fuel RVP, and oxygen weight percent were provided by states, while model default was used for CNG/LPG sulfur percent. Zero % Stage II control was assumed for the model run.

3.4.8.3 RESULTS:

Following table lists emissions for different counties in the Washington, DC-MD-VA ozone nonattainment region.

COUNTY	VOC	CO	NOx
District of Columbia	5.19	52.66	8.85
Calvert County	4.83	18.73	1.37
Charles County	7.85	37.52	2.04
Frederick County	6.25	85.47	5.10
Montgomery County	24.23	365.69	13.16
Prince Georges County	10.96	163.68	10.33
Alexandria city	1.33	20.79	0.51
Arlington County	1.86	26.35	4.59
Fairfax County	26.23	391.58	19.54
Loudoun County	3.89	57.88	4.35
Prince William County	5.01	69.80	3.77
Stafford County	1.44	16.68	1.19
Total	**99.07**	**1306.83**	**74.80**

Chapter 4

On-Road Mobile Sources

4.0 On-Road Mobile Sources

4.1 Introduction

This section describes the preparation of on-road mobile source emissions for the Washington DC-MD-VA non-attainment area. Mobile6.2 model has been used for developing the on-road emission inventories. A broader documentation describing the input assumptions, modeling and data processing are presented in Appendix D.

The National Capitol Region Transportation Planning Board (TPB) is the lead agency responsible for modeling and compiling on-road mobile source emissions; however, MWCOG is responsible for summarizing and presenting the findings into this section of the emission inventory documentation.

Except for updating the input data such as vehicle age distributions, diesel sales fraction, temperature, I/M programs, and vehicle miles traveled fractions data, the on-road mobile emissions analysis process is essentially the same as the one used for developing the 1990 Base Year Emissions Inventories. A detailed description of travel demand modeling and emissions analysis process can be found in "*1990 Base Year Emission Inventory for Stationary Anthropogenic, Biogenic Sources and Highway Vehicle Emissions of Ozone Precursors in the Washington, DC-MD-VA metropolitan Statistical Area, September 1993*".

4.2 Summary of On-Road Mobile Source Emissions

Table 4-1 summarizes the ozone season day emissions in the non-attainment area for ozone precursors VOC, NOx, and CO.

Onroad Mobile - 2002 Periodic Emission Inventories

Metropolitan Washington NAA

Tons per ozone season day

Pollutant	Calvert County	Charles County	Fredrck County	Montg County	P.G. County	Arlington County	City of Alxndria	Fairfax County	Loudoun County	P. Willm County	Stafford County	Dist. Of Columbia	MD Total	VA Total	NAA Total
VOC	2.05	3.41	7.28	22.78	23.41	4.91	3.25	27.68	5.84	8.52	3.55	**12.8**	**58.9**	**53.8**	**125.5**
CO	23.88	42.12	125.31	314.65	335.96	67.65	36.90	399.07	83.53	116.13	65.28	**146.6**	**841.9**	**768.6**	**1757.0**
NOx	3.67	5.65	20.72	51.88	56.59	10.55	6.58	66.58	13.86	19.32	10.58	**24.9**	**138.5**	**127.5**	**290.8**

2002 PERIODIC EMISSIONS INVENTORY
OF OZONE PRECURSOR EMISSIONS

FOR THE
WASHINGTON DC-MD-VA
OZONE NONATTAINMENT AREA

APPENDICES

May 21, 2004

Appendix A

Summary Tables

Appendix A - 2002 PEI Summary Tables

2002 Ozone Season Day Emissions (tons/day)
Metropolitan Washington Nonattainment Area

VOC Emissions (tpsd)

Source Category	Calvert	Charles	Fredrick	Montg-omery	Prince George	Arlington	Alexandria	Fairfax	Loudoun	Prince William	Stafford	District of Columbia	MD Total	VA Total	NNA Total
Point	0.03	0.31	0.83	0.36	0.8	0.05	0.18	0.78	0.45	0.84	0.19	0.26	2.33	2.49	5.08
Area	2.91	4.63	9.27	30.41	30.21	7.07	5.05	38.11	9.05	14.15	3.72	12.85	77.43	77.15	167.42
Non-road	4.83	7.85	6.25	24.23	10.96	1.87	1.35	26.6	3.94	5.07	1.46	5.21	54.13	40.29	99.63
On-road	2.05	3.41	7.28	22.78	23.41	4.91	3.25	27.68	5.84	8.52	3.56	12.84	58.93	53.76	125.53
VOC - Total	9.82	16.20	23.63	77.78	65.38	13.90	9.83	93.17	19.28	28.58	8.93	31.16	192.82	173.69	397.66

NOx Emissions (tpsd)

Source Category	Calvert	Charles	Fredrick	Montg-omery	Prince George	Arlington	Alexandria	Fairfax	Loudoun	Prince William	Stafford	District of Columbia	MD Total	VA Total	NNA Total
Point	0.31	48.71	5.32	23.76	43.85	0.2	21.31	8.81	0.78	26.32	0.08	4.71	121.95	57.5	184.16
Area	0.12	0.24	1.84	5.09	3.65	3.29	1.01	8.62	3.27	3.86	0.81	3.56	10.94	20.86	35.36
Non-road	1.37	2.04	5.10	13.16	10.33	4.62	0.53	20.34	4.47	3.88	1.21	8.9	32.01	35.04	75.95
On-road	3.67	5.65	20.72	51.88	56.59	10.55	6.58	66.58	13.86	19.31	10.58	24.85	138.51	127.46	290.82
NOx - Total	5.47	56.64	32.98	93.90	114.42	18.66	29.43	104.35	22.38	53.36	12.68	42.02	303.41	240.86	586.29

CO Emissions (tpsd)

Source Category	Calvert	Charles	Fredrick	Montg-omery	Prince George	Arlington	Alexandria	Fairfax	Loudoun	Prince William	Stafford	District of Columbia	MD Total	VA Total	NNA Total
Point	0.08	1.87	60.49	1.47	2.74	0.19	1.3	3.17	0.66	3.7	0.02	1.51	66.65	9.04	77.20
Area	0.41	0.96	3.73	2.92	6.82	4.64	0.79	10.87	7.86	4.81	0.53	1.94	14.83	29.49	46.27
Non-road	18.73	37.52	85.47	365.69	163.68	26.98	21.2	400.58	59.30	71.17	16.95	53.19	671.09	596.17	1320.45
On-road	23.88	42.12	125.31	314.65	335.97	67.65	36.9	399.08	83.53	116.13	65.28	146.55	841.93	768.57	1757.05
CO - Total	43.09	82.47	275.00	684.73	509.21	99.46	60.19	813.70	151.35	195.80	82.78	203.19	1594.50	1403.28	3200.97

Appendix B

Point Sources

Summary of Point Source Emissions: District of Columbia

Point Sources - District of Columbia

2002 Ozone Season DAY Emissions (tons/day)
(Based on fuel-use data and AP42 Emission Factors)

FACILITY	NOx	VOC	CO
PEPCO Benning*	2.18	0.01	0.24
Capitol Power Plant	0.37	0.02	0.54
GSA West & Central Heating*	0.23	0.01	0.17
Georgetown Univ Power Plant	0.07	0.00	0.06
PEPCO Buzzard*	1.58	0.00	0.01
St. Eli. Hospital	0.10	0.00	0.06
US Soldiers Home	0.01	0.00	0.06
Naval Research Lab	0.00	0.00	0.00
Howard University	0.02	0.01	0.18
Bureau of Engraving & Printing	0.00	0.15	0.00
Government Printing Office	0.00	0.03	0.00
Washington Hospital Center	0.05	0.00	0.04
Walter Reed Army Med Ctr	0.10	0.01	0.15
Total (Tons/Day)	**4.71**	**0.26**	**1.51**

* EPA's Database -2002 EMISSIONS AND ALLOWANCE HOLDINGS OF NOx BUDGET SOURCES

Summary of Point Source Emissions: Virginia

Point Sources

(Virginia Portion of Washington Nonattainment Area only)

2002 Ozone Season DAY Emissions (tons/day)

FACILITY	VOC	NOx	CO
Pentagon Reservation	0.03	0.12	0.16
US Army - Fort Myer	0.03	0.08	0.04
Inova Fairfax Hospital	0.00	0.05	0.04
Exxon Mobil Corporation	0.20		
Washington Gas Light Company	0.03	0.32	1.00
Motiva Springfield Terminal	0.11		
Motiva Enterprises LLC	0.08		
Crown Central Petroleum-Newington Terminal	0.03		
US Army - Fort Belvoir	0.04	0.16	0.06
Noman M Cole Jr Pollution Control Plant	0.03	0.70	0.83
Bush Center for Intelligence (CIA)	0.02	0.70	0.11
Superior Paving Corp - Centreville Plt	0.07	0.04	0.18
Science Applications International Corp.	0.02	0.59	0.16
Covanta Fairfax, Inc.	0.02	5.70	0.25
MASTER PRINT, INC	0.06		
Michigan Cogeneration Systems Inc	0.03	0.28	0.49
National Reconnaissance Office	0.03	0.18	0.03
America Online Incorporated - Fairfax	0.00	0.09	0.03
Hallmark Iron Works	0.05		
Superior Paving Corp - Leesburg Plant	0.06	0.04	0.15
Tuscarora Incorporated	0.29	0.01	0.01
Dominion Transmission Inc - CNG Leesburg Station	0.02	0.06	0.02
Columbia Gas Transmission Corp	0.04	0.54	0.44
America Online Incorporated - Loudon	0.01	0.14	0.03
Jefferson Millwork and Design	0.03		
APAC Virginia Incorporated- Manassas Plant	0.03	0.09	0.02
Dominion - Possum Point	0.26	19.98	1.86
ConcoPhillips - Manassas Terminal	0.11		
Lockheed Martin Manassas	0.00	0.14	0.03
US Marine Corps - Quantico	0.07	0.07	0.07
Vertis Inc.	0.11	0.01	0.12
Transcontinental Gas Pipeline-Station 185	0.04	0.63	0.23
City of Manassas/VMEA	0.13	4.60	1.03
Micron Technology Incorporated	0.04	0.18	0.04
Prince William County Sanitary Landfill	0.02	0.12	0.25
America Online Inc - Prince William	0.03	0.51	0.07
FBI Academy	0.03	0.08	0.02
Cellofoam North America Inc	0.17	0.00	0.00
Potomac River Generating Station	0.12	19.56	0.83
Virginia Paving Company Alexandria Plant	0.06	0.10	0.23
Covanta Alexandria/Arlington, Inc.	0.01	1.65	0.24
Total (Tons/Day)	**2.49**	**57.50**	**9.04**

Summary of Point Source Emissions: Maryland

Point Sources

(Maryland Portion of Washington Nonattainment Area only)

2002 Ozone Season DAY Emissions (tons/day)

FACILITY	VOC	NOx	CO
Constellation Energy - Calvert Cliffs	0.00	0.04	0.01
Dominion Cove Point Lng	0.03	0.27	0.07
Mirant Mid-Atlantic Llc	0.27	48.42	1.82
Naval Surface Warfare Cntr-Indian Hd	0.02	0.29	0.05
Automated Graphic Systems	0.02	0.00	0.00
Lehigh Portland Cement	0.00	0.47	0.32
Eastalco Aluminum	0.21	0.20	59.66
Moore Communications Services	0.02	0.00	0.00
Essroc Cement	0.02	4.45	0.29
Kline, Richard F., Incorporated	0.03	0.03	0.13
Fort Detrick	0.01	0.13	0.06
Tamko Roofing Products	0.04	0.02	0.02
George Weston Bakeries, Inc.	0.13	0.01	0.00
Canam Steel	0.38	0.01	
Mirant Mid-Atlantic	0.12	20.17	0.81
Dow Jones & Company	0.07	0.00	0.00
National Institute Of Standards And Technology	0.00	0.03	0.02
National Institute Of Health	0.00	0.10	0.01
National Naval Medical Center	0.01	0.02	0.02
Day, F.O. Bituminous - Piney Mtg	0.03	0.03	0.12
Eu Services	0.03	0.00	0.00
Covanta Energy-8309 Tujunga Avenue Corp.	0.00	0.06	0.13
Smith Lithograph	0.06	0.00	0.00
Montgomery County Rrf	0.01	2.82	0.17
Reproductions - Rickenbacker Drive	0.04	0.00	0.00
Miirant Station H	0.00	0.52	0.18
University Of Maryland	0.01	0.19	0.05
Pepco - Chalk Point	0.30	43.24	2.36
Duron, Incorporated	0.05		
Editors Press	0.02	0.00	
Safeway Stores - Bread Plant	0.05	0.00	0.00
Andrews Air Force Base	0.01	0.04	0.05
Goddard Space Flight Center	0.01	0.07	0.05
Kelly Press	0.03	0.00	0.00
Peake Printers	0.03	0.00	0.00
Corporate Press - Brightseat Road	0.02	0.00	0.00
Washington Post, The	0.04	0.01	0.00
S & S Graphics	0.03	0.00	0.00
Mncppc - Sandy Hill Landfill	0.03	0.15	0.08
Mcardle Printing	0.04	0.00	0.00
Brown Station Road Landfill	0.09	0.02	0.01
Panda Brandywine, L.P.	0.01	0.12	0.12
Craftsman Press - Craftsman Circle	0.05	0.00	0.00
Total (Tons/Day)	**2.33**	**121.95**	**66.64**

Appendix C

Area and Non-Road Sources

2002 Periodic Emission Inventory (PEI) for the Metropolitan Washington Nonattainment Area
Volatile Organic Compounds (VOC)
Area Source Emissions by Jurisdiction (tons/ozone season day)

SCC Code	Category Name	NAA Total	District of Columbia	Calvert	Charles	Frederick	Montgomery	Prince George's	Arlington	Alexandria	Fairfax	Loudoun	Prince William	Stafford	VA Total	MD Total
2501060053	Tank Truck Unloading (Stage I)	4.627	0.058	0.050	0.070	0.130	0.470	0.400	0.317	0.223	1.690	0.290	0.660	0.269	3.449	1.120
2501060100	Vehicle Fueling	6.251	0.378	0.110	0.190	0.430	1.160	1.380	0.221	0.121	1.388	0.281	0.399	0.193	2.603	3.270
2501060201	Underground Tank Breathing	2.807	0.018	0.052	0.080	0.137	0.503	0.424	0.146	0.103	0.781	0.134	0.305	0.124	1.593	1.196
2505030120	Losses From Gasoline Tank Trucks in Transit	0.196	0.017	0.005	0.008	0.014	0.051	0.042	0.005	0.004	0.029	0.005	0.011	0.005	0.059	0.120
2275900000	Aircraft Refueling	0.102	0.000	0.000	0.001	0.004	0.003	0.005	0.023	0.000	0.018	0.034	0.014	0.000	0.089	0.013
2505020000	Petroleum Vessel Loading and Unloading Losses	0.214	0.013	0.000	0.201	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.201
2420000000	Dry Cleaning	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
2415000000	Surface Cleaning	8.030	0.606	0.259	0.413	0.669	2.910	2.664	0.027	0.019	0.258	0.073	0.117	0.015	0.509	6.915
2401002000	*Surface Coatings:* Architectural	22.016	2.694	0.372	0.593	0.961	4.184	3.830	0.901	0.616	4.834	0.924	1.647	0.460	9.382	9.940
2401003000	*Surface Coatings:* Traffic Markings	2.424	0.369	0.019	0.022	0.029	0.031	0.024	0.185	0.127	0.994	0.190	0.339	0.095	1.930	0.125
2401008000	*Surface Coatings:* Auto Refinishing	10.773	0.319	0.072	0.213	0.307	1.029	0.818	0.629	0.833	3.149	1.177	2.008	0.219	8.015	2.439
2401005000	*Surface Coatings*: Industrial Product	19.630	0.147	0.786	0.994	1.760	7.168	6.890	0.066	0.093	1.014	0.255	0.412	0.045	1.885	17.598
2401100000	*Surface Coatings:* Special Purpose	11.765	1.236	0.100	0.159	0.257	1.120	1.025	0.756	0.516	4.054	0.775	1.381	0.386	7.868	2.661
2401200000	Graphic Arts	7.172	0.490	0.088	0.116	0.204	0.720	0.539	0.482	0.329	2.584	0.494	0.880	0.246	5.015	1.667
2461020000	Asphalt Paving	0.025	0.005	0.001	0.001	0.002	0.000	0.006	0.000	0.000	0.002	0.000	0.000	0.008	0.010	0.010
2461800000	Pesticide Application	14.596	0.015	0.141	0.135	1.765	1.400	0.645	0.892	0.583	5.106	1.577	1.800	0.537	10.495	4.086
2465000000	Commercial/Consumer Solvent Use	45.976	5.668	0.782	1.248	2.022	8.802	8.057	1.863	1.273	9.995	1.910	3.405	0.951	19.397	20.911
2510000000	Synthetic Organic Chemical Storage Tanks	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
2461160000	Barge, Tank, Tank Truck, Rail Car and Drum Cleanin	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
2302050000	Bakeries	1.587	0.178	0.000	0.010	0.000	0.367	0.036	0.096	0.065	0.513	0.098	0.175	0.049	0.996	0.413
2302070001	Breweries	0.004	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004
2302070005	Wineries	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
2302070010	Distilleries	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
2830000000	Oil Spills	0.004	0.000	0.000	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004
2630020000	Publicly Owned Treatment Works	0.432	0.031	0.000	0.000	0.079	0.078	0.235	0.001	0.006	0.002	0.000	0.000	0.000	0.009	0.392
2630010000	Industrial Wastewater Treatment	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
2640000000	Hazardous Waste Treatment, Storage & Disposal Fac	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
2620000000	Municipal Landfills	0.083	0.000	0.008	0.014	0.014	0.018	0.000	0.000	0.000	0.002	0.003	0.001	0.023	0.029	0.054
2601000000	On-Site Incineration	1.224	0.000	0.000	0.000	0.001	0.007	0.003	0.117	0.079	0.622	0.129	0.210	0.056	1.213	0.011
2610000000	Open Burning	0.833	0.000	0.036	0.036	0.062	0.033	0.001	0.000	0.000	0.367	0.208	0.090	0.000	0.665	0.168
2103004000	Fuel Oil Consumption	0.068	0.007	0.001	0.003	0.004	0.006	0.005	0.005	0.003	0.022	0.004	0.006	0.002	0.042	0.019
2103002000	Coal Consumption*	0.460	0.014	0.000	0.000	0.000	0.001	0.000	0.050	0.034	0.220	0.059	0.064	0.018	0.445	0.001
2103006000	Natural Gas and Liquified Petroleum Gas Consumptio	0.436	0.100	0.001	0.003	0.007	0.079	0.068	0.023	0.014	0.094	0.016	0.024	0.007	0.178	0.158
2104008000	Other Fuels Consumption (Residential Wood)	0.312	0.000	0.016	0.000	0.188	0.062	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.312
2101000000	Small Electric Utility Boilers	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
2810005000	Slash/Prescribed Burning	0.007	0.000	0.000	0.004	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.006
2810001000	Forest Fires	0.035	0.000	0.004	0.012	0.002	0.008	0.004	0.000	0.000	0.000	0.000	0.001	0.004	0.005	0.030
2801500000	Agricultural Burning	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
2810030000	Structure Fires	0.142	0.019	0.002	0.003	0.004	0.005	0.027	0.020	0.013	0.016	0.001	0.030	0.002	0.082	0.041
2801520000	Orchard Heaters	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
2660000000	Leaking Underground Storage Tanks	0.849	0.342	0.001	0.060	0.030	0.105	0.311	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.507
2275020000	Commercial Airports	0.823	0.000	0.000	0.000	0.000	0.000	0.039	0.168	0.000	0.308	0.308	0.000	0.000	0.784	0.039
2275050000	General Aviation Airports	0.473	0.000	0.000	0.007	0.084	0.047	0.046	0.075	0.000	0.035	0.103	0.076	0.000	0.289	0.184
2275001000	Military Airports	2.664	0.000	0.000	0.037	0.013	0.000	2.614	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.664
2285002000	Railroad Locomotives	0.391	0.121	0.000	0.000	0.090	0.040	0.030	0.000	0.000	0.010	0.000	0.090	0.010	0.110	0.160
	2002 Area Source Total	***167.431***	***12.845***	***2.906***	***4.634***	***9.274***	***30.408***	***30.217***	***7.068***	***5.054***	***38.107***	***9.048***	***14.146***	***3.724***	***77.147***	***77.439***

2002 Periodic Emission Inventory (PEI) for the Metropolitan Washington Nonattainment Area

Nitrogen Oxides (NOx)

Area Source Emissions by Jurisdiction (tons/ozone season day)

SCC Code	Category Name	NAA Total	District of Columbia	Calvert	Charles	Frederick	Montgomery	Prince George's	Arlington	Alexandria	Fairfax	Loudoun	Prince William	Stafford	VA Total	MD Total
2601000000	On-Site Incineration	3.152	0.000	0.001	0.001	0.016	2.569	0.049	0.050	0.034	0.264	0.055	0.089	0.024	0.516	2.636
2610000000	Open Burning	0.211	0.000	0.014	0.017	0.029	0.011	0.000	0.000	0.000	0.077	0.044	0.019	0.000	0.140	0.071
2103004000	Fuel Oil Consumption	3.040	0.044	0.059	0.113	0.159	0.249	0.222	0.293	0.180	1.144	0.214	0.285	0.078	2.194	0.802
2103002000	Coal Consumption*	5.385	0.054	0.000	0.000	0.006	0.014	0.000	0.584	0.407	2.617	0.718	0.770	0.215	5.311	0.020
2103006000	Natural Gas and Liquified Petroleum Gas Consumptio	9.249	1.843	0.020	0.061	0.135	1.366	1.183	0.618	0.380	2.417	0.455	0.605	0.166	4.641	2.765
2104008000	Other Fuels Consumption (Residential Wood)	0.161	0.000	0.020	0.027	0.074	0.020	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.161
2101000000	Small Electric Utility Boilers	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
2810005000	Slash/Prescribed Burning	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.002	0.000
2810001000	Forest Fires	0.023	0.000	0.003	0.008	0.002	0.005	0.003	0.000	0.000	0.000	0.000	0.000	0.002	0.002	0.021
2801500000	Agricultural Burning	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
2810030000	Structure Fires	0.018	0.002	0.000	0.000	0.001	0.001	0.003	0.003	0.002	0.002	0.000	0.004	0.000	0.011	0.005
2801520000	Orchard Heaters	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
2275020000	Commercial Airports	5.360	0.000	0.000	0.000	0.000	0.000	0.084	1.730	0.000	1.773	1.773	0.000	0.000	5.276	0.084
2275050000	General Aviation Airports	0.073	0.000	0.000	0.001	0.014	0.008	0.008	0.010	0.000	0.005	0.015	0.012	0.000	0.042	0.031
2275001000	Military Airports	1.516	0.000	0.000	0.013	0.005	0.000	1.498	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.516
2285002000	Railroad Locomotives	7.167	1.617	0.000	0.000	1.400	0.850	0.580	0.000	0.010	0.320	0.000	2.070	0.320	2.720	2.830
	2002 Area Source Total	***35.357***	***3.560***	***0.117***	***0.241***	***1.841***	***5.093***	***3.650***	***3.288***	***1.013***	***8.619***	***3.274***	***3.856***	***0.805***	***20.855***	***10.942***

2002 Periodic Emission Inventory (PEI) for the Metropolitan Washington Nonattainment Area
Carbon Monoxide (CO)
Area Source Emissions by Jurisdiction (tons/ozone season day)

SCC Code	Category Name	NAA Total	District of Columbia	Calvert	Charles	Frederick	Montgomery	Prince George's	Arlington	Alexandria	Fairfax	Loudoun	Prince William	Stafford	VA Total	MD Total
2601000000	On-Site Incineration	2.528	0.000	0.000	0.002	0.006	0.156	0.019	0.226	0.153	1.203	0.248	0.406	0.109	2.345	0.183
2610000000	Open Burning	6.179	0.000	0.261	0.298	0.505	0.215	0.003	0.000	0.000	2.704	1.530	0.663	0.000	4.897	1.282
2103004000	Fuel Oil Consumption	0.673	0.011	0.013	0.026	0.032	0.058	0.052	0.064	0.039	0.252	0.046	0.063	0.017	0.481	0.181
2103002000	Coal Consumption*	6.039	0.396	0.000	0.000	0.006	0.014	0.000	0.616	0.429	2.779	0.748	0.822	0.229	5.623	0.020
2103006000	Natural Gas and Liquified Petroleum Gas Consumptio	3.710	1.183	0.004	0.025	0.059	0.680	0.591	0.148	0.093	0.606	0.117	0.160	0.044	1.168	1.359
2104008000	Other Fuels Consumption (Residential Wood)	0.345	0.000	0.017	0.000	0.208	0.069	0.051	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.345
2101000000	Small Electric Utility Boilers	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
2810005000	Slash/Prescribed Burning	0.057	0.000	0.000	0.027	0.000	0.000	0.010	0.000	0.000	0.002	0.000	0.018	0.000	0.020	0.037
2810001000	Forest Fires	0.802	0.000	0.093	0.283	0.056	0.177	0.088	0.000	0.000	0.000	0.002	0.012	0.091	0.105	0.697
2801500000	Agricultural Burning	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
2810030000	Structure Fires	0.773	0.102	0.009	0.016	0.021	0.029	0.147	0.108	0.071	0.089	0.008	0.163	0.010	0.449	0.222
2801520000	Orchard Heaters	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
2275020000	Commercial Airports	6.409	0.000	0.000	0.000	0.000	0.000	0.198	1.605	0.000	2.303	2.303	0.000	0.000	6.211	0.198
2275050000	General Aviation Airports	13.535	0.000	0.009	0.214	2.610	1.411	1.436	1.866	0.000	0.874	2.825	2.290	0.000	7.855	5.680
2275001000	Military Airports	4.316	0.000	0.000	0.067	0.024	0.000	4.155	0.010	0.000	0.030	0.030	0.000	0.000	0.070	4.246
2285002000	Railroad Locomotives	0.900	0.250	0.000	0.000	0.200	0.110	0.070	0.000	0.000	0.030	0.000	0.210	0.030	0.270	0.380
	2002 Area Source Total	***46.266***	***1.942***	***0.406***	***0.958***	***3.727***	***2.919***	***6.820***	***4.643***	***0.785***	***10.872***	***7.857***	***4.807***	***0.530***	***29.494***	***14.830***

Appendix D

On-Road Mobile Sources

On-Road Mobile Emissions Analysis – Metropolitan Washington, DC-MD-VA Ozone Nonattainment Area

This appendix provides summaries of the on-road mobile emissions for 2002 by jurisdiction and details of the input assumptions that went into the analysis. Mobile6 input assumptions are presented in the following section which is then followed by the emissions analysis summaries, vehicle miles of travel and speed estimates for 2002 in the Washington, DC-MD-VA ozone non-attainment area.

The purpose of this memorandum is to document the MOBILE6 inputs, and the methodologies that were used for developing these inputs, that were developed for the Metropolitan Washington Council of Governments for the purposes of Periodic Emission Inventory (PEI 2002). This memo includes documentation of the inputs that were prepared for calculating emissions in 2002. Separate sets of input files were created to model emission factors corresponding to travel in the COG region 1) on network and local roadways, 2) during auto access to transit, and 3) by diesel transit and school buses. The data included in each of these inputs is discussed separately below.

A. MOBILE6 NETWORK AND LOCAL INPUT FILE SETUP

The MOBILE6 input files representing the network and local roadway conditions include formatting commands, one-time inputs, and scenario data. The one-time inputs include county-specific registration distributions by age, county-specific diesel sales fractions by model year, and inspection and maintenance (I/M) programs.

1. MOBILE6 Run Data

Separate MOBILE6 input files were created for each of the following jurisdictions within the COG region: Washington, DC; Calvert County, Charles County, Frederick County, Montgomery County, and Prince George's County, MD; and Alexandria, Arlington County, Fairfax County, Loudoun County, Prince William County, and Stafford County, VA. The MOBILE6 header and run information common to all of these areas is shown in Table 1.

- The trip length distribution data referenced in Table 1 is shown in Table 2. These data, developed by COG/TPB staff based on the MWCOG Version 2 model, were presented at the May 1, 2002 MOBILE6 Task Force meeting. This same trip length distribution was applied in 2002 input files.
- The fuel program input, indicating the presence of a reformulated gasoline program, is included in the 2002 inputs as this program began in 1995.
- Because the MWCOG region is in the Northeast Ozone Transport Region, the region follows a different implementation schedule for the National Low Emission Vehicle (NLEV) program than that included in the MOBILE6 default. Table 3 shows the LEV implementation schedule for the MWCOG region. This information is accessed through use of the 94+ LDG IMP command.

Additional data included in the run portion of the MOBILE6 input file includes the

registration distribution data, diesel sales fractions, inspection and maintenance (I/M) program inputs, and anti-tampering program (ATP) inputs. These inputs vary by county or State and are discussed in further detail below.

a. Registration Distributions

County-specific registration distributions were used in the MOBILE6 input files. These distributions show the fraction of registered vehicles from ages 1 through 25 for each of 16 MOBILE6 vehicle types. The registration distribution inputs used for 2002 are provided in Appendix 1. Below is a detailed explanation of how these distributions were derived for 2002.

2002 Registration Distributions

For the 2002 emission factor modeling, DC, Virginia, and Maryland obtained the most recent registration data available. Registration distributions input to MOBILE6 are assumed to represent July 1 registration data. Both Maryland and Virginia were able to obtain registration data sets extracted on July 1, 2002. DC's registration data set was extracted on August 26, 2002. Thus, an adjustment was made to the first model year of all vehicle types in the DC registration data. The number of registered LDVs and LDTs in the first model year was multiplied by 9/11. This fraction represents 9 months from the beginning of the 2002 model year (assumed to be October 1, 2001) as of July 1, 2002, but 11 months of registered vehicles in the DC database for the 2002 model year. Similarly, the number of HDVs and MCs registered in DC in the 2002 model year were multiplied by 6/8. This represents six months from the beginning of the model year (starts Jan 1) to July 1, 2002, but 8 months of registered HDVs and MCs in the DC database for the 2002 model year. For Maryland, Virginia, and DC, any 2003 model year vehicles were included with the 2002 model year as the first model year in the registration data.

For each county in Virginia and Maryland, the 2002 registration data included counts of registered vehicles by the MOBILE5 vehicle categories. For use with MOBILE6, the LDGV and LDDV vehicle counts by model year were grouped together and the fraction by model year calculated. This was then used as the MOBILE6 LDV registration distribution. The LDGT1 and LDDT vehicle counts by model year were grouped together to create the MOBILE6 LDT1 and LDT2 registration distributions. The MOBILE5 LDGT2 vehicle counts were converted to fractions by model year and applied to the MOBILE6 LDT3 and LDT4 vehicle categories. The HDGV and HDDV vehicle counts by model year were grouped together to create the registration distribution for the MOBILE HDV categories, except the MOBILE6 HDBT (transit bus) category. The MOBILE6 HDBT registration distribution was calculated from the HDDV data only. DC did not have breakdowns of the vehicle registrations by gasoline and diesel. Thus, the MOBILE6 default diesel sales fractions by model year DC HDV data were applied to obtain the MOBILE6 HDBT registration distribution.

b. Diesel Sales Fractions

The diesel sales fractions input to MOBILE6 are specific to the calendar year being modeled. The MOBILE6 diesel sales fractions for 2002 are shown in Appendix 2.

2002 Diesel Sales Fractions

Diesel sales fractions were developed for each of the Maryland and Virginia counties based on 2002 year of analysis. The LDV diesel sales fractions were calculated by model year by dividing the LDDV registrations by the total of the LDGV plus LDDV registrations for each model year. Similarly, the LDT diesel sales fraction was calculated by model year by dividing the LDDT registrations by the total of the MOBILE5 LDGT1 plus LDDT registrations for each model year. These diesel sales fractions were applied to the MOBILE6 LDT1 and LDT2 categories. The MOBILE6 defaults for a 2002 calendar year are used for the District as well as for all of the heavy duty categories for Maryland and Virginia, since these sales fractions vary significantly by the MOBILE6 weight classes and the registration data for these States is not broken down by weight class. Appendix 2 shows the resulting diesel sales fractions, with the defaults shown for the District, and only the locally-derived LDV and LDT1/2 data shown for Maryland and Virginia.

c. I/M Anti-Tampering Program Inputs

Each jurisdiction provided I/M program inputs and ATP inputs in MOBILE6 format for 2002. Table 4 shows the I/M program parameters for DC. As shown in this table, a separate cutpoint file is needed for the vehicles included in the IM240 test. For all vehicles and model years included in the IM240 test (LDGVs, LDGTs, and HDGVs), the HC cutpoint modeled in this file is 0.8 grams per mile (g/mi), the CO cutpoint modeled is 15.0 g/mi, and the NOx cutpoint modeled is 2.0 g/mi. The I/M program parameters for Maryland are shown in Table 5. As with DC, a cutpoint file is needed to model the IM240 test. This cutpoint file is shown in Table 6. Table 7 shows the I/M program parameters for Virginia. The ATP inputs for all three jurisdictions are shown in Table 8.

2. MOBILE6 Scenario Data

The MOBILE6 network/local input files each contain 134 different scenarios. Table 9 summarizes the scenario commands and inputs. The minimum and maximum daily temperatures shown in Table 9 represent the average minimum and maximum daily temperatures recorded at National Airport and Dulles Airport during the top ten ozone exceedance days from 1998 through 2000. The RVP used in 2002 was 7.8.

a. Scenario-Specific Inputs

As shown in Table 9, several of these inputs vary by scenario. Table 10 summarizes the data modeled for each of these inputs by scenario. In scenarios 1 through 65, the AVERAGE SPEED input is modeled in 1 mile per hour (mph) increments, from 1 mph through 65 mph. The roadway type is also specified with the AVERAGE SPEED command. In scenarios 1 through 65, a roadway type of "Arterial" is specified. In scenarios 66 through 130, a roadway type of "Non-Ramp" is specified, again with speeds varying from 1 mph through 65 mph in 1 mph speed increments. The "Non-Ramp" roadway type represents interstates excluding the ramp portion of the interstate VMT. In each of these first 130 scenarios, the file referenced in the SOAK DISTRIBUTION command

represents the stabilized operating mode. This soak distribution is the first distribution shown in Table 11. Scenario 131 is used to represent ramp VMT. This scenario includes the VMT BY FACILITY command, with the referenced file including 100 percent of the VMT on ramps. This ramp VMT is modeled at the MOBILE6 default ramp speed of 34.6 miles per hour. Scenarios 132 and 133 are used to represent cold start and hot start conditions, respectively. Table 11 shows the soak distributions used in each of these scenarios. The final scenario, 134, models conditions on local roads for the off-network analysis. In this scenario, a different VMT mix is applied, specific to the local roads.

b. VMT Mix Fractions

VMT mix fractions by vehicle type for each jurisdiction in 2002 was based on an estimate of the overall non-bus HDV VMT fraction as output from COG's travel demand model combined with county-specific registration distributions and diesel sales fractions and MOBILE6 default data on the VMT mix by vehicle type within the heavy and light-duty vehicle categories. The 2002 HDVs (excluding buses) account for 7.94 percent of the network VMT and 1.73 percent of local road VMT. The LDV + MC group accounts for 92.06 percent of the total network VMT and 98.27 percent of the local road total VMT in 2002.

A set of MOBILE6 input files was first prepared using each county's registration distribution and the corresponding diesel sales fraction data for that county. These input files included no VMT mix information, and were run for a July evaluation month for a sample scenario. These MOBILE6 input files were run through MOBILE6 and the database outputs for these inputs were obtained. The MOBILE6 database output format gives VMT fractions for each of the 28 MOBILE6 vehicle types, based on the registration distribution and diesel sales fractions supplied in the input file, as well as the MOBILE6 default VMT mix by vehicle category for 2002. Next, following the guidance included in EPA's MOBILE6 technical guidance document (section 4.1.4), the total VMT fractions in the LDV+MC and the HDV groups in the MOBILE6 database output files were separately totaled. Following the MOBILE6 technical guidance, the LDV and MC VMT fractions were multiplied by the ratio of COG's estimated LDV + MC VMT fraction to the default MOBILE6 LDV + MC VMT fraction. The HDV VMT fractions, excluding the bus fractions (which were multiplied by 0), were multiplied the ratio of COG's estimated HDV VMT fraction to the default MOBILE6 default non-bus HDV VMT fraction. Finally, the new VMT mixes were allocated to the 16 vehicle types required when using VMT mix as an input to MOBILE6. These VMT mixes were then used in the MOBILE6 input files. This procedure was followed separately for network road and local roads for 2002 for each county. Tables 12 and 13 show the resulting VMT mix fractions for 2002 network and local roads, respectively. The network VMT mix fractions were included in Scenarios 1 through 133 of the MOBILE6 input files, while Scenario 134 used the local road VMT mix fractions.

B. MOBILE6 AUTO ACCESS TO TRANSIT INPUT FILE SETUP AND PROCESSING

A separate set of MOBILE6 input files was created for use in off-network calculations of

emissions resulting from auto access to transit. These input files were identical to the corresponding MOBILE6 network/local input files, with the exception of the VMT mixes used. The same procedure was used for developing the VMT mixes to represent auto access to transit. However, as this analysis pertains to vehicle accessing the transit system, the vehicle types generating the VMT are believed to be strictly commuting vehicles. Therefore, the HDV fraction was assumed to be 0 percent in 2002, with the LDV + MC accounting for 100 percent of the vehicles accessing the transit system. The resulting VMT mix fractions used for 2002 are reported in Table 14.

The resulting MOBILE6 output files representing auto access to transit were post-processed. Running VOC emission factors by speed were estimated by averaging the total exhaust plus running loss plus crankcase VOC emission factors expressed in grams per mile over the 12 jurisdictions. Similarly, average NOx exhaust emission factors were estimated at each speed over the 12 jurisdictions. The composite hot and cold start VOC and NOx emission rates were calculated based on the start-up portion of the emission factors from scenarios 132 and 133 (cold start and hot start, respectively) in grams per mile, combined with data from the MOBILE6 database output on the average daily miles driven by vehicle type, and the average trip starts made per day. Once these values were calculated for each county, an average hot start and cold start emission factor was estimated over the 12-county region.

Start-up Rate (gm/trip) =

(LDGV ef * LDGV_M / LDGV_S * LDGV_APCT) +
(LDGT12 ef * LDGT12_M / LDGT12_S * LDGT12_APCT) +
(LDGT34 ef * LDGT34_M / LDGT34_S * LDGT34_APCT) +
(LDDV ef * LDDV_M / LDDV_S * LDDV_APCT) +
(LDDT ef * LDDT_M / LDDT_S * LDDT_APCT) +
(MC ef * MC_M / MC_S * MC_APCT)

Where:

LDGV ef, …, MC ef = vehicle-specific start-up emission factor (gm/mi) taken from the MOBILE6 database output

LDGV_APCT,…, MC_APCT = vehicle-specific proportion of VMT of the total (gas & diesel) vehicle VMT

LDGV_M,…, MC_M = vehicle-specific average daily miles driven

LDGV_T,…, MC_S = vehicle-specific average trip starts made per day

C. MOBILE6 DIESEL SCHOOL BUS AND DIESEL TRANSIT BUS INPUT FILE SETUP

Separate MOBILE6 files were set up to model diesel school bus and diesel transit bus emission factors. These input files were set up on a regional rather than county basis, with one input file per year for diesel school buses and one input file per year for diesel transit buses. Based on the October 10, 2002 memo prepared by COG DTP staff, a 2002 MOBILE6 registration distribution was developed for the school bus analysis by using the first 16 years of the default MOBILE6 HDBS registration distribution and renormalizing these data over these 16 years (i.e., zeroing out years 17 through 25). The registration distribution used to model diesel transit buses was based on the regional total fleet distribution survey data provided by COG DTP staff. The 2002 school bus and transit bus RDTs are also provided in Appendix 1. For the 2002 school bus MOBILE6 input files, the VMT mix in all scenarios was set to 1 for the HDBS category and 0 for all other categories. For the 2002 transit bus MOBILE6 input files, the VMT mix in all scenarios was set to 1 for the HDBT category and 0 for all other categories. These VMT mix fractions are shown in Table 15. In the MOBILE6 school bus input file, the diesel sales fractions for all 25 years for the HDBS category were set to 1. The MOBILE6 default diesel sales fractions were used in the transit bus input file. These defaults are also 1 for the entire HDBT category.

Each of the MOBILE6 bus input files was modeled with 67 scenarios. The first sixty-five scenarios apply to 'Arterial' roadway type with an average speed of 1 through 65 mph. (The arterial and non-ramp emission factors under these conditions are identical at the same speed.) Scenario 66 models freeway ramps and scenario 67 represents local roads. All scenario use the stabilized operating mode inputs and the same ambient and fuel conditions as included in the network/local MOBILE6 input files. These scenarios are summarized in Table 16.

Once these MOBILE6 bus input files were run through MOBILE6, the school bus and transit bus emission factors were extracted from the corresponding output files. No other emission factors from these output files were used.

Table 1
MOBILE6 Run Information Common to All COG Counties

Command	Input	Comment
RUN DATA		Marks end of header section and beginning of Run section of input file
EXPRESS HC AS VOC		Directs MOBILE6 to report HC in terms of volatile organic compounds
EXPAND EVAPORATIVE		Display all evaporative emission types in descriptive output file
EXPAND EXHAUST		Display start, running, and total exhaust emission factors in descriptive output file
NO REFUELING		Exclude refueling emissions from all emission factors
WE DA TRI LEN DI	WeekTLD2.WDT	Reads weekday trip length percentages from specified file (see Table 2)
FUEL PROGRAM	2 S	Specifies that a Southern RFG program is in place
94+ LDG IMP	NLEVNE.D	Specifies that LEV implementation schedule should be read from specified file (see Table 3)
REG DIST	Varies by county	Registration distribution data (see Appendix 1)
ANTI-TAMP PROG	Varies by jurisdiction	
I/M PROGRAM	Varies by jurisdiction	
DIESEL FRACTIONS	Varies by county	See Appendix 2

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
2002 I/M Program Parameters for DC

Test Type	IDLE	IM240	FP & GC
I/M Program Years	1983	1983	1999
Test Frequency	Biennial	Biennial	Biennial
Program Type	T/O	T/O	T/O
Model Years	1968-1983	1984-2050	1972-2050
Stringency Rate (%)	20	20	N/A
Compliance Rate (%)	96	96	96
Waiver Rate (%)	3	3	N/A
Exemption Age	25	25	25
Cutpoint File	N/A	DC_cpnew	N/A
Vehicles Tested			
LDGV	Yes	Yes	Yes
LDGT1	Yes	Yes	Yes
LDGT2	Yes	Yes	Yes
LDGT3	Yes	Yes	Yes
LDGT4	Yes	Yes	Yes
HDGV2B	Yes	Yes	Yes
HDGV3	Yes	Yes	Yes
HDGV4	Yes	Yes	Yes
HDGV5	Yes	Yes	Yes
HDGV6	Yes	Yes	Yes
HDGV7	No	No	No
HDGV8A	No	No	No
HDGV8B	No	No	No
GAS BUS	No	No	No

Table 5
2002 I/M Program Parameters for Maryland

Test Type	IDLE	IDLE	IM240
I/M Program Years	1984	1984	1984
Test Frequency	Biennial	Biennial	Biennial
Program Type	T/O	T/O	T/O
Model Years	1977-1983	1977-2050	1984-2050
Stringency Rate (%)	20	20	20
Compliance Rate (%)	96	96	96
Waiver Rate (%)	11 and 15	11 and 15	11 and 15
Grace Period (years)	2	2	2
Cutpoint File	N/A	N/A	Phasein02
Vehicle Types			
LDGV	Yes	No	Yes
LDGT1	Yes	No	Yes
LDGT2	Yes	No	Yes
LDGT3	Yes	No	Yes
LDGT4	Yes	No	Yes
HDGV2B	Yes	No	Yes
HDGV3	No	Yes	No
HDGV4	No	Yes	No
HDGV5	No	Yes	No
HDGV6	No	Yes	No
HDGV7	No	No	No
HDGV8A	No	No	No
HDGV8B	No	No	No
GAS BUS	No	No	No

Table 6
IM240 Cutpoint File (Phasein02.CP2) for Maryland

I/M CUTPOINTS

:

* Block 1 (LDGV, Light LDGT1 (EPA LD 1)

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	2.000	2.000	2.000	2.000
2.000	2.000	2.200	2.000	2.000					
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	30.000	30.000	30.000	30.000
30.000	30.000	30.000	30.000	30.000					
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	3.000	3.000	3.000	3.000
3.000	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	2.400	2.400	2.400
2.400	2.400	3.200	3.200	3.200	3.200	3.200	3.200	3.200	3.200
3.200	3.200	3.200	3.200	3.200					
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	80.000	80.000	80.000	80.000
80.000	80.000	80.000	80.000	80.000					
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	7.000	7.000	7.000	7.000
7.000	7.000	7.000	7.000	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	3.200	3.200	3.200	3.200	3.200	3.200	3.200	3.200
3.200	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	80.000	80.000	80.000	80.000	80.000	80.000	80.000	80.000
80.000	80.000	80.000	80.000	80.000					
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	7.000	7.000	7.000	7.000
7.000	7.000	7.000	7.000	7.000					

* Block 4 (HDGV)

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	5.000	5.000	6.000	6.000
6.000	6.000	6.000	6.000	6.000					
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	80.000	80.000	100.000	100.000
100.000	100.000	100.000	100.000	100.000					
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	8.000	8.000	8.000	8.000
8.000	8.000	8.000	8.000	8.000					

Note: The 1996 and later cutpoints for LDGVs and LDGT1s are below the minimum allowable cutpoints in MOBILE6. Therefore, MOBILE6 overrides the 1996 and later cutpoints for LDGVs and LDGT1s with 0.80 grams/mile for HC, with 15.0 grams per mile for CO, and with 2.0 grams per mile for NOx.

Table 7
2002 I/M Program Parameters for Virginia

Program Parameters	2002		
Test Type	2500/IDLE	ASM 2525/5015 PHASE-IN	GC
I/M Program Start Year	1983	1983	1998
Test Frequency	Biennial	Biennial	Biennial
Program Type	TRC	TRC	TRC
Model Years	1968-2050*	1981-2050	1973-2050
Stringency Rate (%)	35	35	N/A
Compliance Rate (%)	98	98	98
Waiver Rate (%)	2	2	2
I/M Effectiveness (%)	N/A	94	N/A
Vehicle Tested			
LDGV	Yes	Yes	Yes
LDGT1	Yes	Yes	Yes
LDGT2	Yes	Yes	Yes
LDGT3	Yes	Yes	Yes
LDGT4	Yes	Yes	Yes
HDGV2B	Yes	No	Yes
HDGV3	No	No	No
HDGV4	No	No	No
HDGV5	No	No	No
HDGV6	No	No	No
HDGV7	No	No	No
HDGV8A	No	No	No
HDGV8B	No	No	No
GAS BUS	No	No	No

- **Except Clark and Spotsylvania counties, all others have I/M programs.**
- * Replace “2500” with “1980” and add another 2500/IDLE program with I/M Model Years as 1981-2050 with only HDGV2v covered by it.

Table 8
Anti-tampering Program Parameters for 2002

Program Element	DC	MD	VA
Program Start Year	1982	1989	1983
First Model Year	1984	1977	1973
Last Model Year	2050	2050	2050
Program Type	Test Only	Test Only	Test Only
Inspection Frequency	Biennial	Biennial	Biennial
Compliance Rate (%)	96	98	98
Vehicle Types			
LDGV	Yes	Yes	Yes
LDGT1	Yes	Yes	Yes
LDGT2	Yes	Yes	Yes
LDGT3	Yes	Yes	Yes
LDGT4	Yes	Yes	Yes
HDGV2B	Yes	Yes	Yes
HDGV3	Yes	Yes	No
HDGV4	Yes	Yes	No
HDGV5	Yes	Yes	No
HDGV6	Yes	Yes	No
HDGV7	Yes	Yes	No
HDGV8A	Yes	Yes	No
HDGV8B	Yes	Yes	No
GAS BUS	Yes	Yes	No
Inspections Performed			
Air pump system disablement	No	No	Yes
Catalyst removal	Yes	Yes	Yes
Fuel inlet restrictor disablement	Yes	Yes	No
Tailpipe lead deposit test	No	No	No
EGR disablement	No	No	Yes
Evaporative system disablement	No	No	Yes
PCV system disablement	No	No	Yes
Missing gas cap	Yes	Yes	Yes

Table 9
MOBILE6 Scenario Data Inputs

Command	Input	Comment
CALENDAR YEAR	varies	2002
EVALUATION MONTH	7	July registration distributions
MIN/MAX TEMPERATURE	68.5 95.0	Daily ozone season temperature range (^{o}F)
ALTITUDE	1	Low altitude area
FUEL RVP	varies	7.8 in 2002 but overwritten by default RFG parameters
AVERAGE SPEED	varies	See memo text; not used for scenarios 131-134
VMT BY FACILITY	varies	See memo text; not used for scenarios 1-130
SOAK DISTRIBUTION	varies	See memo text
VMT FRACTIONS	varies	See memo text

Table 10
Summary of Scenarios Modeled in Each MOBILE6 Input File
For Network or Auto Access to Transit Analysis

Scenario Number	Operating Mode	Facility Type	Speed
1-65	Stabilized	Arterial/Collectors	1-65 mph
66-130	Stabilized	Freeways excluding Ramps	1-65 mph
131	Stabilized	Freeway Ramps	34.6 mph
132	Cold Start	Local Roadways	12.9 mph
133	Hot Start	Local Roadways	12.9 mph
134	Stabilized	Local Roadways	12.9 mph

Table 11
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
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Cold Start Operating Mode

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SOAK DISTRIBUTION
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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
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Hot Start Operating Mode

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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
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```

Table 12
2002 Summer VMT Mix Fractions
For Network Analysis

Vehicle Type	2002 Summer VMT Mix Fractions											
		Maryland Counties					Virginia Counties					
	DC	Calvert	Charles	Frederick	Montgomery	Prince George's	Alexandria	Arlington	Fairfax	Loudoun	Prince William	Stafford
LDV	0.4638	0.4537	0.4560	0.4570	0.4526	0.4578	0.4519	0.4582	0.4549	0.4588	0.4618	0.4682
LDT1	0.0774	0.0796	0.0796	0.0796	0.0801	0.0796	0.0770	0.0763	0.0767	0.0765	0.0760	0.0754
LDT2	0.2576	0.2651	0.2649	0.2650	0.2667	0.2651	0.2564	0.2540	0.2554	0.2545	0.2530	0.2510
LDT3	0.0799	0.0802	0.0788	0.0783	0.0798	0.0773	0.0892	0.0873	0.0881	0.0862	0.0852	0.0827
LDT4	0.0366	0.0370	0.0362	0.0360	0.0367	0.0356	0.0411	0.0400	0.0406	0.0395	0.0393	0.0380
HDV2B	0.0242	0.0251	0.0250	0.0246	0.0243	0.0247	0.0239	0.0241	0.0240	0.0240	0.0241	0.0242
HDV3	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024
HDV4	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021
HDV5	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016
HDV6	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0061	0.0061	0.0061	0.0061	0.0061	0.0060
HDV7	0.0072	0.0070	0.0071	0.0071	0.0072	0.0071	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072
HDV8A	0.0080	0.0077	0.0077	0.0079	0.0080	0.0078	0.0081	0.0080	0.0080	0.0080	0.0080	0.0080
HDV8B	0.0279	0.0275	0.0275	0.0277	0.0278	0.0277	0.0280	0.0279	0.0280	0.0280	0.0279	0.0279
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
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
MC	0.0053	0.0050	0.0051	0.0047	0.0047	0.0052	0.0050	0.0048	0.0049	0.0051	0.0053	0.0053

Table 13
2002 Summer VMT Mix Fractions
For Local Analysis

Vehicle Type	2002 Summer VMT Mix Fractions											
		Maryland Counties					Virginia Counties					
	DC	Calvert	Charles	Frederick	Montgomery	Prince George's	Alexandria	Arlington	Fairfax	Loudoun	Prince William	Stafford
LDV	0.4951	0.4843	0.4867	0.4878	0.4832	0.4887	0.4824	0.4891	0.4856	0.4897	0.4930	0.4997
LDT1	0.0826	0.0850	0.0849	0.0850	0.0855	0.0850	0.0822	0.0814	0.0819	0.0816	0.0811	0.0805
LDT2	0.2750	0.2830	0.2828	0.2828	0.2847	0.2830	0.2737	0.2711	0.2726	0.2717	0.2701	0.2680
LDT3	0.0853	0.0856	0.0841	0.0836	0.0852	0.0825	0.0952	0.0931	0.0941	0.0920	0.0910	0.0883
LDT4	0.0390	0.0394	0.0387	0.0384	0.0391	0.0380	0.0438	0.0429	0.0432	0.0423	0.0418	0.0406
HDV2B	0.0053	0.0055	0.0055	0.0054	0.0053	0.0054	0.0052	0.0053	0.0052	0.0052	0.0053	0.0053
HDV3	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
HDV4	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
HDV5	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
HDV6	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013
HDV7	0.0016	0.0015	0.0015	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016
HDV8A	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0018	0.0017	0.0018	0.0018	0.0017	0.0017
HDV8B	0.0061	0.0060	0.0060	0.0060	0.0061	0.0060	0.0061	0.0061	0.0061	0.0061	0.0061	0.0061
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
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
MC	0.0057	0.0054	0.0055	0.0051	0.0050	0.0055	0.0054	0.0051	0.0053	0.0054	0.0057	0.0056

Table 14
2002 Summer VMT Mix Fractions
For Auto Access to Transit Analysis

Vehicle Type	2002 Summer VMT Mix Fractions											
		Maryland Counties					Virginia Counties					
	DC	Calvert	Charles	Frederick	Montgomery	Prince George's	Alexandria	Arlington	Fairfax	Loudoun	Prince William	Stafford
LDV	0.5038	0.4929	0.4953	0.4964	0.4917	0.4973	0.4909	0.4977	0.4942	0.4983	0.5016	0.5085
LDT1	0.0841	0.0865	0.0864	0.0865	0.0870	0.0865	0.0837	0.0829	0.0833	0.0830	0.0826	0.0819
LDT2	0.2798	0.2880	0.2878	0.2878	0.2897	0.2880	0.2785	0.2759	0.2774	0.2765	0.2748	0.2727
LDT3	0.0868	0.0871	0.0856	0.0850	0.0867	0.0839	0.0969	0.0948	0.0957	0.0936	0.0926	0.0898
LDT4	0.0397	0.0400	0.0393	0.0391	0.0398	0.0387	0.0446	0.0435	0.0441	0.0431	0.0426	0.0414
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
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
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
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
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
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
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
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
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
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
MC	0.0058	0.0055	0.0056	0.0052	0.0051	0.0056	0.0054	0.0052	0.0053	0.0055	0.0058	0.0057

Table 15
2002 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

Table 16
Summary of Scenarios Modeled in Each MOBILE6 Input File
For School Bus or Transit Bus Analysis

Scenario Number	Operating Mode	Facility Type	Speed
1-65	Stabilized	Arterial/Collectors	1-65 mph
66	Stabilized	Freeway Ramps	34.6 mph
67	Stabilized	Local Road	12.9 mph

Appendix 1
Vehicle Registration Distributions

Registration distributions (RDT) specify the fraction of vehicles by age in the fleet. The distribution for each vehicle category is presented (in fraction) for the newest model year (2002) and progressing back for 25 model years. This information is given for each of the 16 required vehicle classes used in MOBILE6, for each jurisdiction. For school and transit buses, the RDT reported were based on 2002 metropolitan Washington's regional distribution.

District of Columbia—2002 Registration Data

* LDV M5 LDGV
0.0436 0.0625 0.0786 0.0638 0.0650 0.0678 0.0640 0.0740 0.0653 0.0565
0.0530 0.0488 0.0488 0.0436 0.0381 0.0320 0.0252 0.0177 0.0127 0.0071
0.0041 0.0034 0.0026 0.0041 0.0177
* LDT1 M5 LDGT1
0.0663 0.0951 0.0854 0.0832 0.0865 0.0767 0.0675 0.0649 0.0564 0.0496
0.0367 0.0348 0.0340 0.0327 0.0295 0.0252 0.0199 0.0129 0.0113 0.0063
0.0035 0.0027 0.0021 0.0032 0.0139
* LDT2 M5 LDGT1
0.0663 0.0951 0.0854 0.0832 0.0865 0.0767 0.0675 0.0649 0.0564 0.0496
0.0367 0.0348 0.0340 0.0327 0.0295 0.0252 0.0199 0.0129 0.0113 0.0063
0.0035 0.0027 0.0021 0.0032 0.0139
* LDT3 M5 LDGT2
0.0663 0.0951 0.0329 0.0811 0.0422 0.0631 0.0496 0.0654 0.0764 0.0453
0.0339 0.0383 0.0410 0.0461 0.0359 0.0385 0.0356 0.0298 0.0163 0.0132
0.0084 0.0056 0.0043 0.0067 0.0291
* LDT4 M5 LDGT2
0.0663 0.0951 0.0329 0.0811 0.0422 0.0631 0.0496 0.0654 0.0764 0.0453
0.0339 0.0383 0.0410 0.0461 0.0359 0.0385 0.0356 0.0298 0.0163 0.0132
0.0084 0.0056 0.0043 0.0067 0.0291
* HDV2B M5 HDVs (Combined HDGV and HDDV)
0.0606 0.1248 0.0724 0.0923 0.0605 0.0517 0.0409 0.0615 0.0750 0.0601
0.0320 0.0356 0.0509 0.0337 0.0379 0.0291 0.0245 0.0145 0.0059 0.0045
0.0041 0.0035 0.0041 0.0038 0.0161
* HDV3 M5 HDVs (Combined HDGV and HDDV)
0.0606 0.1248 0.0724 0.0923 0.0605 0.0517 0.0409 0.0615 0.0750 0.0601
0.0320 0.0356 0.0509 0.0337 0.0379 0.0291 0.0245 0.0145 0.0059 0.0045
0.0041 0.0035 0.0041 0.0038 0.0161
* HDV4 M5 HDVs (Combined HDGV and HDDV)
0.0606 0.1248 0.0724 0.0923 0.0605 0.0517 0.0409 0.0615 0.0750 0.0601
0.0320 0.0356 0.0509 0.0337 0.0379 0.0291 0.0245 0.0145 0.0059 0.0045
0.0041 0.0035 0.0041 0.0038 0.0161
* HDV5 M5 HDVs (Combined HDGV and HDDV)
0.0606 0.1248 0.0724 0.0923 0.0605 0.0517 0.0409 0.0615 0.0750 0.0601
0.0320 0.0356 0.0509 0.0337 0.0379 0.0291 0.0245 0.0145 0.0059 0.0045
0.0041 0.0035 0.0041 0.0038 0.0161
* HDV6 M5 HDVs (Combined HDGV and HDDV)
0.0606 0.1248 0.0724 0.0923 0.0605 0.0517 0.0409 0.0615 0.0750 0.0601
0.0320 0.0356 0.0509 0.0337 0.0379 0.0291 0.0245 0.0145 0.0059 0.0045
0.0041 0.0035 0.0041 0.0038 0.0161
* HDV7 M5 HDVs (Combined HDGV and HDDV)
0.0606 0.1248 0.0724 0.0923 0.0605 0.0517 0.0409 0.0615 0.0750 0.0601
0.0320 0.0356 0.0509 0.0337 0.0379 0.0291 0.0245 0.0145 0.0059 0.0045
0.0041 0.0035 0.0041 0.0038 0.0161
* HDV8a M5 HDVs (Combined HDGV and HDDV)
0.0606 0.1248 0.0724 0.0923 0.0605 0.0517 0.0409 0.0615 0.0750 0.0601
0.0320 0.0356 0.0509 0.0337 0.0379 0.0291 0.0245 0.0145 0.0059 0.0045
0.0041 0.0035 0.0041 0.0038 0.0161
* HDV8b M5 HDVs (Combined HDGV and HDDV)
0.0606 0.1248 0.0724 0.0923 0.0605 0.0517 0.0409 0.0615 0.0750 0.0601
0.0320 0.0356 0.0509 0.0337 0.0379 0.0291 0.0245 0.0145 0.0059 0.0045
0.0041 0.0035 0.0041 0.0038 0.0161
* HDBS M5 HDVs (Combined HDGV and HDDV)
0.0606 0.1248 0.0724 0.0923 0.0605 0.0517 0.0409 0.0615 0.0750 0.0601
0.0320 0.0356 0.0509 0.0337 0.0379 0.0291 0.0245 0.0145 0.0059 0.0045
0.0041 0.0035 0.0041 0.0038 0.0161
* HDBT M5 HDDVs
0.0741 0.1734 0.1144 0.0746 0.0537 0.0607 0.0369 0.0574 0.0693 0.0410
0.0291 0.0328 0.0537 0.0307 0.0209 0.0197 0.0189 0.0119 0.0057 0.0041
0.0029 0.0020 0.0041 0.0016 0.0066
* Motorcycles M5 MC
0.1036 0.1417 0.0866 0.0901 0.0415 0.0479 0.0551 0.0465 0.0258 0.0293
0.0222 0.3098 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

Calvert County, MD—2002 Registration Data

* LDV M5 LDGV
0.0452 0.0709 0.0786 0.0710 0.0696 0.0719 0.0602 0.0707 0.0588 0.0537
0.0463 0.0441 0.0405 0.0366 0.0337 0.0272 0.0220 0.0151 0.0103 0.0064
0.0034 0.0029 0.0027 0.0030 0.0551
* LDT1 M5 LDGT1
0.0719 0.0899 0.1074 0.1046 0.0951 0.0779 0.0735 0.0708 0.0554 0.0466
0.0370 0.0316 0.0273 0.0266 0.0238 0.0187 0.0130 0.0071 0.0068 0.0035
0.0019 0.0015 0.0005 0.0021 0.0054
* LDT2 M5 LDGT1
0.0719 0.0899 0.1074 0.1046 0.0951 0.0779 0.0735 0.0708 0.0554 0.0466
0.0370 0.0316 0.0273 0.0266 0.0238 0.0187 0.0130 0.0071 0.0068 0.0035
0.0019 0.0015 0.0005 0.0021 0.0054
* LDT3 M5 LDGT2
0.0580 0.0816 0.0813 0.0717 0.0615 0.0643 0.0563 0.0583 0.0638 0.0469
0.0354 0.0313 0.0379 0.0418 0.0438 0.0356 0.0388 0.0221 0.0152 0.0099
0.0073 0.0050 0.0042 0.0061 0.0219
* LDT4 M5 LDGT2
0.0580 0.0816 0.0813 0.0717 0.0615 0.0643 0.0563 0.0583 0.0638 0.0469
0.0354 0.0313 0.0379 0.0418 0.0438 0.0356 0.0388 0.0221 0.0152 0.0099
0.0073 0.0050 0.0042 0.0061 0.0219
* HDV2B M5 HDVs (Combined HDGV and HDDV)
0.0367 0.0683 0.0720 0.0582 0.0413 0.0555 0.0445 0.0683 0.0491 0.0298
0.0339 0.0215 0.0486 0.0459 0.0601 0.0399 0.0348 0.0344 0.0211 0.0133
0.0092 0.0087 0.0124 0.0151 0.0775
* HDV3 M5 HDVs (Combined HDGV and HDDV)
0.0367 0.0683 0.0720 0.0582 0.0413 0.0555 0.0445 0.0683 0.0491 0.0298
0.0339 0.0215 0.0486 0.0459 0.0601 0.0399 0.0348 0.0344 0.0211 0.0133
0.0092 0.0087 0.0124 0.0151 0.0775
* HDV4 M5 HDVs (Combined HDGV and HDDV)
0.0367 0.0683 0.0720 0.0582 0.0413 0.0555 0.0445 0.0683 0.0491 0.0298
0.0339 0.0215 0.0486 0.0459 0.0601 0.0399 0.0348 0.0344 0.0211 0.0133
0.0092 0.0087 0.0124 0.0151 0.0775
* HDV5 M5 HDVs (Combined HDGV and HDDV)
0.0367 0.0683 0.0720 0.0582 0.0413 0.0555 0.0445 0.0683 0.0491 0.0298
0.0339 0.0215 0.0486 0.0459 0.0601 0.0399 0.0348 0.0344 0.0211 0.0133
0.0092 0.0087 0.0124 0.0151 0.0775
* HDV6 M5 HDVs (Combined HDGV and HDDV)
0.0367 0.0683 0.0720 0.0582 0.0413 0.0555 0.0445 0.0683 0.0491 0.0298
0.0339 0.0215 0.0486 0.0459 0.0601 0.0399 0.0348 0.0344 0.0211 0.0133
0.0092 0.0087 0.0124 0.0151 0.0775
* HDV7 M5 HDVs (Combined HDGV and HDDV)
0.0367 0.0683 0.0720 0.0582 0.0413 0.0555 0.0445 0.0683 0.0491 0.0298
0.0339 0.0215 0.0486 0.0459 0.0601 0.0399 0.0348 0.0344 0.0211 0.0133
0.0092 0.0087 0.0124 0.0151 0.0775
* HDV8a M5 HDVs (Combined HDGV and HDDV)
0.0367 0.0683 0.0720 0.0582 0.0413 0.0555 0.0445 0.0683 0.0491 0.0298
0.0339 0.0215 0.0486 0.0459 0.0601 0.0399 0.0348 0.0344 0.0211 0.0133
0.0092 0.0087 0.0124 0.0151 0.0775
* HDV8b M5 HDVs (Combined HDGV and HDDV)
0.0367 0.0683 0.0720 0.0582 0.0413 0.0555 0.0445 0.0683 0.0491 0.0298
0.0339 0.0215 0.0486 0.0459 0.0601 0.0399 0.0348 0.0344 0.0211 0.0133
0.0092 0.0087 0.0124 0.0151 0.0775
* HDBS M5 HDVs (Combined HDGV and HDDV)
0.0367 0.0683 0.0720 0.0582 0.0413 0.0555 0.0445 0.0683 0.0491 0.0298
0.0339 0.0215 0.0486 0.0459 0.0601 0.0399 0.0348 0.0344 0.0211 0.0133
0.0092 0.0087 0.0124 0.0151 0.0775
* HDBT M5 HDDVs
0.0053 0.0339 0.0446 0.0446 0.0499 0.0838 0.0749 0.0927 0.0553 0.0410
0.0517 0.0250 0.0517 0.0410 0.0677 0.0695 0.0392 0.0321 0.0250 0.0125
0.0071 0.0107 0.0196 0.0053 0.0160
* Motorcycles M5 MC
0.1049 0.1128 0.0976 0.0740 0.0567 0.0467 0.0477 0.0331 0.0231 0.0294
0.0215 0.3526 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

Charles County, MD—2002 Registration Data

* LDV M5 LDGV
0.0495 0.0696 0.0802 0.0724 0.0728 0.0715 0.0623 0.0730 0.0631 0.0559
0.0457 0.0435 0.0390 0.0356 0.0315 0.0271 0.0192 0.0160 0.0107 0.0063
0.0030 0.0023 0.0025 0.0030 0.0444
* LDT1 M5 LDGT1
0.0731 0.1015 0.1050 0.0993 0.0944 0.0849 0.0739 0.0688 0.0549 0.0467
0.0327 0.0282 0.0240 0.0274 0.0223 0.0179 0.0121 0.0097 0.0071 0.0039
0.0019 0.0013 0.0006 0.0021 0.0063
* LDT2 M5 LDGT1
0.0731 0.1015 0.1050 0.0993 0.0944 0.0849 0.0739 0.0688 0.0549 0.0467
0.0327 0.0282 0.0240 0.0274 0.0223 0.0179 0.0121 0.0097 0.0071 0.0039
0.0019 0.0013 0.0006 0.0021 0.0063
* LDT3 M5 LDGT2
0.0579 0.0821 0.0750 0.0673 0.0620 0.0651 0.0509 0.0575 0.0661 0.0452
0.0357 0.0355 0.0380 0.0400 0.0429 0.0380 0.0347 0.0247 0.0182 0.0116
0.0080 0.0053 0.0043 0.0081 0.0258
* LDT4 M5 LDGT2
0.0579 0.0821 0.0750 0.0673 0.0620 0.0651 0.0509 0.0575 0.0661 0.0452
0.0357 0.0355 0.0380 0.0400 0.0429 0.0380 0.0347 0.0247 0.0182 0.0116
0.0080 0.0053 0.0043 0.0081 0.0258
* HDV2B M5 HDVs (Combined HDGV and HDDV)
0.0359 0.0721 0.0678 0.0611 0.0497 0.0546 0.0441 0.0613 0.0399 0.0449
0.0302 0.0325 0.0413 0.0492 0.0500 0.0447 0.0404 0.0294 0.0206 0.0122
0.0071 0.0096 0.0119 0.0158 0.0738
* HDV3 M5 HDVs (Combined HDGV and HDDV)
0.0359 0.0721 0.0678 0.0611 0.0497 0.0546 0.0441 0.0613 0.0399 0.0449
0.0302 0.0325 0.0413 0.0492 0.0500 0.0447 0.0404 0.0294 0.0206 0.0122
0.0071 0.0096 0.0119 0.0158 0.0738
* HDV4 M5 HDVs (Combined HDGV and HDDV)
0.0359 0.0721 0.0678 0.0611 0.0497 0.0546 0.0441 0.0613 0.0399 0.0449
0.0302 0.0325 0.0413 0.0492 0.0500 0.0447 0.0404 0.0294 0.0206 0.0122
0.0071 0.0096 0.0119 0.0158 0.0738
* HDV5 M5 HDVs (Combined HDGV and HDDV)
0.0359 0.0721 0.0678 0.0611 0.0497 0.0546 0.0441 0.0613 0.0399 0.0449
0.0302 0.0325 0.0413 0.0492 0.0500 0.0447 0.0404 0.0294 0.0206 0.0122
0.0071 0.0096 0.0119 0.0158 0.0738
* HDV6 M5 HDVs (Combined HDGV and HDDV)
0.0359 0.0721 0.0678 0.0611 0.0497 0.0546 0.0441 0.0613 0.0399 0.0449
0.0302 0.0325 0.0413 0.0492 0.0500 0.0447 0.0404 0.0294 0.0206 0.0122
0.0071 0.0096 0.0119 0.0158 0.0738
* HDV7 M5 HDVs (Combined HDGV and HDDV)
0.0359 0.0721 0.0678 0.0611 0.0497 0.0546 0.0441 0.0613 0.0399 0.0449
0.0302 0.0325 0.0413 0.0492 0.0500 0.0447 0.0404 0.0294 0.0206 0.0122
0.0071 0.0096 0.0119 0.0158 0.0738
* HDV8a M5 HDVs (Combined HDGV and HDDV)
0.0359 0.0721 0.0678 0.0611 0.0497 0.0546 0.0441 0.0613 0.0399 0.0449
0.0302 0.0325 0.0413 0.0492 0.0500 0.0447 0.0404 0.0294 0.0206 0.0122
0.0071 0.0096 0.0119 0.0158 0.0738
* HDV8b M5 HDVs (Combined HDGV and HDDV)
0.0359 0.0721 0.0678 0.0611 0.0497 0.0546 0.0441 0.0613 0.0399 0.0449
0.0302 0.0325 0.0413 0.0492 0.0500 0.0447 0.0404 0.0294 0.0206 0.0122
0.0071 0.0096 0.0119 0.0158 0.0738
* HDBS M5 HDVs (Combined HDGV and HDDV)
0.0359 0.0721 0.0678 0.0611 0.0497 0.0546 0.0441 0.0613 0.0399 0.0449
0.0302 0.0325 0.0413 0.0492 0.0500 0.0447 0.0404 0.0294 0.0206 0.0122
0.0071 0.0096 0.0119 0.0158 0.0738
* HDBT M5 HDDVs
0.0149 0.0298 0.0437 0.0785 0.0656 0.0716 0.0636 0.0825 0.0557 0.0447
0.0318 0.0308 0.0467 0.0656 0.0686 0.0547 0.0427 0.0318 0.0159 0.0089
0.0060 0.0139 0.0060 0.0119 0.0139
* Motorcycles M5 MC
0.0944 0.1365 0.0971 0.0800 0.0576 0.0432 0.0512 0.0372 0.0375 0.0296
0.0273 0.3083 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

Frederick County, MD—2002 Registration Data

* LDV M5 LDGV
0.0528 0.0761 0.0821 0.0730 0.0712 0.0732 0.0661 0.0745 0.0607 0.0541
0.0449 0.0414 0.0388 0.0338 0.0276 0.0233 0.0178 0.0122 0.0089 0.0045
0.0030 0.0021 0.0022 0.0031 0.0528
* LDT1 M5 LDGT1
0.0738 0.0984 0.1056 0.0973 0.0992 0.0825 0.0744 0.0767 0.0622 0.0455
0.0334 0.0281 0.0251 0.0239 0.0198 0.0158 0.0100 0.0083 0.0057 0.0029
0.0019 0.0009 0.0010 0.0024 0.0053
* LDT2 M5 LDGT1
0.0738 0.0984 0.1056 0.0973 0.0992 0.0825 0.0744 0.0767 0.0622 0.0455
0.0334 0.0281 0.0251 0.0239 0.0198 0.0158 0.0100 0.0083 0.0057 0.0029
0.0019 0.0009 0.0010 0.0024 0.0053
* LDT3 M5 LDGT2
0.0465 0.0741 0.0762 0.0733 0.0678 0.0677 0.0547 0.0645 0.0677 0.0434
0.0373 0.0377 0.0376 0.0430 0.0424 0.0353 0.0345 0.0210 0.0161 0.0105
0.0060 0.0060 0.0043 0.0081 0.0242
* LDT4 M5 LDGT2
0.0465 0.0741 0.0762 0.0733 0.0678 0.0677 0.0547 0.0645 0.0677 0.0434
0.0373 0.0377 0.0376 0.0430 0.0424 0.0353 0.0345 0.0210 0.0161 0.0105
0.0060 0.0060 0.0043 0.0081 0.0242
* HDV2B M5 HDVs (Combined HDGV and HDDV)
0.0606 0.0805 0.0921 0.0899 0.0416 0.0700 0.0501 0.0531 0.0363 0.0314
0.0236 0.0237 0.0405 0.0412 0.0436 0.0311 0.0344 0.0268 0.0176 0.0108
0.0085 0.0085 0.0093 0.0146 0.0603
* HDV3 M5 HDVs (Combined HDGV and HDDV)
0.0606 0.0805 0.0921 0.0899 0.0416 0.0700 0.0501 0.0531 0.0363 0.0314
0.0236 0.0237 0.0405 0.0412 0.0436 0.0311 0.0344 0.0268 0.0176 0.0108
0.0085 0.0085 0.0093 0.0146 0.0603
* HDV4 M5 HDVs (Combined HDGV and HDDV)
0.0606 0.0805 0.0921 0.0899 0.0416 0.0700 0.0501 0.0531 0.0363 0.0314
0.0236 0.0237 0.0405 0.0412 0.0436 0.0311 0.0344 0.0268 0.0176 0.0108
0.0085 0.0085 0.0093 0.0146 0.0603
* HDV5 M5 HDVs (Combined HDGV and HDDV)
0.0606 0.0805 0.0921 0.0899 0.0416 0.0700 0.0501 0.0531 0.0363 0.0314
0.0236 0.0237 0.0405 0.0412 0.0436 0.0311 0.0344 0.0268 0.0176 0.0108
0.0085 0.0085 0.0093 0.0146 0.0603
* HDV6 M5 HDVs (Combined HDGV and HDDV)
0.0606 0.0805 0.0921 0.0899 0.0416 0.0700 0.0501 0.0531 0.0363 0.0314
0.0236 0.0237 0.0405 0.0412 0.0436 0.0311 0.0344 0.0268 0.0176 0.0108
0.0085 0.0085 0.0093 0.0146 0.0603
* HDV7 M5 HDVs (Combined HDGV and HDDV)
0.0606 0.0805 0.0921 0.0899 0.0416 0.0700 0.0501 0.0531 0.0363 0.0314
0.0236 0.0237 0.0405 0.0412 0.0436 0.0311 0.0344 0.0268 0.0176 0.0108
0.0085 0.0085 0.0093 0.0146 0.0603
* HDV8a M5 HDVs (Combined HDGV and HDDV)
0.0606 0.0805 0.0921 0.0899 0.0416 0.0700 0.0501 0.0531 0.0363 0.0314
0.0236 0.0237 0.0405 0.0412 0.0436 0.0311 0.0344 0.0268 0.0176 0.0108
0.0085 0.0085 0.0093 0.0146 0.0603
* HDV8b M5 HDVs (Combined HDGV and HDDV)
0.0606 0.0805 0.0921 0.0899 0.0416 0.0700 0.0501 0.0531 0.0363 0.0314
0.0236 0.0237 0.0405 0.0412 0.0436 0.0311 0.0344 0.0268 0.0176 0.0108
0.0085 0.0085 0.0093 0.0146 0.0603
* HDBS M5 HDVs (Combined HDGV and HDDV)
0.0606 0.0805 0.0921 0.0899 0.0416 0.0700 0.0501 0.0531 0.0363 0.0314
0.0236 0.0237 0.0405 0.0412 0.0436 0.0311 0.0344 0.0268 0.0176 0.0108
0.0085 0.0085 0.0093 0.0146 0.0603
* HDBT M5 HDDVs
0.0353 0.0544 0.0616 0.1062 0.0387 0.1045 0.0624 0.0684 0.0506 0.0429
0.0255 0.0212 0.0344 0.0374 0.0527 0.0463 0.0391 0.0302 0.0221 0.0110
0.0068 0.0093 0.0072 0.0119 0.0200
* Motorcycles M5 MC
0.0841 0.1112 0.0905 0.0655 0.0528 0.0409 0.0389 0.0350 0.0285 0.0276

0.0223 0.4029 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

Montgomery County, MD—2002 Registration Data

* LDV M5 LDGV
0.0635 0.0864 0.0846 0.0754 0.0730 0.0724 0.0652 0.0748 0.0626 0.0551
0.0480 0.0434 0.0422 0.0335 0.0273 0.0231 0.0164 0.0114 0.0075 0.0045
0.0027 0.0019 0.0016 0.0019 0.0216
* LDT1 M5 LDGT1
0.0951 0.1220 0.1208 0.1064 0.0931 0.0848 0.0725 0.0695 0.0543 0.0418
0.0289 0.0250 0.0201 0.0171 0.0141 0.0108 0.0071 0.0047 0.0037 0.0019
0.0011 0.0006 0.0005 0.0011 0.0027
* LDT2 M5 LDGT1
0.0951 0.1220 0.1208 0.1064 0.0931 0.0848 0.0725 0.0695 0.0543 0.0418
0.0289 0.0250 0.0201 0.0171 0.0141 0.0108 0.0071 0.0047 0.0037 0.0019
0.0011 0.0006 0.0005 0.0011 0.0027
* LDT3 M5 LDGT2
0.0726 0.0976 0.0894 0.0733 0.0622 0.0672 0.0562 0.0661 0.0638 0.0413
0.0335 0.0303 0.0354 0.0395 0.0370 0.0308 0.0296 0.0177 0.0143 0.0075
0.0058 0.0041 0.0031 0.0053 0.0164
* LDT4 M5 LDGT2
0.0726 0.0976 0.0894 0.0733 0.0622 0.0672 0.0562 0.0661 0.0638 0.0413
0.0335 0.0303 0.0354 0.0395 0.0370 0.0308 0.0296 0.0177 0.0143 0.0075
0.0058 0.0041 0.0031 0.0053 0.0164
* HDV2B M5 HDVs (Combined HDGV and HDDV)
0.0589 0.0987 0.1176 0.0854 0.0497 0.0671 0.0405 0.0623 0.0356 0.0308
0.0199 0.0303 0.0407 0.0389 0.0366 0.0414 0.0277 0.0203 0.0138 0.0083
0.0067 0.0056 0.0111 0.0101 0.0419
* HDV3 M5 HDVs (Combined HDGV and HDDV)
0.0589 0.0987 0.1176 0.0854 0.0497 0.0671 0.0405 0.0623 0.0356 0.0308
0.0199 0.0303 0.0407 0.0389 0.0366 0.0414 0.0277 0.0203 0.0138 0.0083
0.0067 0.0056 0.0111 0.0101 0.0419
* HDV4 M5 HDVs (Combined HDGV and HDDV)
0.0589 0.0987 0.1176 0.0854 0.0497 0.0671 0.0405 0.0623 0.0356 0.0308
0.0199 0.0303 0.0407 0.0389 0.0366 0.0414 0.0277 0.0203 0.0138 0.0083
0.0067 0.0056 0.0111 0.0101 0.0419
* HDV5 M5 HDVs (Combined HDGV and HDDV)
0.0589 0.0987 0.1176 0.0854 0.0497 0.0671 0.0405 0.0623 0.0356 0.0308
0.0199 0.0303 0.0407 0.0389 0.0366 0.0414 0.0277 0.0203 0.0138 0.0083
0.0067 0.0056 0.0111 0.0101 0.0419
* HDV6 M5 HDVs (Combined HDGV and HDDV)
0.0589 0.0987 0.1176 0.0854 0.0497 0.0671 0.0405 0.0623 0.0356 0.0308
0.0199 0.0303 0.0407 0.0389 0.0366 0.0414 0.0277 0.0203 0.0138 0.0083
0.0067 0.0056 0.0111 0.0101 0.0419
* HDV7 M5 HDVs (Combined HDGV and HDDV)
0.0589 0.0987 0.1176 0.0854 0.0497 0.0671 0.0405 0.0623 0.0356 0.0308
0.0199 0.0303 0.0407 0.0389 0.0366 0.0414 0.0277 0.0203 0.0138 0.0083
0.0067 0.0056 0.0111 0.0101 0.0419
* HDV8a M5 HDVs (Combined HDGV and HDDV)
0.0589 0.0987 0.1176 0.0854 0.0497 0.0671 0.0405 0.0623 0.0356 0.0308
0.0199 0.0303 0.0407 0.0389 0.0366 0.0414 0.0277 0.0203 0.0138 0.0083
0.0067 0.0056 0.0111 0.0101 0.0419
* HDV8b M5 HDVs (Combined HDGV and HDDV)
0.0589 0.0987 0.1176 0.0854 0.0497 0.0671 0.0405 0.0623 0.0356 0.0308
0.0199 0.0303 0.0407 0.0389 0.0366 0.0414 0.0277 0.0203 0.0138 0.0083
0.0067 0.0056 0.0111 0.0101 0.0419
* HDBS M5 HDVs (Combined HDGV and HDDV)
0.0589 0.0987 0.1176 0.0854 0.0497 0.0671 0.0405 0.0623 0.0356 0.0308
0.0199 0.0303 0.0407 0.0389 0.0366 0.0414 0.0277 0.0203 0.0138 0.0083
0.0067 0.0056 0.0111 0.0101 0.0419
* HDBT M5 HDDVs
0.0105 0.0309 0.0454 0.0725 0.0491 0.0949 0.0493 0.1019 0.0414 0.0456
0.0256 0.0533 0.0723 0.0594 0.0449 0.0850 0.0410 0.0230 0.0156 0.0072
0.0057 0.0048 0.0070 0.0037 0.0099

* Motorcycles M5 MC
0.0853 0.1188 0.0877 0.0634 0.0555 0.0416 0.0442 0.0413 0.0362 0.0325
0.0263 0.3673 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

Prince George's County, MD—2002 Registration Data

* LDV M5 LDGV
0.0418 0.0637 0.0732 0.0668 0.0691 0.0741 0.0664 0.0757 0.0664 0.0589
0.0523 0.0468 0.0466 0.0409 0.0352 0.0296 0.0222 0.0159 0.0106 0.0060
0.0034 0.0027 0.0022 0.0030 0.0263
* LDT1 M5 LDGT1
0.0669 0.0933 0.0973 0.0990 0.0984 0.0881 0.0732 0.0727 0.0588 0.0487
0.0349 0.0308 0.0293 0.0270 0.0235 0.0176 0.0114 0.0089 0.0063 0.0033
0.0019 0.0011 0.0009 0.0021 0.0045
* LDT2 M5 LDGT1
0.0669 0.0933 0.0973 0.0990 0.0984 0.0881 0.0732 0.0727 0.0588 0.0487
0.0349 0.0308 0.0293 0.0270 0.0235 0.0176 0.0114 0.0089 0.0063 0.0033
0.0019 0.0011 0.0009 0.0021 0.0045
* LDT3 M5 LDGT2
0.0472 0.0723 0.0759 0.0616 0.0580 0.0638 0.0536 0.0578 0.0648 0.0436
0.0361 0.0342 0.0425 0.0464 0.0445 0.0369 0.0397 0.0258 0.0204 0.0132
0.0084 0.0076 0.0049 0.0096 0.0312
* LDT4 M5 LDGT2
0.0472 0.0723 0.0759 0.0616 0.0580 0.0638 0.0536 0.0578 0.0648 0.0436
0.0361 0.0342 0.0425 0.0464 0.0445 0.0369 0.0397 0.0258 0.0204 0.0132
0.0084 0.0076 0.0049 0.0096 0.0312
* HDV2B M5 HDVs (Combined HDGV and HDDV)
0.0431 0.0847 0.0871 0.0830 0.0509 0.0674 0.0405 0.0714 0.0485 0.0300
0.0215 0.0294 0.0650 0.0501 0.0531 0.0331 0.0271 0.0249 0.0200 0.0070
0.0057 0.0058 0.0050 0.0084 0.0374
* HDV3 M5 HDVs (Combined HDGV and HDDV)
0.0431 0.0847 0.0871 0.0830 0.0509 0.0674 0.0405 0.0714 0.0485 0.0300
0.0215 0.0294 0.0650 0.0501 0.0531 0.0331 0.0271 0.0249 0.0200 0.0070
0.0057 0.0058 0.0050 0.0084 0.0374
* HDV4 M5 HDVs (Combined HDGV and HDDV)
0.0431 0.0847 0.0871 0.0830 0.0509 0.0674 0.0405 0.0714 0.0485 0.0300
0.0215 0.0294 0.0650 0.0501 0.0531 0.0331 0.0271 0.0249 0.0200 0.0070
0.0057 0.0058 0.0050 0.0084 0.0374
* HDV5 M5 HDVs (Combined HDGV and HDDV)
0.0431 0.0847 0.0871 0.0830 0.0509 0.0674 0.0405 0.0714 0.0485 0.0300
0.0215 0.0294 0.0650 0.0501 0.0531 0.0331 0.0271 0.0249 0.0200 0.0070
0.0057 0.0058 0.0050 0.0084 0.0374
* HDV6 M5 HDVs (Combined HDGV and HDDV)
0.0431 0.0847 0.0871 0.0830 0.0509 0.0674 0.0405 0.0714 0.0485 0.0300
0.0215 0.0294 0.0650 0.0501 0.0531 0.0331 0.0271 0.0249 0.0200 0.0070
0.0057 0.0058 0.0050 0.0084 0.0374
* HDV7 M5 HDVs (Combined HDGV and HDDV)
0.0431 0.0847 0.0871 0.0830 0.0509 0.0674 0.0405 0.0714 0.0485 0.0300
0.0215 0.0294 0.0650 0.0501 0.0531 0.0331 0.0271 0.0249 0.0200 0.0070
0.0057 0.0058 0.0050 0.0084 0.0374
* HDV8a M5 HDVs (Combined HDGV and HDDV)
0.0431 0.0847 0.0871 0.0830 0.0509 0.0674 0.0405 0.0714 0.0485 0.0300
0.0215 0.0294 0.0650 0.0501 0.0531 0.0331 0.0271 0.0249 0.0200 0.0070
0.0057 0.0058 0.0050 0.0084 0.0374
* HDV8b M5 HDVs (Combined HDGV and HDDV)
0.0431 0.0847 0.0871 0.0830 0.0509 0.0674 0.0405 0.0714 0.0485 0.0300
0.0215 0.0294 0.0650 0.0501 0.0531 0.0331 0.0271 0.0249 0.0200 0.0070
0.0057 0.0058 0.0050 0.0084 0.0374
* HDBS M5 HDVs (Combined HDGV and HDDV)
0.0431 0.0847 0.0871 0.0830 0.0509 0.0674 0.0405 0.0714 0.0485 0.0300
0.0215 0.0294 0.0650 0.0501 0.0531 0.0331 0.0271 0.0249 0.0200 0.0070
0.0057 0.0058 0.0050 0.0084 0.0374
* HDBT M5 HDDVs
0.0215 0.0421 0.0395 0.0724 0.0477 0.0828 0.0613 0.1030 0.0452 0.0363

0.0285 0.0478 0.1143 0.0746 0.0483 0.0414 0.0277 0.0206 0.0139 0.0053
0.0041 0.0038 0.0034 0.0041 0.0104
* Motorcycles M5 MC
0.0856 0.1345 0.1067 0.0854 0.0557 0.0470 0.0492 0.0407 0.0331 0.0341
0.0290 0.2989 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

Alexandria, VA—2002 Registration Data

* LDV M5 LDGV
0.1006 0.0993 0.0778 0.0690 0.0673 0.0655 0.0588 0.0668 0.0571 0.0521
0.0458 0.0448 0.0417 0.0350 0.0298 0.0255 0.0178 0.0118 0.0071 0.0044
0.0024 0.0017 0.0014 0.0014 0.0149
* LDT1 M5 LDGT1
0.1357 0.1517 0.0854 0.0674 0.0720 0.0683 0.0590 0.0595 0.0540 0.0434
0.0342 0.0318 0.0266 0.0246 0.0208 0.0185 0.0146 0.0096 0.0064 0.0035
0.0029 0.0020 0.0012 0.0012 0.0056
* LDT2 M5 LDGT1
0.1357 0.1517 0.0854 0.0674 0.0720 0.0683 0.0590 0.0595 0.0540 0.0434
0.0342 0.0318 0.0266 0.0246 0.0208 0.0185 0.0146 0.0096 0.0064 0.0035
0.0029 0.0020 0.0012 0.0012 0.0056
* LDT3 M5 LDGT2
0.1475 0.2009 0.0913 0.0922 0.0647 0.0559 0.0407 0.0450 0.0379 0.0240
0.0209 0.0140 0.0205 0.0229 0.0195 0.0162 0.0125 0.0105 0.0074 0.0048
0.0027 0.0020 0.0017 0.0062 0.0380
* LDT4 M5 LDGT2
0.1475 0.2009 0.0913 0.0922 0.0647 0.0559 0.0407 0.0450 0.0379 0.0240
0.0209 0.0140 0.0205 0.0229 0.0195 0.0162 0.0125 0.0105 0.0074 0.0048
0.0027 0.0020 0.0017 0.0062 0.0380
* HDV2B M5 HDVs (Combined HDGV and HDDV)
0.0721 0.1407 0.1120 0.1002 0.0465 0.0796 0.0519 0.0668 0.0441 0.0296
0.0211 0.0210 0.0301 0.0357 0.0454 0.0221 0.0238 0.0166 0.0107 0.0055
0.0033 0.0047 0.0030 0.0040 0.0097
* HDV3 M5 HDVs (Combined HDGV and HDDV)
0.0721 0.1407 0.1120 0.1002 0.0465 0.0796 0.0519 0.0668 0.0441 0.0296
0.0211 0.0210 0.0301 0.0357 0.0454 0.0221 0.0238 0.0166 0.0107 0.0055
0.0033 0.0047 0.0030 0.0040 0.0097
* HDV4 M5 HDVs (Combined HDGV and HDDV)
0.0721 0.1407 0.1120 0.1002 0.0465 0.0796 0.0519 0.0668 0.0441 0.0296
0.0211 0.0210 0.0301 0.0357 0.0454 0.0221 0.0238 0.0166 0.0107 0.0055
0.0033 0.0047 0.0030 0.0040 0.0097
* HDV5 M5 HDVs (Combined HDGV and HDDV)
0.0721 0.1407 0.1120 0.1002 0.0465 0.0796 0.0519 0.0668 0.0441 0.0296
0.0211 0.0210 0.0301 0.0357 0.0454 0.0221 0.0238 0.0166 0.0107 0.0055
0.0033 0.0047 0.0030 0.0040 0.0097
* HDV6 M5 HDVs (Combined HDGV and HDDV)
0.0721 0.1407 0.1120 0.1002 0.0465 0.0796 0.0519 0.0668 0.0441 0.0296
0.0211 0.0210 0.0301 0.0357 0.0454 0.0221 0.0238 0.0166 0.0107 0.0055
0.0033 0.0047 0.0030 0.0040 0.0097
* HDV7 M5 HDVs (Combined HDGV and HDDV)
0.0721 0.1407 0.1120 0.1002 0.0465 0.0796 0.0519 0.0668 0.0441 0.0296
0.0211 0.0210 0.0301 0.0357 0.0454 0.0221 0.0238 0.0166 0.0107 0.0055
0.0033 0.0047 0.0030 0.0040 0.0097
* HDV8a M5 HDVs (Combined HDGV and HDDV)
0.0721 0.1407 0.1120 0.1002 0.0465 0.0796 0.0519 0.0668 0.0441 0.0296
0.0211 0.0210 0.0301 0.0357 0.0454 0.0221 0.0238 0.0166 0.0107 0.0055
0.0033 0.0047 0.0030 0.0040 0.0097
* HDV8b M5 HDVs (Combined HDGV and HDDV)
0.0721 0.1407 0.1120 0.1002 0.0465 0.0796 0.0519 0.0668 0.0441 0.0296
0.0211 0.0210 0.0301 0.0357 0.0454 0.0221 0.0238 0.0166 0.0107 0.0055
0.0033 0.0047 0.0030 0.0040 0.0097
* HDBS M5 HDVs (Combined HDGV and HDDV)
0.0721 0.1407 0.1120 0.1002 0.0465 0.0796 0.0519 0.0668 0.0441 0.0296
0.0211 0.0210 0.0301 0.0357 0.0454 0.0221 0.0238 0.0166 0.0107 0.0055
0.0033 0.0047 0.0030 0.0040 0.0097

* HDBT M5 HDDVs
0.0632 0.0977 0.1025 0.1188 0.0402 0.0872 0.0546 0.0728 0.0460 0.0326
0.0182 0.0249 0.0326 0.0364 0.0680 0.0239 0.0278 0.0172 0.0105 0.0048
0.0019 0.0048 0.0029 0.0048 0.0057
* Motorcycles M5 MC
0.1312 0.1213 0.1082 0.0829 0.0668 0.0407 0.0468 0.0453 0.0353 0.0253
0.0215 0.2748 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

Arlington County, VA—2002 Registration Data

* LDV M5 LDGV
0.0714 0.0840 0.0803 0.0715 0.0677 0.0687 0.0624 0.0687 0.0595 0.0556
0.0481 0.0483 0.0439 0.0387 0.0314 0.0258 0.0193 0.0126 0.0088 0.0046
0.0032 0.0021 0.0019 0.0019 0.0196
* LDT1 M5 LDGT1
0.0900 0.1039 0.0949 0.0764 0.0794 0.0739 0.0670 0.0678 0.0619 0.0492
0.0374 0.0365 0.0282 0.0294 0.0258 0.0219 0.0189 0.0110 0.0074 0.0041
0.0031 0.0020 0.0012 0.0015 0.0071
* LDT2 M5 LDGT1
0.0900 0.1039 0.0949 0.0764 0.0794 0.0739 0.0670 0.0678 0.0619 0.0492
0.0374 0.0365 0.0282 0.0294 0.0258 0.0219 0.0189 0.0110 0.0074 0.0041
0.0031 0.0020 0.0012 0.0015 0.0071
* LDT3 M5 LDGT2
0.1000 0.1391 0.1040 0.1075 0.0731 0.0622 0.0472 0.0533 0.0445 0.0282
0.0230 0.0168 0.0221 0.0278 0.0247 0.0200 0.0163 0.0121 0.0089 0.0058
0.0029 0.0017 0.0018 0.0075 0.0494
* LDT4 M5 LDGT2
0.1000 0.1391 0.1040 0.1075 0.0731 0.0622 0.0472 0.0533 0.0445 0.0282
0.0230 0.0168 0.0221 0.0278 0.0247 0.0200 0.0163 0.0121 0.0089 0.0058
0.0029 0.0017 0.0018 0.0075 0.0494
* HDV2B M5 HDVs (Combined HDGV and HDDV)
0.0461 0.1056 0.1376 0.0946 0.0598 0.0710 0.0545 0.0705 0.0464 0.0373
0.0248 0.0245 0.0290 0.0404 0.0354 0.0282 0.0244 0.0195 0.0135 0.0055
0.0052 0.0029 0.0046 0.0035 0.0152
* HDV3 M5 HDVs (Combined HDGV and HDDV)
0.0461 0.1056 0.1376 0.0946 0.0598 0.0710 0.0545 0.0705 0.0464 0.0373
0.0248 0.0245 0.0290 0.0404 0.0354 0.0282 0.0244 0.0195 0.0135 0.0055
0.0052 0.0029 0.0046 0.0035 0.0152
* HDV4 M5 HDVs (Combined HDGV and HDDV)
0.0461 0.1056 0.1376 0.0946 0.0598 0.0710 0.0545 0.0705 0.0464 0.0373
0.0248 0.0245 0.0290 0.0404 0.0354 0.0282 0.0244 0.0195 0.0135 0.0055
0.0052 0.0029 0.0046 0.0035 0.0152
* HDV5 M5 HDVs (Combined HDGV and HDDV)
0.0461 0.1056 0.1376 0.0946 0.0598 0.0710 0.0545 0.0705 0.0464 0.0373
0.0248 0.0245 0.0290 0.0404 0.0354 0.0282 0.0244 0.0195 0.0135 0.0055
0.0052 0.0029 0.0046 0.0035 0.0152
* HDV6 M5 HDVs (Combined HDGV and HDDV)
0.0461 0.1056 0.1376 0.0946 0.0598 0.0710 0.0545 0.0705 0.0464 0.0373
0.0248 0.0245 0.0290 0.0404 0.0354 0.0282 0.0244 0.0195 0.0135 0.0055
0.0052 0.0029 0.0046 0.0035 0.0152
* HDV7 M5 HDVs (Combined HDGV and HDDV)
0.0461 0.1056 0.1376 0.0946 0.0598 0.0710 0.0545 0.0705 0.0464 0.0373
0.0248 0.0245 0.0290 0.0404 0.0354 0.0282 0.0244 0.0195 0.0135 0.0055
0.0052 0.0029 0.0046 0.0035 0.0152
* HDV8a M5 HDVs (Combined HDGV and HDDV)
0.0461 0.1056 0.1376 0.0946 0.0598 0.0710 0.0545 0.0705 0.0464 0.0373
0.0248 0.0245 0.0290 0.0404 0.0354 0.0282 0.0244 0.0195 0.0135 0.0055
0.0052 0.0029 0.0046 0.0035 0.0152
* HDV8b M5 HDVs (Combined HDGV and HDDV)
0.0461 0.1056 0.1376 0.0946 0.0598 0.0710 0.0545 0.0705 0.0464 0.0373
0.0248 0.0245 0.0290 0.0404 0.0354 0.0282 0.0244 0.0195 0.0135 0.0055
0.0052 0.0029 0.0046 0.0035 0.0152
* HDBS M5 HDVs (Combined HDGV and HDDV)
0.0461 0.1056 0.1376 0.0946 0.0598 0.0710 0.0545 0.0705 0.0464 0.0373

0.0248 0.0245 0.0290 0.0404 0.0354 0.0282 0.0244 0.0195 0.0135 0.0055
0.0052 0.0029 0.0046 0.0035 0.0152
* HDBT M5 HDDVs
0.0352 0.0803 0.1465 0.0972 0.0648 0.0592 0.0535 0.0718 0.0437 0.0493
0.0239 0.0324 0.0296 0.0394 0.0451 0.0352 0.0225 0.0225 0.0155 0.0028
0.0056 0.0014 0.0070 0.0028 0.0127
* Motorcycles M5 MC
0.0793 0.1187 0.1024 0.0619 0.0529 0.0394 0.0523 0.0400 0.0394 0.0298
0.0231 0.3607 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

Fairfax County, VA—2002 Registration Data

* LDV M5 LDGV
0.0583 0.0848 0.0923 0.0803 0.0763 0.0738 0.0648 0.0709 0.0608 0.0552
0.0470 0.0429 0.0412 0.0340 0.0276 0.0230 0.0167 0.0113 0.0074 0.0042
0.0025 0.0018 0.0015 0.0017 0.0197
* LDT1 M5 LDGT1
0.0846 0.1045 0.1091 0.0880 0.0879 0.0802 0.0702 0.0679 0.0609 0.0457
0.0331 0.0309 0.0254 0.0255 0.0218 0.0186 0.0150 0.0093 0.0065 0.0035
0.0022 0.0017 0.0011 0.0013 0.0053
* LDT2 M5 LDGT1
0.0846 0.1045 0.1091 0.0880 0.0879 0.0802 0.0702 0.0679 0.0609 0.0457
0.0331 0.0309 0.0254 0.0255 0.0218 0.0186 0.0150 0.0093 0.0065 0.0035
0.0022 0.0017 0.0011 0.0013 0.0053
* LDT3 M5 LDGT2
0.0935 0.1402 0.1191 0.1243 0.0805 0.0673 0.0501 0.0535 0.0437 0.0263
0.0207 0.0143 0.0200 0.0235 0.0210 0.0165 0.0130 0.0103 0.0077 0.0052
0.0021 0.0017 0.0017 0.0069 0.0369
* LDT4 M5 LDGT2
0.0935 0.1402 0.1191 0.1243 0.0805 0.0673 0.0501 0.0535 0.0437 0.0263
0.0207 0.0143 0.0200 0.0235 0.0210 0.0165 0.0130 0.0103 0.0077 0.0052
0.0021 0.0017 0.0017 0.0069 0.0369
* HDV2B M5 HDVs (Combined HDGV and HDDV)
0.0504 0.1074 0.1335 0.1051 0.0607 0.0810 0.0573 0.0753 0.0505 0.0322
0.0237 0.0227 0.0309 0.0360 0.0290 0.0254 0.0218 0.0171 0.0112 0.0059
0.0039 0.0033 0.0027 0.0031 0.0097
* HDV3 M5 HDVs (Combined HDGV and HDDV)
0.0504 0.1074 0.1335 0.1051 0.0607 0.0810 0.0573 0.0753 0.0505 0.0322
0.0237 0.0227 0.0309 0.0360 0.0290 0.0254 0.0218 0.0171 0.0112 0.0059
0.0039 0.0033 0.0027 0.0031 0.0097
* HDV4 M5 HDVs (Combined HDGV and HDDV)
0.0504 0.1074 0.1335 0.1051 0.0607 0.0810 0.0573 0.0753 0.0505 0.0322
0.0237 0.0227 0.0309 0.0360 0.0290 0.0254 0.0218 0.0171 0.0112 0.0059
0.0039 0.0033 0.0027 0.0031 0.0097
* HDV5 M5 HDVs (Combined HDGV and HDDV)
0.0504 0.1074 0.1335 0.1051 0.0607 0.0810 0.0573 0.0753 0.0505 0.0322
0.0237 0.0227 0.0309 0.0360 0.0290 0.0254 0.0218 0.0171 0.0112 0.0059
0.0039 0.0033 0.0027 0.0031 0.0097
* HDV6 M5 HDVs (Combined HDGV and HDDV)
0.0504 0.1074 0.1335 0.1051 0.0607 0.0810 0.0573 0.0753 0.0505 0.0322
0.0237 0.0227 0.0309 0.0360 0.0290 0.0254 0.0218 0.0171 0.0112 0.0059
0.0039 0.0033 0.0027 0.0031 0.0097
* HDV7 M5 HDVs (Combined HDGV and HDDV)
0.0504 0.1074 0.1335 0.1051 0.0607 0.0810 0.0573 0.0753 0.0505 0.0322
0.0237 0.0227 0.0309 0.0360 0.0290 0.0254 0.0218 0.0171 0.0112 0.0059
0.0039 0.0033 0.0027 0.0031 0.0097
* HDV8a M5 HDVs (Combined HDGV and HDDV)
0.0504 0.1074 0.1335 0.1051 0.0607 0.0810 0.0573 0.0753 0.0505 0.0322
0.0237 0.0227 0.0309 0.0360 0.0290 0.0254 0.0218 0.0171 0.0112 0.0059
0.0039 0.0033 0.0027 0.0031 0.0097
* HDV8b M5 HDVs (Combined HDGV and HDDV)
0.0504 0.1074 0.1335 0.1051 0.0607 0.0810 0.0573 0.0753 0.0505 0.0322
0.0237 0.0227 0.0309 0.0360 0.0290 0.0254 0.0218 0.0171 0.0112 0.0059
0.0039 0.0033 0.0027 0.0031 0.0097

* HDBS M5 HDVs (Combined HDGV and HDDV)
0.0504 0.1074 0.1335 0.1051 0.0607 0.0810 0.0573 0.0753 0.0505 0.0322
0.0237 0.0227 0.0309 0.0360 0.0290 0.0254 0.0218 0.0171 0.0112 0.0059
0.0039 0.0033 0.0027 0.0031 0.0097
* HDBT M5 HDDVs
0.0523 0.0934 0.1151 0.1029 0.0590 0.0782 0.0563 0.0813 0.0542 0.0365
0.0250 0.0288 0.0362 0.0376 0.0329 0.0314 0.0236 0.0193 0.0117 0.0053
0.0044 0.0028 0.0024 0.0027 0.0069
* Motorcycles M5 MC
0.0881 0.1186 0.1092 0.0888 0.0641 0.0478 0.0475 0.0426 0.0335 0.0285
0.0268 0.3045 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

Loudoun County, VA—2002 Registration Data

* LDV M5 LDGV
0.0747 0.0934 0.0972 0.0835 0.0811 0.0750 0.0671 0.0704 0.0581 0.0522
0.0414 0.0386 0.0347 0.0284 0.0236 0.0186 0.0143 0.0096 0.0066 0.0036
0.0020 0.0015 0.0012 0.0016 0.0216
* LDT1 M5 LDGT1
0.0849 0.1114 0.1148 0.0915 0.0884 0.0833 0.0697 0.0628 0.0570 0.0421
0.0298 0.0274 0.0221 0.0242 0.0211 0.0170 0.0153 0.0103 0.0069 0.0041
0.0025 0.0023 0.0015 0.0017 0.0081
* LDT2 M5 LDGT1
0.0849 0.1114 0.1148 0.0915 0.0884 0.0833 0.0697 0.0628 0.0570 0.0421
0.0298 0.0274 0.0221 0.0242 0.0211 0.0170 0.0153 0.0103 0.0069 0.0041
0.0025 0.0023 0.0015 0.0017 0.0081
* LDT3 M5 LDGT2
0.0918 0.1434 0.1212 0.1250 0.0789 0.0671 0.0480 0.0477 0.0398 0.0233
0.0182 0.0122 0.0169 0.0222 0.0198 0.0152 0.0130 0.0111 0.0079 0.0059
0.0024 0.0021 0.0025 0.0086 0.0557
* LDT4 M5 LDGT2
0.0918 0.1434 0.1212 0.1250 0.0789 0.0671 0.0480 0.0477 0.0398 0.0233
0.0182 0.0122 0.0169 0.0222 0.0198 0.0152 0.0130 0.0111 0.0079 0.0059
0.0024 0.0021 0.0025 0.0086 0.0557
* HDV2B M5 HDVs (Combined HDGV and HDDV)
0.0546 0.1133 0.1217 0.1070 0.0560 0.0823 0.0550 0.0697 0.0489 0.0329
0.0218 0.0168 0.0278 0.0346 0.0356 0.0260 0.0255 0.0179 0.0131 0.0072
0.0045 0.0052 0.0033 0.0049 0.0144
* HDV3 M5 HDVs (Combined HDGV and HDDV)
0.0546 0.1133 0.1217 0.1070 0.0560 0.0823 0.0550 0.0697 0.0489 0.0329
0.0218 0.0168 0.0278 0.0346 0.0356 0.0260 0.0255 0.0179 0.0131 0.0072
0.0045 0.0052 0.0033 0.0049 0.0144
* HDV4 M5 HDVs (Combined HDGV and HDDV)
0.0546 0.1133 0.1217 0.1070 0.0560 0.0823 0.0550 0.0697 0.0489 0.0329
0.0218 0.0168 0.0278 0.0346 0.0356 0.0260 0.0255 0.0179 0.0131 0.0072
0.0045 0.0052 0.0033 0.0049 0.0144
* HDV5 M5 HDVs (Combined HDGV and HDDV)
0.0546 0.1133 0.1217 0.1070 0.0560 0.0823 0.0550 0.0697 0.0489 0.0329
0.0218 0.0168 0.0278 0.0346 0.0356 0.0260 0.0255 0.0179 0.0131 0.0072
0.0045 0.0052 0.0033 0.0049 0.0144
* HDV6 M5 HDVs (Combined HDGV and HDDV)
0.0546 0.1133 0.1217 0.1070 0.0560 0.0823 0.0550 0.0697 0.0489 0.0329
0.0218 0.0168 0.0278 0.0346 0.0356 0.0260 0.0255 0.0179 0.0131 0.0072
0.0045 0.0052 0.0033 0.0049 0.0144
* HDV7 M5 HDVs (Combined HDGV and HDDV)
0.0546 0.1133 0.1217 0.1070 0.0560 0.0823 0.0550 0.0697 0.0489 0.0329
0.0218 0.0168 0.0278 0.0346 0.0356 0.0260 0.0255 0.0179 0.0131 0.0072
0.0045 0.0052 0.0033 0.0049 0.0144
* HDV8a M5 HDVs (Combined HDGV and HDDV)
0.0546 0.1133 0.1217 0.1070 0.0560 0.0823 0.0550 0.0697 0.0489 0.0329
0.0218 0.0168 0.0278 0.0346 0.0356 0.0260 0.0255 0.0179 0.0131 0.0072
0.0045 0.0052 0.0033 0.0049 0.0144
* HDV8b M5 HDVs (Combined HDGV and HDDV)
0.0546 0.1133 0.1217 0.1070 0.0560 0.0823 0.0550 0.0697 0.0489 0.0329

0.0218 0.0168 0.0278 0.0346 0.0356 0.0260 0.0255 0.0179 0.0131 0.0072
0.0045 0.0052 0.0033 0.0049 0.0144
* HDBS M5 HDVs (Combined HDGV and HDDV)
0.0546 0.1133 0.1217 0.1070 0.0560 0.0823 0.0550 0.0697 0.0489 0.0329
0.0218 0.0168 0.0278 0.0346 0.0356 0.0260 0.0255 0.0179 0.0131 0.0072
0.0045 0.0052 0.0033 0.0049 0.0144
* HDBT M5 HDDVs
0.0580 0.1063 0.1018 0.1056 0.0526 0.0808 0.0540 0.0734 0.0521 0.0372
0.0227 0.0180 0.0310 0.0355 0.0422 0.0303 0.0284 0.0187 0.0142 0.0071
0.0047 0.0054 0.0026 0.0052 0.0118
* Motorcycles M5 MC
0.1024 0.1392 0.1204 0.0871 0.0608 0.0500 0.0527 0.0368 0.0355 0.0239
0.0242 0.2669 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

Prince William, VA—2002 Registration Data

* LDV M5 LDGV
0.0519 0.0765 0.0874 0.0754 0.0765 0.0769 0.0670 0.0733 0.0630 0.0562
0.0456 0.0431 0.0387 0.0355 0.0305 0.0244 0.0183 0.0123 0.0088 0.0047
0.0026 0.0019 0.0016 0.0020 0.0259
* LDT1 M5 LDGT1
0.0720 0.0897 0.0967 0.0810 0.0844 0.0802 0.0692 0.0676 0.0640 0.0492
0.0360 0.0328 0.0300 0.0306 0.0290 0.0231 0.0201 0.0119 0.0088 0.0047
0.0036 0.0025 0.0016 0.0018 0.0095
* LDT2 M5 LDGT1
0.0720 0.0897 0.0967 0.0810 0.0844 0.0802 0.0692 0.0676 0.0640 0.0492
0.0360 0.0328 0.0300 0.0306 0.0290 0.0231 0.0201 0.0119 0.0088 0.0047
0.0036 0.0025 0.0016 0.0018 0.0095
* LDT3 M5 LDGT2
0.0768 0.1187 0.1039 0.1136 0.0771 0.0670 0.0488 0.0528 0.0460 0.0281
0.0223 0.0149 0.0223 0.0283 0.0270 0.0209 0.0174 0.0133 0.0106 0.0071
0.0035 0.0025 0.0024 0.0094 0.0653
* LDT4 M5 LDGT2
0.0768 0.1187 0.1039 0.1136 0.0771 0.0670 0.0488 0.0528 0.0460 0.0281
0.0223 0.0149 0.0223 0.0283 0.0270 0.0209 0.0174 0.0133 0.0106 0.0071
0.0035 0.0025 0.0024 0.0094 0.0653
* HDV2B M5 HDVs (Combined HDGV and HDDV)
0.0532 0.0985 0.1249 0.1119 0.0544 0.0761 0.0548 0.0682 0.0511 0.0359
0.0220 0.0178 0.0280 0.0385 0.0346 0.0290 0.0251 0.0215 0.0130 0.0073
0.0053 0.0045 0.0041 0.0042 0.0160
* HDV3 M5 HDVs (Combined HDGV and HDDV)
0.0532 0.0985 0.1249 0.1119 0.0544 0.0761 0.0548 0.0682 0.0511 0.0359
0.0220 0.0178 0.0280 0.0385 0.0346 0.0290 0.0251 0.0215 0.0130 0.0073
0.0053 0.0045 0.0041 0.0042 0.0160
* HDV4 M5 HDVs (Combined HDGV and HDDV)
0.0532 0.0985 0.1249 0.1119 0.0544 0.0761 0.0548 0.0682 0.0511 0.0359
0.0220 0.0178 0.0280 0.0385 0.0346 0.0290 0.0251 0.0215 0.0130 0.0073
0.0053 0.0045 0.0041 0.0042 0.0160
* HDV5 M5 HDVs (Combined HDGV and HDDV)
0.0532 0.0985 0.1249 0.1119 0.0544 0.0761 0.0548 0.0682 0.0511 0.0359
0.0220 0.0178 0.0280 0.0385 0.0346 0.0290 0.0251 0.0215 0.0130 0.0073
0.0053 0.0045 0.0041 0.0042 0.0160
* HDV6 M5 HDVs (Combined HDGV and HDDV)
0.0532 0.0985 0.1249 0.1119 0.0544 0.0761 0.0548 0.0682 0.0511 0.0359
0.0220 0.0178 0.0280 0.0385 0.0346 0.0290 0.0251 0.0215 0.0130 0.0073
0.0053 0.0045 0.0041 0.0042 0.0160
* HDV7 M5 HDVs (Combined HDGV and HDDV)
0.0532 0.0985 0.1249 0.1119 0.0544 0.0761 0.0548 0.0682 0.0511 0.0359
0.0220 0.0178 0.0280 0.0385 0.0346 0.0290 0.0251 0.0215 0.0130 0.0073
0.0053 0.0045 0.0041 0.0042 0.0160
* HDV8a M5 HDVs (Combined HDGV and HDDV)
0.0532 0.0985 0.1249 0.1119 0.0544 0.0761 0.0548 0.0682 0.0511 0.0359
0.0220 0.0178 0.0280 0.0385 0.0346 0.0290 0.0251 0.0215 0.0130 0.0073
0.0053 0.0045 0.0041 0.0042 0.0160

* HDV8b M5 HDVs (Combined HDGV and HDDV)
0.0532 0.0985 0.1249 0.1119 0.0544 0.0761 0.0548 0.0682 0.0511 0.0359
0.0220 0.0178 0.0280 0.0385 0.0346 0.0290 0.0251 0.0215 0.0130 0.0073
0.0053 0.0045 0.0041 0.0042 0.0160
* HDBS M5 HDVs (Combined HDGV and HDDV)
0.0532 0.0985 0.1249 0.1119 0.0544 0.0761 0.0548 0.0682 0.0511 0.0359
0.0220 0.0178 0.0280 0.0385 0.0346 0.0290 0.0251 0.0215 0.0130 0.0073
0.0053 0.0045 0.0041 0.0042 0.0160
* HDBT M5 HDDVs
0.0625 0.0961 0.1203 0.1218 0.0508 0.0711 0.0535 0.0680 0.0523 0.0400
0.0204 0.0179 0.0274 0.0365 0.0361 0.0317 0.0239 0.0230 0.0118 0.0065
0.0049 0.0037 0.0039 0.0037 0.0119
* Motorcycles M5 MC
0.1235 0.1399 0.1087 0.0864 0.0563 0.0494 0.0532 0.0419 0.0313 0.0235
0.0199 0.2661 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

Stafford County, VA—2002 Registration Data

* LDV M5 LDGV
0.0493 0.0783 0.0861 0.0775 0.0751 0.0731 0.0651 0.0730 0.0611 0.0569
0.0457 0.0411 0.0373 0.0371 0.0311 0.0244 0.0193 0.0125 0.0092 0.0045
0.0032 0.0017 0.0020 0.0022 0.0332
* LDT1 M5 LDGT1
0.0640 0.0857 0.0926 0.0780 0.0802 0.0746 0.0662 0.0648 0.0660 0.0493
0.0381 0.0331 0.0312 0.0337 0.0318 0.0255 0.0247 0.0145 0.0106 0.0070
0.0045 0.0038 0.0026 0.0033 0.0141
* LDT2 M5 LDGT1
0.0640 0.0857 0.0926 0.0780 0.0802 0.0746 0.0662 0.0648 0.0660 0.0493
0.0381 0.0331 0.0312 0.0337 0.0318 0.0255 0.0247 0.0145 0.0106 0.0070
0.0045 0.0038 0.0026 0.0033 0.0141
* LDT3 M5 LDGT2
0.0677 0.1103 0.0964 0.1048 0.0712 0.0598 0.0447 0.0486 0.0458 0.0272
0.0228 0.0149 0.0237 0.0307 0.0296 0.0224 0.0207 0.0157 0.0121 0.0099
0.0039 0.0035 0.0036 0.0156 0.0943
* LDT4 M5 LDGT2
0.0677 0.1103 0.0964 0.1048 0.0712 0.0598 0.0447 0.0486 0.0458 0.0272
0.0228 0.0149 0.0237 0.0307 0.0296 0.0224 0.0207 0.0157 0.0121 0.0099
0.0039 0.0035 0.0036 0.0156 0.0943
* HDV2B M5 HDVs (Combined HDGV and HDDV)
0.0530 0.0945 0.1181 0.0910 0.0501 0.0738 0.0537 0.0695 0.0538 0.0319
0.0235 0.0201 0.0296 0.0458 0.0397 0.0332 0.0302 0.0235 0.0140 0.0101
0.0050 0.0043 0.0057 0.0057 0.0202
* HDV3 M5 HDVs (Combined HDGV and HDDV)
0.0530 0.0945 0.1181 0.0910 0.0501 0.0738 0.0537 0.0695 0.0538 0.0319
0.0235 0.0201 0.0296 0.0458 0.0397 0.0332 0.0302 0.0235 0.0140 0.0101
0.0050 0.0043 0.0057 0.0057 0.0202
* HDV4 M5 HDVs (Combined HDGV and HDDV)
0.0530 0.0945 0.1181 0.0910 0.0501 0.0738 0.0537 0.0695 0.0538 0.0319
0.0235 0.0201 0.0296 0.0458 0.0397 0.0332 0.0302 0.0235 0.0140 0.0101
0.0050 0.0043 0.0057 0.0057 0.0202
* HDV5 M5 HDVs (Combined HDGV and HDDV)
0.0530 0.0945 0.1181 0.0910 0.0501 0.0738 0.0537 0.0695 0.0538 0.0319
0.0235 0.0201 0.0296 0.0458 0.0397 0.0332 0.0302 0.0235 0.0140 0.0101
0.0050 0.0043 0.0057 0.0057 0.0202
* HDV6 M5 HDVs (Combined HDGV and HDDV)
0.0530 0.0945 0.1181 0.0910 0.0501 0.0738 0.0537 0.0695 0.0538 0.0319
0.0235 0.0201 0.0296 0.0458 0.0397 0.0332 0.0302 0.0235 0.0140 0.0101
0.0050 0.0043 0.0057 0.0057 0.0202
* HDV7 M5 HDVs (Combined HDGV and HDDV)
0.0530 0.0945 0.1181 0.0910 0.0501 0.0738 0.0537 0.0695 0.0538 0.0319
0.0235 0.0201 0.0296 0.0458 0.0397 0.0332 0.0302 0.0235 0.0140 0.0101
0.0050 0.0043 0.0057 0.0057 0.0202
* HDV8a M5 HDVs (Combined HDGV and HDDV)

0.0530 0.0945 0.1181 0.0910 0.0501 0.0738 0.0537 0.0695 0.0538 0.0319
0.0235 0.0201 0.0296 0.0458 0.0397 0.0332 0.0302 0.0235 0.0140 0.0101
0.0050 0.0043 0.0057 0.0057 0.0202
* HDV8b M5 HDVs (Combined HDGV and HDDV)
0.0530 0.0945 0.1181 0.0910 0.0501 0.0738 0.0537 0.0695 0.0538 0.0319
0.0235 0.0201 0.0296 0.0458 0.0397 0.0332 0.0302 0.0235 0.0140 0.0101
0.0050 0.0043 0.0057 0.0057 0.0202
* HDBS M5 HDVs (Combined HDGV and HDDV)
0.0530 0.0945 0.1181 0.0910 0.0501 0.0738 0.0537 0.0695 0.0538 0.0319
0.0235 0.0201 0.0296 0.0458 0.0397 0.0332 0.0302 0.0235 0.0140 0.0101
0.0050 0.0043 0.0057 0.0057 0.0202
* HDBT M5 HDDVs
0.0681 0.0933 0.1135 0.0908 0.0454 0.0725 0.0549 0.0744 0.0574 0.0340
0.0221 0.0221 0.0284 0.0460 0.0429 0.0385 0.0284 0.0240 0.0113 0.0082
0.0038 0.0013 0.0050 0.0038 0.0101
* Motorcycles M5 MC
0.1106 0.1186 0.1030 0.0874 0.0646 0.0531 0.0499 0.0392 0.0357 0.0281
0.0227 0.2871 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

2002 Regional School Bus Registration Data

* HDBS M5 HDVs (Combined HDGV and HDDV)

0.0522	0.0975	0.0911	0.0851	0.0795	0.0742	0.0693	0.0648	0.0606	0.0566
0.0528	0.0494	0.0461	0.0430	0.0402	0.0376	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000					

2002 Regional Transit Bus Registration Data

* HDBT M5 HDDVs

0.0324	0.0660	0.1071	0.0602	0.0478	0.1120	0.0333	0.0756	0.0336	0.0318
0.0457	0.0136	0.0867	0.0475	0.0592	0.0691	0.0654	0.0068	0.0000	0.0062
0.0000	0.0000	0.0000	0.0000	0.0000					

Appendix 2
Diesel Sales Fractions

The diesel sales fractions are presented by vehicle, year-specific model year, and going back 25 model years. Maryland and Virginia use the defaults present for the District for all categories other than LDVs and LDT12 for network and off-network analyses. The diesel sales fractions for the school bus analysis are also provided in this section.

District of Columbia—MOBILE6 2002 Default Diesel Sales Fractions

* LDV
0.0009 0.0009 0.0009 0.0009 0.0009 0.0009 0.0009 0.0006 0.0001 0.0003
0.0006 0.0013 0.0004 0.0004 0.0001 0.0027 0.0032 0.0097 0.0162 0.0241
0.0510 0.0706 0.0390 0.0269 0.0114
* LDT12
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 0.0007 0.0033 0.0048 0.0120 0.0223
0.0656 0.0616 0.0439 0.0316 0.0259
* LDT34
0.0126 0.0126 0.0126 0.0126 0.0126 0.0126 0.0126 0.0115 0.0111 0.0145
0.0115 0.0129 0.0096 0.0083 0.0072 0.0082 0.0124 0.0135 0.0169 0.0209
0.0256 0.0013 0.0006 0.0011 0.0001
* HDV2B
0.1998 0.1998 0.1998 0.1998 0.1998 0.1998 0.1998 0.2578 0.2515 0.3263
0.2784 0.2963 0.2384 0.2058 0.1756 0.1958 0.2726 0.2743 0.3004 0.2918
0.2859 0.0138 0.0000 0.0000 0.0000
* HDV3
0.6774 0.6774 0.6774 0.6774 0.6774 0.6774 0.6774 0.7715 0.7910 0.8105
0.8068 0.8280 0.8477 0.7940 0.7488 0.7789 0.7842 0.6145 0.5139 0.5032
0.4277 0.0079 0.0000 0.0000 0.0001
* HDV4
0.8606 0.8606 0.8606 0.8606 0.8606 0.8606 0.8606 0.8473 0.8048 0.8331
0.7901 0.7316 0.7275 0.7158 0.5647 0.3178 0.2207 0.1968 0.1570 0.0738
0.0341 0.0414 0.0003 0.0000 0.0000
* HDV5
0.4647 0.4647 0.4647 0.4647 0.4647 0.4647 0.4647 0.4384 0.3670 0.4125
0.3462 0.2771 0.2730 0.2616 0.1543 0.0615 0.0383 0.0333 0.0255 0.0111
0.0049 0.0060 0.0000 0.0000 0.0000
* HDV6
0.6300 0.6300 0.6300 0.6300 0.6300 0.6300 0.6300 0.6078 0.5246 0.5767
0.5289 0.5788 0.5617 0.4537 0.4216 0.4734 0.4705 0.4525 0.4310 0.3569
0.3690 0.4413 0.3094 0.1679 0.1390
* HDV7
0.8563 0.8563 0.8563 0.8563 0.8563 0.8563 0.8563 0.8443 0.7943 0.8266
0.7972 0.8279 0.8177 0.7440 0.7184 0.7588 0.7567 0.7431 0.7261 0.6602
0.6717 0.7344 0.6107 0.4140 0.3610
* HDV8A
0.9992 0.9992 0.9992 0.9992 0.9992 0.9992 0.9992 0.9989 0.9987 0.9989
0.9977 0.9984 0.9982 0.9979 0.9969 0.9978 0.9980 0.9979 0.9976 0.9969
0.9978 0.9982 0.9974 0.9965 0.9964
* HDV8B
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
* HDBS
0.9585 0.9585 0.9585 0.9585 0.9585 0.9585 0.9585 0.8857 0.8525 0.8795
0.9900 0.9105 0.8760 0.7710 0.7502 0.7345 0.6733 0.5155 0.3845 0.3238
0.3260 0.2639 0.0594 0.0460 0.0291

Calvert County, MD—2002 Diesel Sales Fractions

* LDV
0.0006 0.0000 0.0004 0.0017 0.0029 0.0020 0.0015 0.0025 0.0010 0.0016
0.0013 0.0033 0.0022 0.0008 0.0000 0.0086 0.0027 0.0389 0.0284 0.1091
0.0855 0.1200 0.0543 0.0481 0.0011
* LDT1, LDT2
0.0009 0.0014 0.0048 0.0185 0.0068 0.0265 0.0185 0.0246 0.0082 0.0097
0.0070 0.0061 0.0095 0.0146 0.0407 0.0104 0.0249 0.0818 0.0660 0.0926
0.2000 0.1304 0.0000 0.0000 0.0000

Charles County, MD—2002 Diesel Sales Fractions

* LDV
0.0000 0.0000 0.0004 0.0029 0.0007 0.0010 0.0003 0.0002 0.0006 0.0000
0.0008 0.0020 0.0005 0.0005 0.0000 0.0046 0.0073 0.0165 0.0181 0.0279
0.0698 0.0451 0.0286 0.0058 0.0008
* LDT1, LDT2
0.0025 0.0018 0.0038 0.0212 0.0057 0.0259 0.0176 0.0215 0.0082 0.0106
0.0055 0.0159 0.0112 0.0147 0.0161 0.0376 0.0669 0.0369 0.0633 0.0682
0.1628 0.0357 0.0714 0.0435 0.0071

Frederick County, MD—2002 Diesel Sales Fractions

* LDV
0.0002 0.0003 0.0009 0.0033 0.0026 0.0007 0.0019 0.0010 0.0002 0.0002
0.0007 0.0013 0.0013 0.0012 0.0000 0.0049 0.0093 0.0367 0.0292 0.0389
0.0596 0.1330 0.0386 0.0169 0.0028
* LDT1, LDT2
0.0013 0.0019 0.0036 0.0203 0.0060 0.0272 0.0227 0.0317 0.0157 0.0115
0.0107 0.0127 0.0181 0.0229 0.0193 0.0363 0.0619 0.0802 0.0630 0.0976
0.1282 0.1892 0.0250 0.0303 0.0134

Montgomery County, MD—2002 Diesel Sales Fractions

* LDV
0.0001 0.0001 0.0004 0.0021 0.0015 0.0015 0.0012 0.0012 0.0008 0.0011
0.0014 0.0040 0.0006 0.0005 0.0008 0.0154 0.0102 0.0617 0.0864 0.1308
0.1700 0.1661 0.1152 0.0961 0.0096
* LDT1, LDT2
0.0005 0.0007 0.0017 0.0058 0.0033 0.0082 0.0083 0.0089 0.0068 0.0071
0.0093 0.0086 0.0110 0.0169 0.0158 0.0150 0.0501 0.0384 0.0862 0.0909
0.2108 0.1458 0.1842 0.0235 0.0126

Prince Georges County, MD—2002 Diesel Sales Fractions

* LDV
0.0001 0.0000 0.0001 0.0011 0.0009 0.0011 0.0009 0.0006 0.0002 0.0008
0.0008 0.0021 0.0006 0.0005 0.0005 0.0082 0.0068 0.0280 0.0404 0.0805
0.0974 0.0896 0.0658 0.0261 0.0052
* LDT1, LDT2
0.0008 0.0003 0.0018 0.0054 0.0019 0.0099 0.0088 0.0102 0.0087 0.0123
0.0097 0.0065 0.0154 0.0148 0.0156 0.0208 0.0289 0.0540 0.0498 0.0608
0.1306 0.1260 0.0841 0.0331 0.0077

Alexandria, VA—2002 Diesel Sales Fractions

* LDV
0.0014 0.0016 0.0020 0.0027 0.0023 0.0008 0.0009 0.0011 0.0002 0.0010
0.0011 0.0023 0.0000 0.0006 0.0000 0.0127 0.0058 0.0353 0.0626 0.1318
0.1164 0.1553 0.1471 0.0667 0.0112
* LDT1, LDT2
0.0036 0.0077 0.0168 0.0273 0.0119 0.0164 0.0167 0.0264 0.0141 0.0248
0.0079 0.0353 0.0101 0.0073 0.0194 0.0291 0.0185 0.0327 0.0629 0.1037
0.1222 0.0883 0.1484 0.0361 0.0160

Arlington County, VA—2002 Diesel Sales Fractions

* LDV
0.0024 0.0033 0.0027 0.0047 0.0036 0.0016 0.0016 0.0020 0.0008 0.0013

0.0018 0.0027 0.0030 0.0010 0.0008 0.0117 0.0126 0.0720 0.0560 0.1283
0.2330 0.2138 0.1440 0.0727 0.0075
* LDT1, LDT2
0.0162 0.0430 0.0358 0.0352 0.0264 0.0395 0.0255 0.0297 0.0279 0.0287
0.0157 0.0318 0.0249 0.0289 0.0231 0.0162 0.0318 0.0515 0.0742 0.0830
0.0777 0.1313 0.0137 0.0127 0.0104

Fairfax County, VA—2002 Diesel Sales Fractions

* LDV
0.0018 0.0018 0.0022 0.0028 0.0022 0.0013 0.0016 0.0015 0.0005 0.0012
0.0013 0.0029 0.0015 0.0011 0.0007 0.0114 0.0089 0.0573 0.0842 0.1384
0.1989 0.1766 0.1464 0.0780 0.0103
* LDT1, LDT2
0.0128 0.0206 0.0218 0.0213 0.0197 0.0172 0.0099 0.0126 0.0184 0.0093
0.0110 0.0112 0.0165 0.0424 0.0141 0.0460 0.0312 0.0441 0.0609 0.0619
0.1032 0.0866 0.0529 0.0337 0.0108

Loudoun County, VA—2002 Diesel Sales Fractions

* LDV
0.0024 0.0033 0.0027 0.0047 0.0036 0.0016 0.0016 0.0020 0.0008 0.0013
0.0018 0.0027 0.0030 0.0010 0.0008 0.0117 0.0126 0.0720 0.0560 0.1283
0.2330 0.2138 0.1440 0.0727 0.0075
* LDT1, LDT2
0.0162 0.0430 0.0358 0.0352 0.0264 0.0395 0.0255 0.0297 0.0279 0.0287
0.0157 0.0318 0.0249 0.0289 0.0231 0.0162 0.0318 0.0515 0.0742 0.0830
0.0777 0.1313 0.0137 0.0127 0.0104

Prince William County, VA—2002 Diesel Sales Fractions

* LDV
0.0026 0.0041 0.0040 0.0025 0.0019 0.0013 0.0011 0.0009 0.0007 0.0010
0.0009 0.0026 0.0005 0.0008 0.0006 0.0075 0.0100 0.0263 0.0525 0.1135
0.1290 0.1344 0.1553 0.0571 0.0089
* LDT1, LDT2
0.0431 0.0305 0.0334 0.0250 0.0189 0.0182 0.0171 0.0189 0.0131 0.0163
0.0164 0.0268 0.0679 0.0394 0.0460 0.0174 0.0318 0.0349 0.0458 0.0589
0.0796 0.0988 0.0782 0.0275 0.0264

Stafford County, VA—2002 Diesel Sales Fractions

* LDV
0.0107 0.0065 0.0074 0.0068 0.0053 0.0021 0.0030 0.0018 0.0004 0.0000
0.0024 0.0043 0.0012 0.0030 0.0014 0.0109 0.0114 0.0440 0.0627 0.0488
0.1189 0.1772 0.0667 0.0606 0.0100
* LDT1, LDT2
0.0223 0.0288 0.0362 0.0375 0.0178 0.0289 0.0314 0.0291 0.0192 0.0187
0.0202 0.0116 0.0173 0.0240 0.0182 0.0196 0.0312 0.0424 0.0689 0.0878
0.1625 0.1320 0.1200 0.0704 0.0245

School Bus—2002 Regional Diesel Sales Fractions

* All Other Vehicle Categories
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

2002 On-Road Mobile Emissions Summaries

DATE: May 21, 2004

TO: Sunil Kumar
Department of Environmental Planning

FROM: Eulalie G. Lucas
Transportation Engineer

SUBJECT: 2002 Periodic Emissions Inventory (PEI) Mobile Source Ozone Season VOC, NO_X, and CO for the Washington DC-MD-VA Non-attainment Area (MSA).

This memo transmits 2002 on-road daily mobile source ozone season emissions data summaries and vehicle miles of travel (VMT), by vehicle class and roadway type for the Washington DC, Maryland and Virginia non-attainment area. These emissions and VMT reflect the updated vehicle types (12) requested in your May 17, 2004 e-mail and replace the data previously transmitted to you in my May 10, 2004 memo. Data used in the preparation of these of these emissions and VMT estimates are based on results from the Severe Area State Implementation Plan (SIP), submitted to EPA February 2004.

Four sets of tables (labeled Attachments A-D) are attached to this transmittal. The attachments represent VOC, NO_X, and CO emissions and VMT for 2002. The emissions tables contain data summarized by: jurisdiction (with MSA total); exhaust vs evaporative; Highway Performance Monitoring System (HPMS) facility type for rural vs urban area within each jurisdiction; and vehicle type.

Attachments

cc: Mike Clifford
Joan Rohlfs
Periodic Emissions File

2002 VOC EMISSIONS

Table A-1

District of Columbia

Total Exhaust Emissions

Facility Type	% EMISS	EMISS	VEHICLE TYPE											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Other Principal Arterial	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Minor Arterial	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Major Collector	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Minor Collector	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Local		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Urban														
Interstate	0.01	0.8790	0.4070	0.2944	0.1010	0.0198	0.0001	0.0052	0.0031	0.0021	0.0163	0.0289	0.0010	
Other Frwy & Expwy	0.01	0.8960	0.4145	0.2997	0.1028	0.0202	0.0001	0.0053	0.0032	0.0022	0.0166	0.0294	0.0020	
Other Principal Arterial	0.06	2.1874	1.0111	0.7312	0.2508	0.0493	0.0002	0.0130	0.0078	0.0053	0.0406	0.0717	0.0020	0.0044
Minor Arterial	0.12	2.0086	0.9115	0.6591	0.2261	0.0444	0.0002	0.0117	0.0071	0.0047	0.0366	0.0646	0.0400	0.0025
Collector	0.12	0.9789	0.4295	0.3106	0.1065	0.0209	0.0001	0.0055	0.0033	0.0022	0.0172	0.0305	0.0500	0.0025
Local	0.68	3.4021	1.6202	1.1716	0.4018	0.0497	0.0004	0.0129	0.0078	0.0046	0.0401	0.0781	0.0050	0.0097
Total		10.35	3.5491	2.5665	0.8804	0.1442	0.0009	0.0379	0.0228	0.0147	0.1180	0.2155	0.1000	0.0190

Total Evaporative Emissions

Facility Type												
Rural		**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	
Interstate	0.00	0.0000										
Other Principal Arterial	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Minor Arterial	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Major Collector	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Minor Collector	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Local		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Urban												
Interstate	0.01	0.0000										
Other Frwy & Expwy	0.01	0.0000										
Other Principal Arterial	0.06	0.1499	0.0695	0.0502	0.0172	0.0034	0.0000	0.0009	0.0005	0.0004	0.0028	0.0049
Minor Arterial	0.12	0.2995	0.1388	0.1004	0.0344	0.0068	0.0000	0.0018	0.0011	0.0007	0.0056	0.0099
Collector	0.12	0.2745	0.1272	0.0920	0.0316	0.0062	0.0000	0.0016	0.0010	0.0007	0.0051	0.0090
Local	0.68	1.7621	0.8163	0.5903	0.2025	0.0401	0.0002	0.0106	0.0064	0.0043	0.0331	0.0583
Sub Total		2.49	2.3934	1.7308	0.5937	0.1167	0.0006	0.0308	0.0185	0.0125	0.0961	0.1697
Total All Emiss		12.84	5.94	4.30	1.47	0.26	0.00	0.07	0.04	0.03	0.21	0.39	0.1000	0.0190

Table A-2

Montgomery County

Total Exhaust Emissions

Facility Type	% EMISS	EMISS	VEHICLE TYPE											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate		0.3012	0.1360	0.1039	0.0346	0.0071	0.0006	0.0017	0.0011	0.0007	0.0056	0.0097	0.0002	
Other Principal Arterial	0.00	0.0155	0.0067	0.0051	0.0017	0.0004	0.0000	0.0001	0.0001	0.0000	0.0003	0.0005	0.0007	
Minor Arterial	0.00	0.3633	0.1629	0.1245	0.0415	0.0085	0.0007	0.0021	0.0013	0.0009	0.0067	0.0116	0.0007	0.0019
Major Collector	0.00	0.4189	0.1884	0.1439	0.0479	0.0099	0.0008	0.0024	0.0015	0.0010	0.0078	0.0134	0.0009	0.0011
Minor Collector	0.00	0.1494	0.0666	0.0509	0.0170	0.0035	0.0003	0.0009	0.0005	0.0004	0.0027	0.0048	0.0009	0.0011
Local		0.4599	0.2112	0.1588	0.0533	0.0085	0.0006	0.0021	0.0013	0.0008	0.0067	0.0121	0.0002	0.0042
Urban														
Interstate	0.01	3.8059	1.6040	1.3859	0.4616	0.0950	0.0074	0.0233	0.0142	0.0098	0.0747	0.1293	0.0007	
Other Frwy & Expwy	0.01	0.3418	0.1540	0.1176	0.0392	0.0081	0.0006	0.0020	0.0012	0.0008	0.0063	0.0110	0.0010	
Other Principal Arterial	0.06	3.5287	1.5832	1.2095	0.4029	0.0829	0.0065	0.0204	0.0124	0.0085	0.0652	0.1129	0.0067	0.0177
Minor Arterial	0.12	2.2632	1.0149	0.7753	0.2583	0.0531	0.0042	0.0130	0.0079	0.0055	0.0418	0.0724	0.0067	0.0100
Collector	0.12	1.3168	0.5827	0.4452	0.1483	0.0305	0.0024	0.0075	0.0045	0.0031	0.0240	0.0417	0.0168	0.0100
Local	0.68	4.5555	2.0881	1.5725	0.5277	0.0865	0.0064	0.0212	0.0129	0.0084	0.0677	0.1225	0.0024	0.0393
Total		17.52	3.5491	2.5665	0.8804	0.1442	0.0009	0.0379	0.0228	0.0147	0.1180	0.2155	0.0379	0.0852

Total Evaporative Emissions

Facility Type														
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**		
Interstate	0.00	0.0000												
Other Principal Arterial	0.00	0.0144	0.0065	0.0050	0.0017	0.0003	0.0000	0.0001	0.0001	0.0000	0.0003	0.0005		
Minor Arterial	0.00	0.0288	0.0130	0.0100	0.0033	0.0007	0.0001	0.0002	0.0001	0.0001	0.0005	0.0009		
Major Collector	0.00	0.0577	0.0260	0.0199	0.0066	0.0014	0.0001	0.0003	0.0002	0.0001	0.0011	0.0019		
Minor Collector	0.00	0.0577	0.0260	0.0199	0.0066	0.0014	0.0001	0.0003	0.0002	0.0001	0.0011	0.0019		
Local		0.3221	0.1454	0.1111	0.0370	0.0077	0.0006	0.0019	0.0011	0.0008	0.0060	0.0104		
Urban														
Interstate														
Other Frwy & Expwy														
Other Principal Arterial	0.06	0.2714	0.1225	0.0936	0.0312	0.0065	0.0005	0.0016	0.0010	0.0007	0.0051	0.0088		
Minor Arterial	0.12	0.5421	0.2447	0.1870	0.0623	0.0129	0.0010	0.0032	0.0019	0.0013	0.0102	0.0176		
Collector	0.12	0.4971	0.2244	0.1715	0.0571	0.0118	0.0009	0.0029	0.0018	0.0012	0.0093	0.0161		
Local	0.68	3.2127	1.4505	1.1085	0.3692	0.0764	0.0060	0.0188	0.0114	0.0079	0.0601	0.1040		
Sub Total		5.00	2.3934	1.7308	0.5937	0.1167	0.0006	0.0308	0.0185	0.0125	0.0961	0.1697		
Total All Emiss		22.52	5.94	4.30	1.47	0.26	0.00	0.07	0.04	0.03	0.21	0.39	0.0379	0.0852

Table A-3

Prince Georges County

Total Exhaust Emissions

Facility Type	% EMISS	EMISS	VEHICLE TYPE											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate		0.0683	0.0313	0.0235	0.0076	0.0015	0.0002	0.0004	0.0002	0.0001	0.0011	0.0021	0.0003	
Other Principal Arterial	0.00	0.5501	0.2507	0.1879	0.0611	0.0131	0.0012	0.0033	0.0020	0.0013	0.0101	0.0180	0.0014	
Minor Arterial	0.00	0.0856	0.0380	0.0285	0.0093	0.0018	0.0002	0.0005	0.0003	0.0002	0.0014	0.0025	0.0014	0.0016
Major Collector	0.00	0.1569	0.0708	0.0531	0.0173	0.0035	0.0003	0.0009	0.0005	0.0003	0.0027	0.0049	0.0017	0.0009
Minor Collector	0.00	0.0543	0.0237	0.0178	0.0058	0.0012	0.0001	0.0003	0.0002	0.0001	0.0009	0.0016	0.0017	0.0009
Local		0.2858	0.1319	0.0989	0.0321	0.0049	0.0006	0.0012	0.0007	0.0006	0.0038	0.0071	0.0003	0.0036
Urban														
Interstate	0.01	4.6342	2.1193	1.5887	0.5165	0.1088	0.0104	0.0272	0.0162	0.0108	0.0841	0.1502	0.0020	
Other Frwy & Expwy	0.01	2.3813	1.0867	0.8146	0.2649	0.0566	0.0053	0.0142	0.0084	0.0056	0.0438	0.0781	0.0030	
Other Principal Arterial	0.06	2.9597	1.3348	1.0006	0.3253	0.0681	0.0066	0.0170	0.0101	0.0067	0.0526	0.0941	0.0200	0.0238
Minor Arterial	0.12	1.9027	0.8601	0.6375	0.2073	0.0439	0.0042	0.0110	0.0065	0.0043	0.0339	0.0605	0.0200	0.0135
Collector	0.12	1.2546	0.5451	0.4086	0.1329	0.0279	0.0027	0.0070	0.0042	0.0028	0.0216	0.0385	0.0500	0.0135
Local	0.68	4.3225	1.9896	1.4915	0.4849	0.0779	0.0097	0.0192	0.0115	0.0093	0.0594	0.1116	0.0050	0.0529
Total		18.66	3.5491	2.5665	0.8804	0.1442	0.0009	0.0379	0.0228	0.0147	0.1180	0.2155	0.1068	0.1107

Total Evaporative Emissions

Facility Type														
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**		
Interstate	0.00	0.0000												
Other Principal Arterial	0.00	0.0091	0.0042	0.0031	0.0010	0.0002	0.0000	0.0001	0.0000	0.0000	0.0002	0.0003		
Minor Arterial	0.00	0.0182	0.0083	0.0063	0.0020	0.0004	0.0000	0.0001	0.0001	0.0000	0.0003	0.0006		
Major Collector	0.00	0.0365	0.0167	0.0125	0.0041	0.0009	0.0001	0.0002	0.0001	0.0001	0.0007	0.0012		
Minor Collector	0.00	0.0365	0.0167	0.0125	0.0041	0.0009	0.0001	0.0002	0.0001	0.0001	0.0007	0.0012		
Local		0.2037	0.0931	0.0698	0.0227	0.0048	0.0005	0.0012	0.0007	0.0005	0.0037	0.0067		
Urban														
Interstate														
Other Frwy & Expwy														
Other Principal Arterial	0.06	0.2692	0.1231	0.0923	0.0300	0.0064	0.0006	0.0016	0.0010	0.0006	0.0049	0.0088		
Minor Arterial	0.12	0.5374	0.2456	0.1841	0.0599	0.0128	0.0012	0.0032	0.0019	0.0013	0.0099	0.0176		
Collector	0.12	0.4929	0.2253	0.1689	0.0549	0.0117	0.0011	0.0029	0.0017	0.0012	0.0090	0.0161		
Local	0.68	3.1874	1.4571	1.0923	0.3551	0.0755	0.0071	0.0189	0.0113	0.0075	0.0584	0.1042		
Sub Total		4.79	2.3934	1.7308	0.5937	0.1167	0.0006	0.0308	0.0185	0.0125	0.0961	0.1697		
Total All Emiss		23.45	5.94	4.30	1.47	0.26	0.00	0.07	0.04	0.03	0.21	0.39	0.1068	0.1107

Table A-4

Frederick County

Total Exhaust Emissions

Facility Type	% EMISS	EMISS	VEHICLE TYPE											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate		1.2209	0.5568	0.4145	0.1376	0.0292	0.0062	0.0072	0.0043	0.0029	0.0226	0.0395	0.0002	
Other Principal Arterial	0.00	0.7185	0.3274	0.2437	0.0809	0.0172	0.0037	0.0042	0.0025	0.0017	0.0133	0.0233	0.0007	
Minor Arterial	0.00	0.2951	0.1327	0.0988	0.0328	0.0069	0.0015	0.0017	0.0010	0.0007	0.0054	0.0094	0.0007	0.0036
Major Collector	0.00	0.5817	0.2641	0.1966	0.0653	0.0138	0.0030	0.0034	0.0020	0.0014	0.0107	0.0187	0.0008	0.0021
Minor Collector	0.00	0.2921	0.1320	0.0982	0.0326	0.0069	0.0015	0.0017	0.0010	0.0007	0.0053	0.0093	0.0008	0.0021
Local		1.1456	0.5343	0.3977	0.1321	0.0181	0.0060	0.0044	0.0026	0.0024	0.0138	0.0260	0.0002	0.0081
Urban														
Interstate	0.01	0.2928	0.1341	0.0998	0.0331	0.0067	0.0015	0.0016	0.0010	0.0007	0.0052	0.0091	0.0000	
Other Frwy & Expwy	0.01	0.2732	0.1246	0.0928	0.0308	0.0065	0.0014	0.0016	0.0010	0.0007	0.0051	0.0088	0.0000	
Other Principal Arterial	0.06	0.1971	0.0896	0.0667	0.0221	0.0044	0.0010	0.0011	0.0006	0.0004	0.0034	0.0060	0.0002	0.0014
Minor Arterial	0.12	0.2328	0.1068	0.0782	0.0260	0.0054	0.0012	0.0013	0.0008	0.0005	0.0042	0.0074	0.0002	0.0008
Collector	0.12	0.1882	0.0853	0.0635	0.0211	0.0044	0.0010	0.0011	0.0006	0.0004	0.0034	0.0060	0.0006	0.0008
Local	0.68	0.4062	0.1883	0.1401	0.0465	0.0071	0.0021	0.0017	0.0010	0.0009	0.0054	0.0100	0.0001	0.0030
Total		5.84	3.5491	2.5665	0.8804	0.1442	0.0009	0.0379	0.0228	0.0147	0.1180	0.2155	0.1000	0.0190

Total Evaporative Emissions

Facility Type												
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**
Interstate	0.00	0.0000										
Other Principal Arterial	0.00	0.0313	0.0143	0.0106	0.0035	0.0007	0.0002	0.0002	0.0001	0.0001	0.0006	0.0010
Minor Arterial	0.00	0.0626	0.0285	0.0212	0.0071	0.0015	0.0003	0.0004	0.0002	0.0001	0.0012	0.0020
Major Collector	0.00	0.1251	0.0571	0.0425	0.0141	0.0030	0.0006	0.0007	0.0004	0.0003	0.0023	0.0040
Minor Collector	0.00	0.1251	0.0571	0.0425	0.0141	0.0030	0.0006	0.0007	0.0004	0.0003	0.0023	0.0040
Local		0.6985	0.3186	0.2372	0.0788	0.0166	0.0036	0.0041	0.0024	0.0017	0.0129	0.0226
Urban												
Interstate												
Other Frwy & Expwy												
Other Principal Arterial	0.06	0.0236	0.0108	0.0080	0.0027	0.0006	0.0001	0.0001	0.0001	0.0001	0.0004	0.0008
Minor Arterial	0.12	0.0471	0.0215	0.0160	0.0053	0.0011	0.0002	0.0003	0.0002	0.0001	0.0009	0.0015
Collector	0.12	0.0432	0.0197	0.0147	0.0049	0.0010	0.0002	0.0003	0.0002	0.0001	0.0008	0.0014
Local	0.68	0.2792	0.1274	0.0948	0.0315	0.0067	0.0014	0.0016	0.0010	0.0007	0.0052	0.0090
Sub Total		1.44	2.3934	1.7308	0.5937	0.1167	0.0006	0.0308	0.0185	0.0125	0.0961	0.1697
Total All Emiss		7.28	5.94	4.30	1.47	0.26	0.00	0.07	0.04	0.03	0.21	0.39	0.1000	0.0190

Table A-5

Charles County

Total Exhaust Emissions

Facility Type	% EMISS	EMISS	VEHICLE TYPE											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate		0.0054	0.0024	0.0018	0.0006	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0002	0.0002	
Other Principal Arterial	0.00	0.5420	0.2465	0.1840	0.0614	0.0131	0.0025	0.0032	0.0019	0.0013	0.0099	0.0176	0.0006	
Minor Arterial	0.00	0.1725	0.0771	0.0575	0.0192	0.0041	0.0008	0.0010	0.0006	0.0004	0.0031	0.0055	0.0006	0.0026
Major Collector	0.00	0.2878	0.1300	0.0971	0.0324	0.0069	0.0013	0.0017	0.0010	0.0007	0.0052	0.0093	0.0008	0.0015
Minor Collector	0.00	0.1288	0.0576	0.0430	0.0144	0.0030	0.0006	0.0008	0.0004	0.0003	0.0023	0.0041	0.0008	0.0015
Local		0.5094	0.2346	0.1751	0.0584	0.0089	0.0023	0.0022	0.0013	0.0011	0.0067	0.0127	0.0002	0.0059
Urban														
Interstate	0.01	0.0095	0.0045	0.0034	0.0011	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0002	0.0000	
Other Frwy & Expwy	0.01	0.0056	0.0025	0.0019	0.0006	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0002	0.0001	
Other Principal Arterial	0.06	0.3769	0.1710	0.1276	0.0426	0.0090	0.0017	0.0022	0.0013	0.0009	0.0068	0.0121	0.0003	0.0014
Minor Arterial	0.12	0.0912	0.0411	0.0307	0.0102	0.0021	0.0004	0.0005	0.0003	0.0002	0.0016	0.0029	0.0003	0.0008
Collector	0.12	0.1246	0.0560	0.0418	0.0139	0.0029	0.0006	0.0007	0.0004	0.0003	0.0022	0.0040	0.0009	0.0008
Local	0.68	0.2906	0.1337	0.0999	0.0333	0.0052	0.0013	0.0013	0.0007	0.0006	0.0039	0.0074	0.0001	0.0032
Total		2.54	3.5491	2.5665	0.8804	0.1442	0.0009	0.0379	0.0228	0.0147	0.1180	0.2155	0.0050	0.0177

Total Evaporative Emissions

Facility Type												
Rural		**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	
Interstate	0.00	0.0000										
Other Principal Arterial	0.00	0.0167	0.0076	0.0057	0.0019	0.0004	0.0001	0.0001	0.0001	0.0000	0.0003	0.0005
Minor Arterial	0.00	0.0335	0.0153	0.0114	0.0038	0.0008	0.0002	0.0002	0.0001	0.0001	0.0006	0.0011
Major Collector	0.00	0.0670	0.0305	0.0228	0.0076	0.0016	0.0003	0.0004	0.0002	0.0002	0.0012	0.0022
Minor Collector	0.00	0.0670	0.0305	0.0228	0.0076	0.0016	0.0003	0.0004	0.0002	0.0002	0.0012	0.0022
Local		0.3741	0.1704	0.1272	0.0424	0.0090	0.0017	0.0022	0.0013	0.0009	0.0068	0.0122
Urban												
Interstate												
Other Frwy & Expwy												
Other Principal Arterial	0.06	0.0181	0.0082	0.0061	0.0021	0.0004	0.0001	0.0001	0.0001	0.0000	0.0003	0.0006
Minor Arterial	0.12	0.0361	0.0165	0.0123	0.0041	0.0009	0.0002	0.0002	0.0001	0.0001	0.0007	0.0012
Collector	0.12	0.0331	0.0151	0.0113	0.0038	0.0008	0.0001	0.0002	0.0001	0.0001	0.0006	0.0011
Local	0.68	0.2140	0.0975	0.0728	0.0243	0.0051	0.0010	0.0013	0.0007	0.0005	0.0039	0.0070
Sub Total		0.86	2.3934	1.7308	0.5937	0.1167	0.0006	0.0308	0.0185	0.0125	0.0961	0.1697
Total All Emiss		3.40	5.94	4.30	1.47	0.26	0.00	0.07	0.04	0.03	0.21	0.39	0.0050	0.0177

Table A-6
Calvert County

Total Exhaust Emissions

Facility Type	% EMISS	EMISS	VEHICLE TYPE											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate		0.0046	0.0020	0.0015	0.0005	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0001	
Other Principal Arterial	0.00	0.5691	0.2573	0.1935	0.0657	0.0142	0.0025	0.0034	0.0020	0.0014	0.0103	0.0185	0.0003	
Minor Arterial	0.00	0.0789	0.0334	0.0251	0.0085	0.0018	0.0003	0.0004	0.0003	0.0002	0.0013	0.0024	0.0003	0.0048
Major Collector	0.00	0.1519	0.0674	0.0507	0.0172	0.0037	0.0007	0.0009	0.0005	0.0004	0.0027	0.0048	0.0003	0.0027
Minor Collector	0.00	0.0989	0.0434	0.0326	0.0111	0.0024	0.0004	0.0006	0.0003	0.0002	0.0017	0.0031	0.0003	0.0027
Local		0.5297	0.2416	0.1817	0.0617	0.0088	0.0024	0.0020	0.0012	0.0011	0.0062	0.0121	0.0001	0.0106
Urban														
Interstate	0.01	0.0017	0.0008	0.0006	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Other Frwy & Expwy	0.01	0.0005	0.0002	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Other Principal Arterial	0.06	0.0026	0.0011	0.0008	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002
Minor Arterial	0.12	0.0274	0.0123	0.0093	0.0031	0.0007	0.0001	0.0002	0.0001	0.0001	0.0005	0.0009	0.0000	0.0001
Collector	0.12	0.0149	0.0067	0.0050	0.0017	0.0004	0.0001	0.0001	0.0000	0.0000	0.0003	0.0005	0.0000	0.0001
Local	0.68	0.0284	0.0130	0.0098	0.0033	0.0005	0.0001	0.0001	0.0001	0.0001	0.0003	0.0007	0.0000	0.0005
Total		1.51	3.5491	2.5665	0.8804	0.1442	0.0009	0.0379	0.0228	0.0147	0.1180	0.2155	0.0014	0.0218

Total Evaporative Emissions

Facility Type												
Rural		**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	
Interstate	0.00	0.0000										
Other Principal Arterial	0.00	0.0158	0.0072	0.0054	0.0018	0.0004	0.0001	0.0001	0.0001	0.0000	0.0003	0.0005
Minor Arterial	0.00	0.0316	0.0143	0.0108	0.0037	0.0008	0.0001	0.0002	0.0001	0.0001	0.0006	0.0010
Major Collector	0.00	0.0632	0.0286	0.0215	0.0073	0.0016	0.0003	0.0004	0.0002	0.0002	0.0011	0.0021
Minor Collector	0.00	0.0632	0.0286	0.0215	0.0073	0.0016	0.0003	0.0004	0.0002	0.0002	0.0011	0.0021
Local		0.3530	0.1597	0.1201	0.0408	0.0088	0.0016	0.0021	0.0012	0.0008	0.0064	0.0115
Urban												
Interstate												
Other Frwy & Expwy												
Other Principal Arterial	0.06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Minor Arterial	0.12	0.0016	0.0007	0.0005	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001
Collector	0.12	0.0032	0.0014	0.0011	0.0004	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001
Local	0.68	0.0029	0.0013	0.0010	0.0003	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001
Sub Total		0.53	2.3934	1.7308	0.5937	0.1167	0.0006	0.0308	0.0185	0.0125	0.0961	0.1697
Total All Emiss		2.04	5.94	4.30	1.47	0.26	0.00	0.07	0.04	0.03	0.21	0.39	0.0014	0.0218

Table A-7

Arlington County

Total Exhaust Emissions

Facility Type	% EMISS	EMISS	VEHICLE TYPE											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Other Principal Arterial	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Minor Arterial	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Major Collector	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Minor Collector	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Local		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Urban														
Interstate	0.01	1.0677	0.4877	0.3459	0.1340	0.0252	0.0069	0.0063	0.0038	0.0028	0.0201	0.0348	0.0001	
Other Frwy & Expwy	0.01	0.3922	0.1793	0.1271	0.0493	0.0092	0.0025	0.0023	0.0014	0.0010	0.0073	0.0127	0.0001	
Other Principal Arterial	0.06	0.5809	0.2650	0.1879	0.0728	0.0136	0.0037	0.0034	0.0021	0.0015	0.0109	0.0188	0.0005	0.0006
Minor Arterial	0.12	0.3328	0.1518	0.1077	0.0417	0.0077	0.0021	0.0019	0.0012	0.0009	0.0062	0.0107	0.0005	0.0003
Collector	0.12	0.2506	0.1139	0.0808	0.0313	0.0058	0.0016	0.0014	0.0009	0.0006	0.0046	0.0079	0.0014	0.0003
Local	0.68	1.0695	0.4952	0.3512	0.1361	0.0212	0.0069	0.0052	0.0032	0.0027	0.0166	0.0297	0.0001	0.0013
Total		3.69	3.5491	2.5665	0.8804	0.1442	0.0009	0.0379	0.0228	0.0147	0.1180	0.2155	0.0027	0.0026

Total Evaporative Emissions

Facility Type												
Rural		**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	
Interstate												
Other Principal Arterial	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Minor Arterial	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Major Collector	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Minor Collector	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Local		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Urban												
Interstate												
Other Frwy & Expwy												
Other Principal Arterial	0.06	0.0726	0.0332	0.0235	0.0091	0.0017	0.0005	0.0004	0.0003	0.0002	0.0014	0.0023
Minor Arterial	0.12	0.1451	0.0663	0.0470	0.0182	0.0034	0.0009	0.0009	0.0005	0.0004	0.0027	0.0047
Collector	0.12	0.1329	0.0608	0.0431	0.0167	0.0031	0.0008	0.0008	0.0005	0.0003	0.0025	0.0043
Local	0.68	0.8524	0.3894	0.2762	0.1070	0.0201	0.0055	0.0050	0.0031	0.0023	0.0161	0.0278
Sub Total		1.20	2.3934	1.7308	0.5937	0.1167	0.0006	0.0308	0.0185	0.0125	0.0961	0.1697
Total All Emiss		4.90	5.94	4.30	1.47	0.26	0.00	0.07	0.04	0.03	0.21	0.39	0.0027	0.0026

Table A-8

City Of Alexandria

Total Exhaust Emissions

Facility Type	% EMISS	EMISS	VEHICLE TYPE											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Other Principal Arterial	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Minor Arterial	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Major Collector	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Minor Collector	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Local		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Urban														
Interstate	0.01	0.5043	0.2269	0.1652	0.0647	0.0116	0.0027	0.0029	0.0018	0.0014	0.0095	0.0165	0.0010	
Other Frwy & Expwy	0.01	0.0128	0.0050	0.0036	0.0014	0.0002	0.0001	0.0000	0.0000	0.0000	0.0001	0.0003	0.0020	
Other Principal Arterial	0.06	0.3480	0.1559	0.1135	0.0444	0.0080	0.0019	0.0020	0.0012	0.0009	0.0065	0.0113	0.0020	0.0005
Minor Arterial	0.12	0.4743	0.1958	0.1425	0.0558	0.0100	0.0023	0.0025	0.0016	0.0012	0.0082	0.0142	0.0400	0.0003
Collector	0.12	0.2052	0.0700	0.0510	0.0199	0.0035	0.0008	0.0009	0.0005	0.0004	0.0029	0.0050	0.0500	0.0003
Local	0.68	0.8995	0.4144	0.3016	0.1180	0.0142	0.0049	0.0035	0.0022	0.0022	0.0113	0.0212	0.0050	0.0010
Total		2.44	3.5491	2.5665	0.8804	0.1442	0.0009	0.0379	0.0228	0.0147	0.1180	0.2155	0.1000	0.0020

Total Evaporative Emissions

Facility Type														
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**		
Interstate														
Other Principal Arterial														
Minor Arterial														
Major Collector														
Minor Collector														
Local														
Urban														
Interstate														
Other Frwy & Expwy														
Other Principal Arterial	0.06	0.0508	0.0229	0.0167	0.0065	0.0012	0.0003	0.0003	0.0002	0.0001	0.0010	0.0017		
Minor Arterial	0.12	0.1015	0.0458	0.0333	0.0131	0.0023	0.0005	0.0006	0.0004	0.0003	0.0019	0.0033		
Collector	0.12	0.0930	0.0420	0.0306	0.0120	0.0021	0.0005	0.0005	0.0003	0.0003	0.0018	0.0030		
Local	0.68	0.5965	0.2689	0.1958	0.0766	0.0138	0.0032	0.0035	0.0022	0.0016	0.0113	0.0196		
Sub Total		0.84	2.3934	1.7308	0.5937	0.1167	0.0006	0.0308	0.0185	0.0125	0.0961	0.1697		
Total All Emiss		3.29	5.94	4.30	1.47	0.26	0.00	0.07	0.04	0.03	0.21	0.39	0.1000	0.0020

Table A-9
Fairfax County

Total Exhaust Emissions

Facility Type	% EMISS	EMISS	VEHICLE TYPE											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate														
Other Principal Arterial														
Minor Arterial														
Major Collector														
Minor Collector														
Local														
Urban														
Interstate	0.01	5.1055	2.3147	1.6596	0.6478	0.1201	0.0363	0.0300	0.0184	0.0137	0.0963	0.1670	0.0015	
Other Frwy & Expwy	0.01	0.9965	0.4525	0.3244	0.1266	0.0229	0.0071	0.0057	0.0035	0.0026	0.0183	0.0319	0.0010	
Other Principal Arterial	0.06	4.3687	1.9704	1.4128	0.5514	0.1011	0.0309	0.0252	0.0155	0.0115	0.0809	0.1406	0.0094	0.0189
Minor Arterial	0.12	3.8754	1.7500	1.2548	0.4897	0.0898	0.0274	0.0224	0.0138	0.0102	0.0718	0.1249	0.0099	0.0107
Collector	0.12	1.5831	0.7026	0.5038	0.1966	0.0359	0.0109	0.0090	0.0055	0.0041	0.0287	0.0500	0.0252	0.0107
Local	0.68	5.9378	2.7310	1.9581	0.7641	0.1062	0.0424	0.0259	0.0159	0.0147	0.0831	0.1520	0.0025	0.0419
Total		21.87	3.5491	2.5665	0.8804	0.1442	0.0009	0.0379	0.0228	0.0147	0.1180	0.2155	0.0495	0.0822

Total Evaporative Emissions

Facility Type														
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**		
Interstate														
Other Principal Arterial														
Minor Arterial														
Major Collector														
Minor Collector														
Local														
Urban														
Interstate														
Other Frwy & Expwy														
Other Principal Arterial	0.06	0.3505	0.1591	0.1140	0.0445	0.0082	0.0025	0.0021	0.0013	0.0009	0.0066	0.0114		
Minor Arterial	0.12	0.7002	0.3177	0.2278	0.0889	0.0164	0.0049	0.0041	0.0025	0.0019	0.0131	0.0228		
Collector	0.12	0.6417	0.2912	0.2088	0.0815	0.0150	0.0045	0.0038	0.0023	0.0017	0.0120	0.0209		
Local	0.68	4.1167	1.8668	1.3385	0.5224	0.0970	0.0291	0.0243	0.0149	0.0111	0.0778	0.1349		
Sub Total		5.81	2.3934	1.7308	0.5937	0.1167	0.0006	0.0308	0.0185	0.0125	0.0961	0.1697		
Total All Emiss		27.68	5.94	4.30	1.47	0.26	0.00	0.07	0.04	0.03	0.21	0.39	0.0495	0.0822

Table A-10

Loudoun County

Total Exhaust Emissions

Facility Type	% EMISS	EMISS	VEHICLE TYPE											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate		0.0081	0.0036	0.0025	0.0010	0.0002	0.0001	0.0000	0.0000	0.0000	0.0001	0.0002	0.0004	
Other Principal Arterial	0.00	0.8939	0.4110	0.2824	0.1098	0.0212	0.0110	0.0052	0.0032	0.0023	0.0168	0.0293	0.0017	
Minor Arterial	0.00	0.4023	0.1815	0.1266	0.0492	0.0095	0.0049	0.0023	0.0014	0.0010	0.0075	0.0131	0.0017	0.0034
Major Collector	0.00	0.5446	0.2471	0.1724	0.0670	0.0129	0.0067	0.0032	0.0019	0.0014	0.0102	0.0178	0.0021	0.0019
Minor Collector	0.00	0.1331	0.0590	0.0412	0.0160	0.0031	0.0016	0.0008	0.0005	0.0003	0.0024	0.0042	0.0021	0.0019
Local		0.8498	0.3968	0.2768	0.1076	0.0134	0.0107	0.0031	0.0019	0.0020	0.0101	0.0193	0.0004	0.0076
Urban														
Interstate	0.01	0.0163	0.0100	0.0046	0.0015	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	
Other Frwy & Expwy	0.01	0.3451	0.1576	0.1100	0.0427	0.0082	0.0043	0.0020	0.0012	0.0009	0.0065	0.0114	0.0002	
Other Principal Arterial	0.06	0.4443	0.2020	0.1411	0.0546	0.0103	0.0054	0.0025	0.0016	0.0011	0.0082	0.0143	0.0010	0.0021
Minor Arterial	0.12	0.2913	0.1323	0.0925	0.0358	0.0068	0.0035	0.0017	0.0010	0.0007	0.0054	0.0094	0.0010	0.0012
Collector	0.12	0.1428	0.0636	0.0445	0.0172	0.0033	0.0017	0.0008	0.0005	0.0004	0.0026	0.0045	0.0026	0.0012
Local	0.68	0.5490	0.2560	0.1786	0.0694	0.0089	0.0069	0.0021	0.0013	0.0013	0.0067	0.0128	0.0004	0.0047
Total		4.62	3.5491	2.5665	0.8804	0.1442	0.0009	0.0379	0.0228	0.0147	0.1180	0.2155	0.0137	0.0241

Total Evaporative Emissions

Facility Type												
Rural		**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	
Interstate												
Other Principal Arterial	0.00	0.0214	0.0097	0.0070	0.0026	0.0005	0.0003	0.0001	0.0001	0.0001	0.0004	0.0007
Minor Arterial	0.00	0.0424	0.0194	0.0135	0.0053	0.0010	0.0005	0.0002	0.0002	0.0001	0.0008	0.0014
Major Collector	0.00	0.0848	0.0388	0.0270	0.0105	0.0020	0.0010	0.0005	0.0003	0.0002	0.0016	0.0028
Minor Collector	0.00	0.0848	0.0388	0.0270	0.0105	0.0020	0.0010	0.0005	0.0003	0.0002	0.0016	0.0028
Local		0.4735	0.2164	0.1510	0.0587	0.0113	0.0058	0.0028	0.0017	0.0012	0.0089	0.0156
Urban												
Interstate												
Other Frwy & Expwy												
Other Principal Arterial	0.06	0.0262	0.0120	0.0084	0.0033	0.0006	0.0003	0.0002	0.0001	0.0001	0.0005	0.0009
Minor Arterial	0.12	0.0524	0.0240	0.0167	0.0065	0.0013	0.0006	0.0003	0.0002	0.0001	0.0010	0.0017
Collector	0.12	0.0481	0.0220	0.0153	0.0060	0.0011	0.0006	0.0003	0.0002	0.0001	0.0009	0.0016
Local	0.68	0.3107	0.1420	0.0991	0.0385	0.0074	0.0038	0.0018	0.0011	0.0008	0.0059	0.0102
Sub Total		1.14	2.3934	1.7308	0.5937	0.1167	0.0006	0.0308	0.0185	0.0125	0.0961	0.1697
Total All Emiss		5.77	5.94	4.30	1.47	0.26	0.00	0.07	0.04	0.03	0.21	0.39	0.0137	0.0241

Table A-11

Prince William County

Total Exhaust Emissions

Facility Type	% EMISS	EMISS	VEHICLE TYPE											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate		1.0345	0.4781	0.3324	0.1269	0.0234	0.0104	0.0058	0.0035	0.0025	0.0186	0.0328	0.0000	
Other Principal Arterial	0.00	0.3987	0.1841	0.1281	0.0489	0.0090	0.0040	0.0022	0.0014	0.0010	0.0071	0.0126	0.0002	
Minor Arterial	0.00	0.3466	0.1598	0.1111	0.0424	0.0078	0.0035	0.0019	0.0012	0.0009	0.0062	0.0110	0.0001	0.0007
Major Collector	0.00	0.3902	0.1801	0.1252	0.0478	0.0088	0.0039	0.0022	0.0013	0.0010	0.0070	0.0124	0.0001	0.0004
Minor Collector	0.00	0.0272	0.0124	0.0086	0.0033	0.0006	0.0003	0.0002	0.0001	0.0001	0.0005	0.0009	0.0000	0.0004
Local		0.5587	0.2707	0.1875	0.0721	0.0054	0.0061	0.0012	0.0007	0.0012	0.0037	0.0087	0.0000	0.0015
Urban														
Interstate	0.01	0.5726	0.2645	0.1840	0.0702	0.0130	0.0058	0.0032	0.0020	0.0014	0.0103	0.0182	0.0002	
Other Frwy & Expwy	0.01	0.0152	0.0070	0.0049	0.0019	0.0003	0.0002	0.0001	0.0001	0.0000	0.0003	0.0005	0.0001	
Other Principal Arterial	0.06	0.4067	0.1845	0.1283	0.0490	0.0091	0.0040	0.0022	0.0014	0.0010	0.0072	0.0127	0.0010	0.0064
Minor Arterial	0.12	1.1956	0.5503	0.3827	0.1461	0.0270	0.0120	0.0067	0.0041	0.0029	0.0214	0.0378	0.0011	0.0036
Collector	0.12	0.3093	0.1399	0.0973	0.0371	0.0069	0.0030	0.0017	0.0010	0.0007	0.0055	0.0098	0.0027	0.0036
Local	0.68	1.5242	0.7101	0.4929	0.1888	0.0274	0.0156	0.0066	0.0041	0.0036	0.0212	0.0395	0.0003	0.0142
Total		6.78	3.5491	2.5665	0.8804	0.1442	0.0009	0.0379	0.0228	0.0147	0.1180	0.2155	0.0059	0.0308

Total Evaporative Emissions

Facility Type												
Rural		**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	
Interstate												
Other Principal Arterial	0.00	0.0059	0.0027	0.0019	0.0007	0.0001	0.0001	0.0000	0.0000	0.0000	0.0001	0.0002
Minor Arterial	0.00	0.0138	0.0063	0.0044	0.0017	0.0003	0.0001	0.0001	0.0000	0.0000	0.0003	0.0005
Major Collector	0.00	0.0373	0.0172	0.0119	0.0046	0.0009	0.0004	0.0002	0.0001	0.0001	0.0007	0.0012
Minor Collector	0.00	0.0098	0.0045	0.0031	0.0012	0.0002	0.0001	0.0001	0.0000	0.0000	0.0002	0.0003
Local		0.1297	0.0598	0.0414	0.0159	0.0030	0.0013	0.0008	0.0005	0.0003	0.0024	0.0042
Urban												
Interstate												
Other Frwy & Expwy												
Other Principal Arterial	0.06	0.1109	0.0511	0.0354	0.0136	0.0026	0.0011	0.0006	0.0004	0.0003	0.0021	0.0036
Minor Arterial	0.12	0.2034	0.0937	0.0650	0.0250	0.0048	0.0021	0.0012	0.0007	0.0005	0.0038	0.0067
Collector	0.12	0.1849	0.0852	0.0591	0.0227	0.0043	0.0019	0.0011	0.0007	0.0005	0.0034	0.0060
Local	0.68	1.3495	0.6219	0.4311	0.1656	0.0316	0.0139	0.0078	0.0048	0.0034	0.0251	0.0442
Sub Total		2.05	2.3934	1.7308	0.5937	0.1167	0.0006	0.0308	0.0185	0.0125	0.0961	0.1697
Total All Emiss		8.82	5.94	4.30	1.47	0.26	0.00	0.07	0.04	0.03	0.21	0.39

Table A-12
Stafford County

Total Exhaust Emissions

Facility Type	% EMISS	EMISS	VEHICLE TYPE											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate		1.0993	0.5123	0.3484	0.1309	0.0271	0.0114	0.0064	0.0039	0.0027	0.0203	0.0360	0.0000	
Other Principal Arterial	0.00	0.2084	0.0971	0.0660	0.0248	0.0051	0.0022	0.0012	0.0007	0.0005	0.0039	0.0068	0.0000	
Minor Arterial	0.00	0.1308	0.0609	0.0414	0.0155	0.0032	0.0014	0.0008	0.0005	0.0003	0.0024	0.0043	0.0000	0.0002
Major Collector	0.00	0.3562	0.1659	0.1128	0.0424	0.0088	0.0037	0.0021	0.0013	0.0009	0.0066	0.0116	0.0000	0.0001
Minor Collector	0.00	0.0392	0.0182	0.0124	0.0047	0.0010	0.0004	0.0002	0.0001	0.0001	0.0007	0.0013	0.0000	0.0001
Local		0.4160	0.1974	0.1352	0.0513	0.0075	0.0044	0.0017	0.0011	0.0010	0.0055	0.0105	0.0000	0.0004
Urban														
Interstate	0.01	0.1149	0.0535	0.0364	0.0137	0.0028	0.0012	0.0007	0.0004	0.0003	0.0021	0.0038	0.0000	
Other Frwy & Expwy	0.01	0.0010	0.0005	0.0003	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Other Principal Arterial	0.06	0.1302	0.0599	0.0407	0.0153	0.0032	0.0013	0.0007	0.0005	0.0003	0.0024	0.0042	0.0000	0.0017
Minor Arterial	0.12	0.1214	0.0561	0.0382	0.0143	0.0030	0.0012	0.0007	0.0004	0.0003	0.0022	0.0039	0.0000	0.0010
Collector	0.12	0.0810	0.0373	0.0254	0.0095	0.0020	0.0008	0.0005	0.0003	0.0002	0.0015	0.0026	0.0000	0.0010
Local	0.68	0.2193	0.1041	0.0716	0.0274	0.0027	0.0024	0.0006	0.0004	0.0005	0.0019	0.0040	0.0000	0.0038
Total		2.92	3.5491	2.5665	0.8804	0.1442	0.0009	0.0379	0.0228	0.0147	0.1180	0.2155	0.0000	0.0082

Total Evaporative Emissions

Facility Type												
Rural		**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	
Interstate												
Other Principal Arterial	0.00	0.0154	0.0072	0.0049	0.0018	0.0004	0.0002	0.0001	0.0001	0.0000	0.0003	0.0005
Minor Arterial	0.00	0.0359	0.0167	0.0113	0.0043	0.0009	0.0004	0.0002	0.0001	0.0001	0.0007	0.0012
Major Collector	0.00	0.0973	0.0453	0.0308	0.0116	0.0024	0.0010	0.0006	0.0003	0.0002	0.0018	0.0032
Minor Collector	0.00	0.0256	0.0119	0.0081	0.0030	0.0006	0.0003	0.0002	0.0001	0.0001	0.0005	0.0008
Local		0.3381	0.1574	0.1069	0.0402	0.0084	0.0035	0.0020	0.0012	0.0008	0.0063	0.0112
Urban												
Interstate												
Other Frwy & Expwy												
Other Principal Arterial	0.06	0.0076	0.0035	0.0024	0.0009	0.0002	0.0001	0.0000	0.0000	0.0000	0.0001	0.0002
Minor Arterial	0.12	0.0139	0.0065	0.0044	0.0016	0.0003	0.0001	0.0001	0.0000	0.0000	0.0003	0.0005
Collector	0.12	0.0126	0.0059	0.0040	0.0015	0.0003	0.0001	0.0001	0.0000	0.0000	0.0002	0.0004
Local	0.68	0.0920	0.0428	0.0291	0.0109	0.0023	0.0010	0.0005	0.0003	0.0002	0.0017	0.0030
Sub Total		0.64	2.3934	1.7308	0.5937	0.1167	0.0006	0.0308	0.0185	0.0125	0.0961	0.1697
Total All Emiss		3.56	5.94	4.30	1.47	0.26	0.00	0.07	0.04	0.03	0.21	0.39

Table A-13
MSA

Total Exhaust Emissions

Facility Type	% EMISS	EMISS	VEHICLE TYPE											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate		3.7424	1.7224	1.2285	0.4397	0.0888	0.0289	0.0216	0.0131	0.0091	0.0686	0.1206	0.0014	0.0000
Other Principal Arterial	0.00	3.8962	1.7809	1.2908	0.4543	0.0932	0.0271	0.0228	0.0137	0.0095	0.0717	0.1267	0.0055	0.0000
Minor Arterial	0.00	1.8750	0.8463	0.6135	0.2184	0.0437	0.0132	0.0107	0.0065	0.0045	0.0340	0.0598	0.0054	0.0189
Major Collector	0.00	2.8881	1.3136	0.9517	0.3372	0.0683	0.0203	0.0167	0.0101	0.0070	0.0529	0.0930	0.0068	0.0107
Minor Collector	0.00	0.9231	0.4129	0.3047	0.1047	0.0216	0.0051	0.0053	0.0032	0.0022	0.0167	0.0293	0.0067	0.0107
Local		4.7549	2.2185	1.6117	0.5686	0.0756	0.0332	0.0179	0.0108	0.0102	0.0565	0.1086	0.0014	0.0418
Urban														
Interstate	0.01	17.0044	7.6270	5.7683	2.0454	0.4033	0.0724	0.1006	0.0610	0.0429	0.3188	0.5581	0.0066	0.0000
Other Frwy & Expwy	0.01	5.6613	2.5844	1.8972	0.6604	0.1324	0.0216	0.0333	0.0201	0.0139	0.1045	0.1842	0.0094	0.0000
Other Principal Arterial	0.06	15.5310	7.0283	5.1607	1.8315	0.3590	0.0632	0.0899	0.0544	0.0383	0.2846	0.4987	0.0433	0.0791
Minor Arterial	0.12	12.8166	5.7831	4.2084	1.5145	0.2939	0.0588	0.0737	0.0447	0.0316	0.2338	0.4095	0.1199	0.0447
Collector	0.12	6.4499	2.8327	2.0773	0.7362	0.1444	0.0257	0.0361	0.0219	0.0153	0.1144	0.2009	0.2003	0.0447
Local	0.68	23.2045	10.7437	7.8394	2.8014	0.4074	0.0991	0.1003	0.0609	0.0488	0.3178	0.5895	0.0208	0.1755
Total		98.75	3.5491	2.5665	0.8804	0.1442	0.0009	0.0379	0.0228	0.0147	0.1180	0.2155	0.4273	0.4260

Total Evaporative Emissions

Facility Type												
Rural		**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	
Interstate												
Other Principal Arterial	0.00	0.1301	0.0593	0.0435	0.0151	0.0031	0.0008	0.0008	0.0005	0.0003	0.0024	0.0042
Minor Arterial	0.00	0.2668	0.1219	0.0888	0.0311	0.0064	0.0017	0.0016	0.0009	0.0007	0.0049	0.0087
Major Collector	0.00	0.5690	0.2602	0.1889	0.0664	0.0137	0.0039	0.0033	0.0020	0.0014	0.0105	0.0186
Minor Collector	0.00	0.4697	0.2141	0.1575	0.0545	0.0113	0.0028	0.0028	0.0017	0.0011	0.0087	0.0153
Local		2.8926	1.3209	0.9648	0.3365	0.0697	0.0186	0.0170	0.0102	0.0071	0.0536	0.0943
Urban												
Interstate												
Other Frwy & Expwy												
Other Principal Arterial	0.06	1.3509	0.6159	0.4508	0.1611	0.0317	0.0061	0.0079	0.0048	0.0034	0.0252	0.0440
Minor Arterial	0.12	2.6804	1.2218	0.8946	0.3195	0.0630	0.0119	0.0158	0.0096	0.0067	0.0500	0.0875
Collector	0.12	2.4573	1.1201	0.8202	0.2929	0.0578	0.0109	0.0145	0.0088	0.0062	0.0458	0.0802
Local	0.68	15.9762	7.2821	5.3294	1.9040	0.3762	0.0722	0.0942	0.0571	0.0402	0.2986	0.5222
Sub Total		26.79	2.3934	1.7308	0.5937	0.1167	0.0006	0.0308	0.0185	0.0125	0.0961	0.1697
Total All Emiss		125.54	5.94	4.30	1.47	0.26	0.00	0.07	0.04	0.03	0.21	0.39

2002 NOx Emissions

Table B-1
District Of Columbia

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.00	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
Other Principal Arterial	0.00	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
Minor Arterial	0.00	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
Major Collector	0.00	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
Minor Collector	0.00	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
Local	0.00	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
Urban														
Interstate	0.11	2.7059	1.2464	0.9013	0.3092	0.0611	0.0003	0.0161	0.0097	0.0065	0.0504	0.0888	0.0159	0.0000
Other Frwy & Expwy	0.12	2.9236	1.3399	0.9690	0.3324	0.0657	0.0003	0.0174	0.0104	0.0070	0.0541	0.0955	0.0318	0.0000
Other Principal Arterial	0.28	6.9040	3.1629	2.2873	0.7846	0.1552	0.0008	0.0410	0.0246	0.0166	0.1278	0.2254	0.0318	0.0460
Minor Arterial	0.25	6.2927	2.6070	1.8852	0.6467	0.1279	0.0006	0.0338	0.0203	0.0137	0.1053	0.1858	0.6398	0.0266
Collector	0.12	3.0638	1.0391	0.7514	0.2578	0.0510	0.0003	0.0135	0.0081	0.0054	0.0420	0.0741	0.7950	0.0262
Local	0.12	2.9559	1.3401	0.9690	0.3323	0.0329	0.0003	0.0084	0.0051	0.0058	0.0262	0.0543	0.0795	0.1020
TOTAL	**1.00**	**24.8459**	**10.7355**	**7.7633**	**2.6631**	**0.4938**	**0.0026**	**0.1301**	**0.0782**	**0.0550**	**0.4058**	**0.7239**	**1.5938**	**0.2008**

Table B-2
Montgomery County

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.02	1.1907	0.5343	0.4084	0.1360	0.0282	0.0022	0.0069	0.0042	0.0029	0.0222	0.0383	0.0072	0.0000
Other Principal Arterial	0.00	0.0376	0.0040	0.0030	0.0010	0.0002	0.0000	0.0001	0.0000	0.0000	0.0002	0.0003	0.0288	0.0000
Minor Arterial	0.03	1.3945	0.6037	0.4615	0.1537	0.0318	0.0025	0.0078	0.0047	0.0033	0.0250	0.0433	0.0288	0.0283
Major Collector	0.03	1.5131	0.6596	0.5042	0.1679	0.0348	0.0027	0.0085	0.0052	0.0036	0.0274	0.0473	0.0360	0.0160
Minor Collector	0.01	0.4556	0.1822	0.1393	0.0464	0.0096	0.0008	0.0024	0.0014	0.0010	0.0076	0.0131	0.0360	0.0160
Local	0.01	0.4209	0.1631	0.1247	0.0415	0.0056	0.0007	0.0013	0.0008	0.0008	0.0043	0.0081	0.0072	0.0627
Urban														
Interstate	0.30	15.7160	7.0837	5.4150	1.8031	0.3735	0.0293	0.0917	0.0557	0.0384	0.2938	0.5078	0.0240	0.0000
Other Frwy & Expwy	0.02	1.0733	0.4699	0.3592	0.1196	0.0248	0.0019	0.0061	0.0037	0.0025	0.0195	0.0337	0.0324	0.0000
Other Principal Arterial	0.26	13.5269	5.8767	4.4924	1.4959	0.3098	0.0243	0.0761	0.0462	0.0319	0.2437	0.4213	0.2540	0.2546
Minor Arterial	0.16	8.0833	3.4693	2.6521	0.8831	0.1829	0.0144	0.0449	0.0273	0.0188	0.1439	0.2487	0.2540	0.1439
Collector	0.09	4.4978	1.6758	1.2811	0.4266	0.0884	0.0069	0.0217	0.0132	0.0091	0.0695	0.1201	0.6415	0.1439
Local	0.08	3.9707	1.5395	1.1768	0.3918	0.0546	0.0064	0.0130	0.0079	0.0074	0.0417	0.0777	0.0894	0.5646
TOTAL	**1.00**	**51.8804**	**22.2619**	**17.0176**	**5.6665**	**1.1442**	**0.0922**	**0.2804**	**0.1703**	**0.1197**	**0.8986**	**1.5596**	**1.4394**	**1.2300**

Table B-3

3 **Prince George's County**

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.00	0.2431	0.1094	0.0820	0.0267	0.0057	0.0005	0.0014	0.0008	0.0006	0.0044	0.0078	0.0037	0.0000
Other Principal Arterial	0.04	2.1853	0.9922	0.7438	0.2418	0.0514	0.0049	0.0129	0.0077	0.0051	0.0397	0.0709	0.0150	0.0000
Minor Arterial	0.01	0.2885	0.1133	0.0849	0.0276	0.0059	0.0006	0.0015	0.0009	0.0006	0.0045	0.0081	0.0150	0.0258
Major Collector	0.01	0.5095	0.2177	0.1632	0.0531	0.0113	0.0011	0.0028	0.0017	0.0011	0.0087	0.0156	0.0187	0.0146
Minor Collector	0.00	0.1288	0.0437	0.0327	0.0106	0.0023	0.0002	0.0006	0.0003	0.0002	0.0017	0.0031	0.0187	0.0146
Local	0.00	0.2794	0.0999	0.0748	0.0243	0.0052	0.0005	0.0013	0.0008	0.0005	0.0040	0.0072	0.0037	0.0571
Urban														
Interstate	0.32	17.9826	8.2126	6.1563	2.0016	0.4255	0.0404	0.1065	0.0634	0.0421	0.3289	0.5869	0.0184	0.0000
Other Frwy & Expwy	0.16	9.2509	4.2178	3.1617	1.0280	0.2185	0.0208	0.0547	0.0326	0.0216	0.1689	0.3014	0.0249	0.0000
Other Principal Arterial	0.20	11.1115	4.8342	3.6237	1.1782	0.2504	0.0238	0.0627	0.0373	0.0248	0.1936	0.3455	0.1950	0.3422
Minor Arterial	0.12	6.6361	2.8542	2.1395	0.6956	0.1479	0.0141	0.0370	0.0220	0.0146	0.1143	0.2040	0.1950	0.1979
Collector	0.07	4.1130	1.5660	1.1739	0.3817	0.0811	0.0077	0.0203	0.0121	0.0080	0.0627	0.1119	0.4926	0.1949
Local	0.07	3.8647	1.3876	1.0401	0.3382	0.0722	0.0068	0.0181	0.0108	0.0071	0.0558	0.0995	0.0697	0.7589
TOTAL	**1.00**	**56.5934**	**24.6485**	**18.4768**	**6.0074**	**1.2773**	**0.1214**	**0.3196**	**0.1904**	**0.1264**	**0.9874**	**1.7619**	**1.0705**	**1.6060**

Table B-4

4 **Frederick County**

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.29	5.9892	2.7307	2.0328	0.6749	0.1426	0.0306	0.0350	0.0210	0.0143	0.1107	0.1933	0.0032	0.0000
Other Principal Arterial	0.17	3.4346	1.5609	1.1620	0.3858	0.0815	0.0175	0.0200	0.0120	0.0082	0.0633	0.1105	0.0130	0.0000
Minor Arterial	0.06	1.2443	0.5375	0.4002	0.1329	0.0281	0.0060	0.0069	0.0041	0.0028	0.0218	0.0381	0.0130	0.0530
Major Collector	0.12	2.3951	1.0716	0.7977	0.2648	0.0560	0.0120	0.0137	0.0082	0.0056	0.0434	0.0759	0.0162	0.0300
Minor Collector	0.05	1.0105	0.4399	0.3275	0.1087	0.0230	0.0049	0.0056	0.0034	0.0023	0.0178	0.0311	0.0162	0.0300
Local	0.05	0.9662	0.4013	0.2988	0.0992	0.0111	0.0045	0.0026	0.0016	0.0017	0.0083	0.0165	0.0032	0.1175
Urban														
Interstate	0.06	1.3454	0.6135	0.4567	0.1516	0.0320	0.0069	0.0079	0.0047	0.0032	0.0249	0.0434	0.0005	0.0000
Other Frwy & Expwy	0.06	1.3148	0.5995	0.4463	0.1482	0.0313	0.0067	0.0077	0.0046	0.0031	0.0243	0.0424	0.0006	0.0000
Other Principal Arterial	0.04	0.8361	0.3698	0.2753	0.0914	0.0193	0.0041	0.0047	0.0028	0.0019	0.0150	0.0262	0.0049	0.0206
Minor Arterial	0.05	1.0112	0.4536	0.3377	0.1121	0.0237	0.0051	0.0058	0.0035	0.0024	0.0184	0.0321	0.0049	0.0119
Collector	0.04	0.7893	0.3490	0.2598	0.0863	0.0182	0.0039	0.0045	0.0027	0.0018	0.0141	0.0247	0.0125	0.0117
Local	0.02	0.3876	0.1612	0.1200	0.0399	0.0046	0.0018	0.0011	0.0007	0.0007	0.0034	0.0068	0.0018	0.0457
TOTAL	**1.00**	**20.7243**	**9.2886**	**6.9147**	**2.2958**	**0.4714**	**0.1042**	**0.1156**	**0.0693**	**0.0480**	**0.3653**	**0.6410**	**0.0900**	**0.3204**

Table B-5
Charles County

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.00	0.0042	0.0012	0.0009	0.0003	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0016	0.0000
Other Principal Arterial	0.29	1.6616	0.7538	0.5628	0.1877	0.0399	0.0075	0.0098	0.0057	0.0039	0.0301	0.0539	0.0065	0.0000
Minor Arterial	0.09	0.4970	0.2058	0.1537	0.0513	0.0109	0.0020	0.0027	0.0016	0.0011	0.0082	0.0147	0.0065	0.0385
Major Collector	0.14	0.7688	0.3365	0.2512	0.0838	0.0178	0.0033	0.0044	0.0026	0.0018	0.0134	0.0241	0.0081	0.0218
Minor Collector	0.05	0.2857	0.1165	0.0870	0.0290	0.0062	0.0012	0.0015	0.0009	0.0006	0.0047	0.0083	0.0081	0.0218
Local	0.08	0.4570	0.1741	0.1300	0.0434	0.0053	0.0017	0.0013	0.0008	0.0008	0.0039	0.0079	0.0016	0.0862
Urban														
Interstate	0.00	0.0031	0.0013	0.0010	0.0003	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0003	0.0000
Other Frwy & Expwy	0.00	0.0032	0.0013	0.0010	0.0003	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0004	0.0000
Other Principal Arterial	0.20	1.1457	0.5107	0.3813	0.1272	0.0270	0.0051	0.0067	0.0039	0.0027	0.0204	0.0365	0.0034	0.0209
Minor Arterial	0.04	0.2357	0.1004	0.0750	0.0250	0.0053	0.0010	0.0013	0.0008	0.0005	0.0040	0.0072	0.0034	0.0118
Collector	0.06	0.3352	0.1434	0.1070	0.0357	0.0076	0.0014	0.0019	0.0011	0.0007	0.0057	0.0102	0.0087	0.0117
Local	0.05	0.2544	0.0974	0.0727	0.0242	0.0031	0.0010	0.0007	0.0004	0.0004	0.0023	0.0045	0.0012	0.0464
TOTAL	**1.00**	**5.6515**	**2.4422**	**1.8233**	**0.6082**	**0.1232**	**0.0243**	**0.0303**	**0.0177**	**0.0125**	**0.0930**	**0.1676**	**0.0500**	**0.2592**

Table B-6
Calvert County

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.00	0.0032	0.0010	0.0008	0.0003	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0010	0.0000
Other Principal Arterial	0.55	2.0222	0.9138	0.6872	0.2334	0.0500	0.0090	0.0119	0.0069	0.0048	0.0363	0.0651	0.0038	0.0000
Minor Arterial	0.07	0.2570	0.0833	0.0626	0.0213	0.0046	0.0008	0.0011	0.0006	0.0004	0.0033	0.0059	0.0038	0.0693
Major Collector	0.11	0.4181	0.1694	0.1274	0.0433	0.0093	0.0017	0.0022	0.0013	0.0009	0.0067	0.0121	0.0048	0.0392
Minor Collector	0.07	0.2403	0.0889	0.0668	0.0227	0.0049	0.0009	0.0012	0.0007	0.0005	0.0035	0.0063	0.0048	0.0392
Local	0.15	0.5570	0.1890	0.1422	0.0483	0.0054	0.0019	0.0012	0.0007	0.0008	0.0037	0.0078	0.0010	0.1550
Urban														
Interstate	0.00	0.0003	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Frwy & Expwy	0.00	0.0003	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Principal Arterial	0.00	0.0046	0.0003	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0037
Minor Arterial	0.03	0.0932	0.0412	0.0310	0.0105	0.0023	0.0004	0.0005	0.0003	0.0002	0.0016	0.0029	0.0002	0.0021
Collector	0.01	0.0486	0.0209	0.0157	0.0053	0.0011	0.0002	0.0003	0.0002	0.0001	0.0008	0.0015	0.0005	0.0021
Local	0.01	0.0300	0.0103	0.0077	0.0026	0.0003	0.0001	0.0001	0.0000	0.0000	0.0002	0.0004	0.0001	0.0082
TOTAL	**1.00**	**3.6749**	**1.5182**	**1.1418**	**0.3878**	**0.0778**	**0.0150**	**0.0184**	**0.0107**	**0.0078**	**0.0563**	**0.1022**	**0.0200**	**0.3188**

Table B-7
Arlington County

Total Exhaust Emissions														
Facility Type	% Emissions	Emissions	Vehicle Type											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.00	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
Other Principal Arterial	0.00	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
Minor Arterial	0.00	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
Major Collector	0.00	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
Minor Collector	0.00	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
Local	0.00	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
Urban														
Interstate	0.43	4.5295	2.0681	1.4667	0.5683	0.1068	0.0293	0.0267	0.0163	0.0119	0.0852	0.1472	0.0030	0.0000
Other Frwy & Expwy	0.15	1.6215	0.7399	0.5248	0.2033	0.0382	0.0105	0.0095	0.0058	0.0043	0.0305	0.0527	0.0020	0.0000
Other Principal Arterial	0.21	2.2209	1.0029	0.7112	0.2756	0.0518	0.0142	0.0129	0.0079	0.0058	0.0413	0.0714	0.0190	0.0069
Minor Arterial	0.08	0.8669	0.3851	0.2731	0.1058	0.0199	0.0054	0.0050	0.0030	0.0022	0.0159	0.0274	0.0200	0.0039
Collector	0.05	0.5336	0.2187	0.1551	0.0601	0.0113	0.0031	0.0028	0.0017	0.0013	0.0090	0.0156	0.0510	0.0039
Local	0.07	0.7767	0.3538	0.2509	0.0973	0.0132	0.0050	0.0032	0.0020	0.0019	0.0103	0.0188	0.0050	0.0153
TOTAL	**1.00**	**10.5490**	**4.7686**	**3.3819**	**1.3104**	**0.2412**	**0.0675**	**0.0602**	**0.0367**	**0.0273**	**0.1922**	**0.3330**	**0.1000**	**0.0300**

Table B-8
Alexandria

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.00	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
Other Principal Arterial	0.00	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
Minor Arterial	0.00	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
Major Collector	0.00	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
Minor Collector	0.00	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
Local	0.00	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
Urban														
Interstate	0.29	1.9242	0.8529	0.6208	0.2430	0.0435	0.0102	0.0110	0.0068	0.0051	0.0357	0.0618	0.0333	0.0000
Other Frwy & Expwy	0.00	0.0265	0.0019	0.0014	0.0005	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0222	0.0000
Other Principal Arterial	0.21	1.3790	0.5238	0.3813	0.1493	0.0267	0.0063	0.0067	0.0042	0.0031	0.0219	0.0380	0.2109	0.0069
Minor Arterial	0.24	1.5715	0.6069	0.4418	0.1730	0.0310	0.0072	0.0078	0.0048	0.0036	0.0254	0.0440	0.2220	0.0039
Collector	0.13	0.8411	0.1228	0.0894	0.0350	0.0063	0.0015	0.0016	0.0010	0.0007	0.0051	0.0089	0.5650	0.0039
Local	0.13	0.8426	0.3622	0.2637	0.1032	0.0098	0.0043	0.0024	0.0015	0.0018	0.0077	0.0153	0.0555	0.0153
TOTAL	**1.00**	**6.5849**	**2.4705**	**1.7984**	**0.7040**	**0.1175**	**0.0295**	**0.0295**	**0.0183**	**0.0145**	**0.0959**	**0.1681**	**1.1089**	**0.0300**

Table B-9
Fairfax County

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.00	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
Other Principal Arterial	0.00	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
Minor Arterial	0.00	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
Major Collector	0.00	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
Minor Collector	0.00	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
Local	0.00	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
Urban														
Interstate	0.32	21.5997	9.7855	7.0162	2.7385	0.5075	0.1536	0.1269	0.0779	0.0578	0.4067	0.7057	0.0234	0.0000
Other Frwy & Expwy	0.06	3.9362	1.7781	1.2749	0.4976	0.0922	0.0279	0.0231	0.0141	0.0105	0.0739	0.1282	0.0156	0.0000
Other Principal Arterial	0.26	17.4265	7.7121	5.5296	2.1583	0.3999	0.1211	0.1000	0.0614	0.0456	0.3205	0.5562	0.1482	0.2737
Minor Arterial	0.21	13.9247	6.1744	4.4270	1.7279	0.3202	0.0969	0.0801	0.0491	0.0365	0.2566	0.4453	0.1560	0.1547
Collector	0.07	4.3795	1.7360	1.2447	0.4858	0.0900	0.0273	0.0225	0.0138	0.0103	0.0722	0.1252	0.3970	0.1547
Local	0.08	5.3097	2.1861	1.5674	0.6116	0.0699	0.0343	0.0167	0.0103	0.0112	0.0536	0.1027	0.0390	0.6069
TOTAL	**1.00**	**66.5762**	**29.3723**	**21.0598**	**8.2197**	**1.4797**	**0.4611**	**0.3692**	**0.2266**	**0.1719**	**1.1836**	**2.0632**	**0.7792**	**1.1900**

Table B-10
Loudoun County

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.00	0.0036	0.0016	0.0011	0.0004	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0000
Other Principal Arterial	0.26	3.6346	1.6594	1.1572	0.4500	0.0865	0.0449	0.0213	0.0131	0.0095	0.0685	0.1196	0.0047	0.0000
Minor Arterial	0.12	1.6580	0.7182	0.5008	0.1947	0.0375	0.0194	0.0092	0.0057	0.0041	0.0296	0.0517	0.0372	0.0499
Major Collector	0.16	2.1701	0.9686	0.6754	0.2626	0.0505	0.0262	0.0124	0.0076	0.0056	0.0400	0.0698	0.0233	0.0282
Minor Collector	0.02	0.2647	0.0975	0.0680	0.0264	0.0051	0.0026	0.0012	0.0008	0.0006	0.0040	0.0070	0.0233	0.0282
Local	0.06	0.8360	0.3444	0.2402	0.0935	0.0088	0.0093	0.0020	0.0012	0.0016	0.0064	0.0132	0.0047	0.1107
Urban														
Interstate	0.00	0.0039	0.0010	0.0007	0.0003	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0017	0.0000
Other Frwy & Expwy	0.10	1.3855	0.6329	0.4413	0.1716	0.0330	0.0171	0.0081	0.0050	0.0036	0.0261	0.0456	0.0011	0.0000
Other Principal Arterial	0.13	1.7932	0.8008	0.5584	0.2171	0.0418	0.0217	0.0103	0.0063	0.0046	0.0330	0.0577	0.0108	0.0306
Minor Arterial	0.08	1.1144	0.4963	0.3461	0.1346	0.0259	0.0134	0.0064	0.0039	0.0029	0.0205	0.0358	0.0114	0.0173
Collector	0.03	0.4734	0.1952	0.1361	0.0529	0.0102	0.0053	0.0025	0.0015	0.0011	0.0081	0.0141	0.0290	0.0173
Local	0.04	0.5259	0.2171	0.1514	0.0589	0.0057	0.0059	0.0013	0.0008	0.0010	0.0042	0.0085	0.0029	0.0682
TOTAL	**1.00**	**13.8633**	**6.1330**	**4.2768**	**1.6631**	**0.3051**	**0.1661**	**0.0746**	**0.0459**	**0.0347**	**0.2405**	**0.4232**	**0.1499**	**0.3504**

Table B-11
Prince William County

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.21	4.1492	1.9098	1.3218	0.5093	0.0985	0.0436	0.0245	0.0150	0.0108	0.0785	0.1375	0.0000	0.0000
Other Principal Arterial	0.08	1.5978	0.7331	0.5074	0.1955	0.0378	0.0167	0.0094	0.0057	0.0041	0.0301	0.0528	0.0051	0.0000
Minor Arterial	0.08	1.4664	0.6319	0.4373	0.1685	0.0326	0.0144	0.0081	0.0050	0.0036	0.0260	0.0455	0.0408	0.0528
Major Collector	0.08	1.5788	0.7012	0.4853	0.1870	0.0362	0.0160	0.0090	0.0055	0.0040	0.0288	0.0505	0.0255	0.0298
Minor Collector	0.01	0.1523	0.0446	0.0309	0.0119	0.0023	0.0010	0.0006	0.0003	0.0003	0.0018	0.0032	0.0255	0.0298
Local	0.05	0.9350	0.3906	0.2703	0.1041	0.0102	0.0089	0.0024	0.0014	0.0018	0.0075	0.0156	0.0051	0.1170
Urban														
Interstate	0.12	2.2434	1.0313	0.7137	0.2750	0.0532	0.0235	0.0132	0.0081	0.0058	0.0424	0.0743	0.0029	0.0000
Other Frwy & Expwy	0.00	0.0061	0.0019	0.0013	0.0005	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0020	0.0000
Other Principal Arterial	0.07	1.3324	0.5814	0.4024	0.1551	0.0300	0.0133	0.0075	0.0046	0.0033	0.0239	0.0419	0.0186	0.0507
Minor Arterial	0.22	4.2049	1.9132	1.3241	0.5103	0.0987	0.0436	0.0245	0.0150	0.0108	0.0786	0.1378	0.0196	0.0287
Collector	0.04	0.7282	0.2990	0.2070	0.0798	0.0154	0.0068	0.0038	0.0023	0.0017	0.0123	0.0215	0.0499	0.0287
Local	0.05	0.9240	0.3868	0.2677	0.1031	0.0104	0.0088	0.0024	0.0015	0.0018	0.0077	0.0158	0.0049	0.1131
TOTAL	**1.00**	**19.3186**	**8.6248**	**5.9692**	**2.3001**	**0.4253**	**0.1967**	**0.1054**	**0.0644**	**0.0479**	**0.3377**	**0.5965**	**0.1999**	**0.4507**

Table B-12
Stafford County

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.49	5.1477	2.3973	1.6271	0.6130	0.1285	0.0541	0.0302	0.0184	0.0128	0.0963	0.1700	0.0000	0.0000
Other Principal Arterial	0.09	0.9273	0.4319	0.2931	0.1104	0.0231	0.0097	0.0054	0.0033	0.0023	0.0174	0.0306	0.0000	0.0000
Minor Arterial	0.05	0.5148	0.2295	0.1557	0.0587	0.0123	0.0052	0.0029	0.0018	0.0012	0.0092	0.0163	0.0000	0.0221
Major Collector	0.13	1.3575	0.6264	0.4251	0.1602	0.0336	0.0141	0.0079	0.0048	0.0034	0.0252	0.0444	0.0000	0.0125
Minor Collector	0.01	0.1101	0.0454	0.0308	0.0116	0.0024	0.0010	0.0006	0.0003	0.0002	0.0018	0.0032	0.0000	0.0125
Local	0.04	0.4308	0.1858	0.1261	0.0475	0.0051	0.0042	0.0011	0.0007	0.0008	0.0034	0.0071	0.0000	0.0490
Urban														
Interstate	0.05	0.5355	0.2494	0.1692	0.0638	0.0134	0.0056	0.0031	0.0019	0.0013	0.0100	0.0177	0.0000	0.0000
Other Frwy & Expwy	0.00	0.0005	0.0002	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Principal Arterial	0.06	0.5838	0.2693	0.1828	0.0689	0.0144	0.0061	0.0034	0.0021	0.0014	0.0108	0.0191	0.0000	0.0055
Minor Arterial	0.05	0.5225	0.2419	0.1642	0.0619	0.0130	0.0055	0.0031	0.0019	0.0013	0.0097	0.0171	0.0000	0.0031
Collector	0.03	0.3369	0.1554	0.1055	0.0397	0.0083	0.0035	0.0020	0.0012	0.0008	0.0062	0.0110	0.0000	0.0031
Local	0.01	0.1107	0.0478	0.0324	0.0122	0.0014	0.0011	0.0003	0.0002	0.0002	0.0009	0.0019	0.0000	0.0123
TOTAL	**1.00**	**10.5781**	**4.8803**	**3.3124**	**1.2480**	**0.2555**	**0.1101**	**0.0600**	**0.0365**	**0.0259**	**0.1910**	**0.3385**	**0.0000**	**0.1201**

Table B-13
MSA

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.06	16.7310	7.6854	5.4749	1.9610	0.4036	0.1311	0.0981	0.0594	0.0413	0.3122	0.5472	0.0168	0.0000
Other Principal Arterial	0.05	15.5010	7.0490	5.1164	1.8057	0.3704	0.1104	0.0907	0.0545	0.0380	0.2855	0.5037	0.0768	0.0000
Minor Arterial	0.03	7.3205	3.1231	2.2567	0.8086	0.1635	0.0510	0.0401	0.0243	0.0171	0.1277	0.2236	0.1450	0.3397
Major Collector	0.04	10.7110	4.7509	3.4296	1.2227	0.2493	0.0772	0.0610	0.0369	0.0258	0.1936	0.3395	0.1326	0.1920
Minor Collector	0.01	2.6479	1.0587	0.7830	0.2674	0.0557	0.0126	0.0136	0.0082	0.0056	0.0430	0.0754	0.1326	0.1920
Local	0.02	4.8824	1.9482	1.4071	0.5018	0.0568	0.0317	0.0132	0.0080	0.0089	0.0416	0.0834	0.0265	0.7553
	0.00													
Urban	0.00													
Interstate	0.24	68.5894	31.1458	22.9178	8.1548	1.6166	0.2992	0.4031	0.2444	0.1723	1.2780	2.2338	0.1234	0.0000
Other Frwy & Expwy	0.07	21.5424	9.7835	7.1811	2.5022	0.5040	0.0854	0.1266	0.0763	0.0528	0.3976	0.6999	0.1331	0.0000
Other Principal Arterial	0.20	58.2646	25.6449	18.8259	6.7015	1.3264	0.2407	0.3319	0.2012	0.1417	1.0521	1.8390	0.8970	1.0624
Minor Arterial	0.15	44.5572	19.3436	14.0968	5.0865	0.9985	0.2077	0.2501	0.1519	0.1075	0.7943	1.3880	1.5264	0.6058
Collector	0.07	20.1403	7.5214	5.5267	1.9467	0.3889	0.0679	0.0973	0.0589	0.0411	0.3078	0.5388	3.0426	0.6022
Local	0.07	19.9528	8.0899	5.9199	2.1153	0.2779	0.0758	0.0676	0.0411	0.0394	0.2139	0.4062	0.3489	2.3569
TOTAL	**1.00**	**290.8405**	**127.1443**	**92.9360**	**33.0740**	**6.4119**	**1.3907**	**1.5933**	**0.9649**	**0.6916**	**5.0472**	**8.8786**	**6.6016**	**6.1062**
														290.840

2002 CO Emissions

Table C-1
District Of Columbia

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.00	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
Other Principal Arterial	0.00	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
Minor Arterial	0.00	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
Major Collector	0.00	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
Minor Collector	0.00	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
Local	0.01	1.0242	0.5063	0.3661	0.1255	0.0057	0.0001	0.0014	0.0008	0.0019	0.0042	0.0121	0.0000	0.0000
Urban														
Interstate	0.10	14.4627	6.7017	4.8463	1.6625	0.3265	0.0016	0.0862	0.0518	0.0349	0.2687	0.4745	0.0081	0.0000
Other Frwy & Expwy	0.10	14.7361	6.8247	4.9353	1.6930	0.3325	0.0017	0.0877	0.0527	0.0355	0.2736	0.4832	0.0162	0.0000
Other Principal Arterial	0.24	35.6618	16.5196	11.9462	4.0981	0.8048	0.0040	0.2124	0.1276	0.0859	0.6622	1.1697	0.0162	0.0151
Minor Arterial	0.22	31.9364	14.6526	10.5960	3.6349	0.7138	0.0036	0.1884	0.1132	0.0762	0.5874	1.0375	0.3243	0.0085
Collector	0.10	14.4459	6.5058	4.7046	1.6139	0.3169	0.0016	0.0836	0.0502	0.0338	0.2608	0.4606	0.4054	0.0085
Local	0.23	34.2887	16.1463	11.6761	4.0049	0.6160	0.0039	0.1612	0.0970	0.0776	0.5022	0.9294	0.0405	0.0335
TOTAL	**1.00**	**146.5559**	**67.8570**	**49.0706**	**16.8330**	**3.1161**	**0.0166**	**0.8208**	**0.4933**	**0.3459**	**2.5591**	**4.5671**	**0.8108**	**0.0657**

Table C-2
Montgomery County

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.02	6.1792	2.7894	2.1323	0.7100	0.1463	0.0116	0.0359	0.0218	0.0150	0.1150	0.1990	0.0030	0.0000
Other Principal Arterial	0.00	0.2324	0.0996	0.0761	0.0253	0.0052	0.0004	0.0013	0.0008	0.0005	0.0041	0.0071	0.0119	0.0000
Minor Arterial	0.02	7.2812	3.2805	2.5077	0.8350	0.1721	0.0136	0.0422	0.0256	0.0177	0.1353	0.2340	0.0119	0.0056
Major Collector	0.03	8.2713	3.7274	2.8494	0.9488	0.1955	0.0154	0.0480	0.0291	0.0201	0.1537	0.2659	0.0149	0.0031
Minor Collector	0.01	2.7465	1.2323	0.9420	0.3137	0.0646	0.0051	0.0159	0.0096	0.0066	0.0508	0.0879	0.0149	0.0031
Local	0.02	5.8457	2.6604	2.0337	0.6771	0.1224	0.0110	0.0298	0.0181	0.0137	0.0954	0.1687	0.0030	0.0124
Urban														
Interstate	0.26	82.1771	37.1091	28.3674	9.4458	1.9466	0.1537	0.4775	0.2899	0.2001	1.5301	2.6470	0.0099	0.0000
Other Frwy & Expwy	0.02	6.4449	2.9047	2.2204	0.7394	0.1524	0.0120	0.0374	0.0227	0.0157	0.1198	0.2072	0.0134	0.0000
Other Principal Arterial	0.22	70.6029	31.8163	24.3214	8.0986	1.6690	0.1318	0.4094	0.2485	0.1716	1.3118	2.2695	0.1049	0.0501
Minor Arterial	0.14	44.0647	19.8407	15.1669	5.0503	1.0408	0.0822	0.2553	0.1550	0.1070	0.8181	1.4153	0.1049	0.0283
Collector	0.08	24.2125	10.8026	8.2578	2.7497	0.5667	0.0447	0.1390	0.0844	0.0583	0.4454	0.7706	0.2650	0.0283
Local	0.18	56.5910	25.7366	19.6735	6.5504	1.1959	0.1066	0.2911	0.1769	0.1332	0.9325	1.6462	0.0369	0.1112
TOTAL	**1.00**	**314.6494**	**141.9996**	**108.5487**	**36.1441**	**7.2775**	**0.5882**	**1.7825**	**1.0824**	**0.7595**	**5.7119**	**9.9183**	**0.5946**	**0.2422**

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Table C-3
Prince George's County

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.00	1.3121	0.5996	0.4495	0.1461	0.0308	0.0030	0.0077	0.0046	0.0030	0.0238	0.0425	0.0016	0.0000
Other Principal Arterial	0.03	11.6918	5.3461	4.0075	1.3030	0.2747	0.0263	0.0687	0.0409	0.0272	0.2121	0.3791	0.0062	0.0000
Minor Arterial	0.00	1.5275	0.6937	0.5200	0.1691	0.0356	0.0034	0.0089	0.0053	0.0035	0.0275	0.0492	0.0062	0.0051
Major Collector	0.01	2.9401	1.3402	1.0047	0.3266	0.0689	0.0066	0.0172	0.0103	0.0068	0.0532	0.0950	0.0078	0.0029
Minor Collector	0.00	0.8747	0.3953	0.2963	0.0963	0.0203	0.0019	0.0051	0.0030	0.0020	0.0157	0.0280	0.0078	0.0029
Local	0.01	3.4281	1.5824	1.1862	0.3857	0.0687	0.0078	0.0171	0.0102	0.0076	0.0527	0.0970	0.0016	0.0112
Urban														
Interstate	0.29	96.7884	44.2772	33.1908	10.7913	2.2748	0.2181	0.5686	0.3387	0.2249	1.7568	3.1396	0.0076	0.0000
Other Frwy & Expwy	0.15	50.1308	22.9301	17.1887	5.5885	1.1781	0.1129	0.2945	0.1754	0.1165	0.9098	1.6259	0.0103	0.0000
Other Principal Arterial	0.18	59.1790	27.0065	20.2444	6.5820	1.3875	0.1330	0.3468	0.2066	0.1372	1.0715	1.9150	0.0810	0.0673
Minor Arterial	0.11	36.8780	16.8172	12.6064	4.0987	0.8640	0.0828	0.2160	0.1287	0.0854	0.6672	1.1925	0.0810	0.0381
Collector	0.07	22.3835	10.1294	7.5931	2.4687	0.5204	0.0499	0.1301	0.0775	0.0515	0.4019	0.7182	0.2046	0.0381
Local	0.15	48.8308	22.5232	16.8840	5.4892	0.9903	0.1109	0.2458	0.1466	0.1086	0.7597	1.3948	0.0285	0.1493
TOTAL	**1.00**	**335.9648**	**153.6411**	**115.1716**	**37.4453**	**7.7142**	**0.7567**	**1.9264**	**1.1477**	**0.7743**	**5.9518**	**10.6767**	**0.4443**	**0.3148**

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Table C-4
Frederick County

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.26	32.7222	14.9320	11.1158	3.6906	0.7768	0.1675	0.1906	0.1143	0.0776	0.6025	1.0530	0.0014	0.0000
Other Principal Arterial	0.15	18.9504	8.6453	6.4358	2.1368	0.4498	0.0970	0.1103	0.0662	0.0450	0.3488	0.6097	0.0058	0.0000
Minor Arterial	0.06	7.0330	3.2022	2.3838	0.7914	0.1666	0.0359	0.0409	0.0245	0.0166	0.1292	0.2258	0.0058	0.0103
Major Collector	0.11	14.0050	6.3852	4.7533	1.5782	0.3322	0.0716	0.0815	0.0489	0.0332	0.2576	0.4503	0.0072	0.0058
Minor Collector	0.05	6.3601	2.8965	2.1562	0.7159	0.1507	0.0325	0.0370	0.0222	0.0151	0.1169	0.2043	0.0072	0.0058
Local	0.09	11.7867	5.4679	4.0704	1.3514	0.2210	0.0614	0.0536	0.0322	0.0262	0.1693	0.3091	0.0014	0.0228
Urban														
Interstate	0.06	7.4071	3.3801	2.5162	0.8354	0.1758	0.0379	0.0431	0.0259	0.0176	0.1364	0.2384	0.0002	0.0000
Other Frwy & Expwy	0.06	7.2391	3.3034	2.4592	0.8165	0.1719	0.0371	0.0422	0.0253	0.0172	0.1333	0.2330	0.0003	0.0000
Other Principal Arterial	0.04	4.6695	2.1281	1.5842	0.5260	0.1107	0.0239	0.0272	0.0163	0.0111	0.0859	0.1501	0.0022	0.0040
Minor Arterial	0.05	5.7322	2.6138	1.9458	0.6460	0.1360	0.0293	0.0334	0.0200	0.0136	0.1055	0.1843	0.0022	0.0023
Collector	0.04	4.5246	2.0612	1.5344	0.5094	0.1072	0.0231	0.0263	0.0158	0.0107	0.0832	0.1454	0.0056	0.0023
Local	0.04	4.8789	2.2610	1.6832	0.5588	0.0929	0.0254	0.0226	0.0135	0.0109	0.0713	0.1297	0.0008	0.0088
TOTAL	**1.00**	**125.3087**	**57.2768**	**42.6384**	**14.1564**	**2.8916**	**0.6427**	**0.7084**	**0.4249**	**0.2947**	**2.2398**	**3.9329**	**0.0401**	**0.0620**

Table C-5
Charles County

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.00	0.0662	0.0300	0.0224	0.0075	0.0016	0.0003	0.0004	0.0002	0.0002	0.0012	0.0021	0.0003	0.0000
Other Principal Arterial	0.26	10.8347	4.9343	3.6839	1.2288	0.2606	0.0491	0.0642	0.0375	0.0257	0.1970	0.3524	0.0011	0.0000
Minor Arterial	0.08	3.2210	1.4631	1.0923	0.3644	0.0773	0.0146	0.0190	0.0111	0.0076	0.0584	0.1045	0.0011	0.0075
Major Collector	0.13	5.3667	2.4418	1.8230	0.6081	0.1290	0.0243	0.0318	0.0185	0.0127	0.0975	0.1744	0.0014	0.0043
Minor Collector	0.05	2.1963	0.9978	0.7449	0.2485	0.0527	0.0099	0.0130	0.0076	0.0052	0.0398	0.0713	0.0014	0.0043
Local	0.13	5.6767	2.6159	1.9530	0.6515	0.1134	0.0260	0.0278	0.0162	0.0128	0.0852	0.1579	0.0003	0.0167
Urban														
Interstate	0.00	0.0710	0.0323	0.0241	0.0080	0.0017	0.0003	0.0004	0.0002	0.0002	0.0013	0.0023	0.0001	0.0000
Other Frwy & Expwy	0.00	0.0710	0.0323	0.0241	0.0080	0.0017	0.0003	0.0004	0.0002	0.0002	0.0013	0.0023	0.0001	0.0000
Other Principal Arterial	0.18	7.4039	3.3701	2.5161	0.8392	0.1780	0.0335	0.0439	0.0256	0.0175	0.1346	0.2407	0.0006	0.0041
Minor Arterial	0.04	1.6377	0.7446	0.5559	0.1854	0.0393	0.0074	0.0097	0.0057	0.0039	0.0297	0.0532	0.0006	0.0023
Collector	0.05	2.3065	1.0488	0.7830	0.2612	0.0554	0.0104	0.0137	0.0080	0.0055	0.0419	0.0749	0.0015	0.0023
Local	0.08	3.2695	1.5055	1.1240	0.3749	0.0662	0.0150	0.0162	0.0095	0.0074	0.0497	0.0919	0.0002	0.0090
TOTAL	**1.00**	**42.1213**	**19.2165**	**14.3468**	**4.7855**	**0.9770**	**0.1913**	**0.2405**	**0.1403**	**0.0987**	**0.7376**	**1.3279**	**0.0088**	**0.0504**

Table C-6
Calvert County

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.00	0.0589	0.0266	0.0200	0.0068	0.0014	0.0003	0.0003	0.0002	0.0001	0.0010	0.0019	0.0002	0.0000
Other Principal Arterial	0.48	11.5056	5.2114	3.9193	1.3312	0.2831	0.0516	0.0671	0.0392	0.0273	0.2053	0.3692	0.0008	0.0000
Minor Arterial	0.06	1.3299	0.5959	0.4481	0.1522	0.0324	0.0059	0.0077	0.0045	0.0031	0.0235	0.0422	0.0008	0.0136
Major Collector	0.11	2.6650	1.2032	0.9049	0.3074	0.0654	0.0119	0.0155	0.0090	0.0063	0.0474	0.0852	0.0010	0.0077
Minor Collector	0.07	1.6178	0.7289	0.5482	0.1862	0.0396	0.0072	0.0094	0.0055	0.0038	0.0287	0.0516	0.0010	0.0077
Local	0.23	5.5423	2.5440	1.9133	0.6497	0.1072	0.0252	0.0250	0.0146	0.0123	0.0765	0.1443	0.0002	0.0301
Urban														
Interstate	0.00	0.0062	0.0028	0.0021	0.0007	0.0002	0.0000	0.0000	0.0000	0.0000	0.0001	0.0002	0.0000	0.0000
Other Frwy & Expwy	0.00	0.0062	0.0028	0.0021	0.0007	0.0002	0.0000	0.0000	0.0000	0.0000	0.0001	0.0002	0.0000	0.0000
Other Principal Arterial	0.00	0.0193	0.0084	0.0063	0.0021	0.0005	0.0001	0.0001	0.0001	0.0000	0.0003	0.0006	0.0000	0.0007
Minor Arterial	0.02	0.5320	0.2408	0.1811	0.0615	0.0131	0.0024	0.0031	0.0018	0.0013	0.0095	0.0171	0.0000	0.0004
Collector	0.01	0.2818	0.1274	0.0958	0.0325	0.0069	0.0013	0.0016	0.0010	0.0007	0.0050	0.0090	0.0001	0.0004
Local	0.01	0.3103	0.1423	0.1070	0.0363	0.0061	0.0014	0.0014	0.0008	0.0007	0.0044	0.0082	0.0000	0.0016
TOTAL	**1.00**	**23.8752**	**10.8345**	**8.1483**	**2.7675**	**0.5560**	**0.1073**	**0.1314**	**0.0767**	**0.0557**	**0.4019**	**0.7297**	**0.0042**	**0.0621**

Table C-7

7 **Arlington County**

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.00	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
Other Principal Arterial	0.00	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
Minor Arterial	0.00	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
Major Collector	0.00	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
Minor Collector	0.00	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
Local	0.00	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
Urban														
Interstate	0.35	23.5069	10.7465	7.6215	2.9531	0.5510	0.1520	0.1375	0.0838	0.0616	0.4392	0.7594	0.0013	0.0000
Other Frwy & Expwy	0.13	8.4982	3.8849	2.7552	1.0676	0.1992	0.0550	0.0497	0.0303	0.0223	0.1588	0.2745	0.0009	0.0000
Other Principal Arterial	0.18	12.1600	5.5548	3.9395	1.5264	0.2848	0.0786	0.0711	0.0433	0.0318	0.2270	0.3925	0.0085	0.0017
Minor Arterial	0.09	5.8607	2.6749	1.8971	0.7351	0.1372	0.0378	0.0342	0.0209	0.0153	0.1093	0.1890	0.0089	0.0010
Collector	0.06	3.8575	1.7528	1.2431	0.4817	0.0899	0.0248	0.0224	0.0137	0.0100	0.0716	0.1239	0.0227	0.0010
Local	0.20	13.7692	6.3401	4.4963	1.7424	0.2959	0.0897	0.0733	0.0447	0.0352	0.2341	0.4113	0.0022	0.0039
TOTAL	**1.00**	**67.6524**	**30.9540**	**21.9525**	**8.5063**	**1.5580**	**0.4378**	**0.3882**	**0.2368**	**0.1762**	**1.2400**	**2.1506**	**0.0445**	**0.0076**

Table C-8

8 **Alexandria**

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.00	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
Other Principal Arterial	0.00	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
Minor Arterial	0.00	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
Major Collector	0.00	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
Minor Collector	0.00	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
Local	0.00	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
Urban														
Interstate	0.26	9.5995	4.3275	3.1502	1.2332	0.2190	0.0517	0.0552	0.0341	0.0257	0.1792	0.3109	0.0127	0.0000
Other Frwy & Expwy	0.00	0.1180	0.0494	0.0360	0.0141	0.0025	0.0006	0.0006	0.0004	0.0003	0.0020	0.0036	0.0084	0.0000
Other Principal Arterial	0.17	6.4440	2.8720	2.0907	0.8184	0.1453	0.0343	0.0366	0.0226	0.0170	0.1190	0.2064	0.0802	0.0014
Minor Arterial	0.21	7.8147	3.4892	2.5399	0.9943	0.1766	0.0417	0.0445	0.0275	0.0207	0.1445	0.2507	0.0844	0.0008
Collector	0.07	2.4654	1.0154	0.7391	0.2894	0.0514	0.0121	0.0129	0.0080	0.0060	0.0421	0.0730	0.2152	0.0008
Local	0.28	10.4604	4.7898	3.4867	1.3647	0.1940	0.0572	0.0482	0.0298	0.0266	0.1566	0.2828	0.0211	0.0030
TOTAL	**1.00**	**36.9019**	**16.5434**	**12.0427**	**4.7141**	**0.7888**	**0.1975**	**0.1980**	**0.1225**	**0.0963**	**0.6434**	**1.1273**	**0.4220**	**0.0059**

Table C-9
Fairfax County

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.00	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
Other Principal Arterial	0.00	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
Minor Arterial	0.00	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
Major Collector	0.00	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
Minor Collector	0.00	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
Local	0.00	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
Urban														
Interstate	0.28	111.0634	50.3988	36.1358	14.1042	2.5954	0.7911	0.6481	0.3977	0.2954	2.0776	3.6092	0.0100	0.0000
Other Frwy & Expwy	0.05	20.7310	9.4052	6.7435	2.6321	0.4843	0.1476	0.1209	0.0742	0.0551	0.3877	0.6735	0.0067	0.0000
Other Principal Arterial	0.23	91.1100	41.2948	29.6083	11.5564	2.1266	0.6482	0.5310	0.3259	0.2420	1.7023	2.9572	0.0635	0.0538
Minor Arterial	0.19	77.0718	34.9330	25.0469	9.7761	1.7990	0.5484	0.4492	0.2757	0.2047	1.4401	2.5016	0.0668	0.0304
Collector	0.07	26.4418	11.9088	8.5386	3.3327	0.6133	0.1869	0.1531	0.0940	0.0698	0.4909	0.8528	0.1704	0.0304
Local	0.18	72.6576	33.3134	23.8854	9.3217	1.4694	0.5229	0.3624	0.2227	0.1859	1.1629	2.0749	0.0167	0.1192
TOTAL	**1.00**	**399.0756**	**181.2541**	**129.9584**	**50.7231**	**9.0880**	**2.8452**	**2.2649**	**1.3902**	**1.0530**	**7.2616**	**12.6693**	**0.3342**	**0.2338**

Table C-10
Loudoun County

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.00	0.0989	0.0452	0.0315	0.0123	0.0023	0.0012	0.0006	0.0004	0.0003	0.0019	0.0032	0.0000	0.0000
Other Principal Arterial	0.23	19.2510	8.8040	6.1393	2.3873	0.4567	0.2384	0.1121	0.0689	0.0503	0.3610	0.6311	0.0019	0.0000
Minor Arterial	0.11	8.8131	4.0195	2.8029	1.0899	0.2085	0.1089	0.0512	0.0314	0.0230	0.1648	0.2881	0.0150	0.0098
Major Collector	0.15	12.6350	5.7721	4.0251	1.5651	0.2994	0.1563	0.0735	0.0452	0.0330	0.2367	0.4137	0.0094	0.0055
Minor Collector	0.02	1.5330	0.6943	0.4842	0.1883	0.0360	0.0188	0.0088	0.0054	0.0040	0.0285	0.0498	0.0094	0.0055
Local	0.11	9.3110	4.3345	3.0226	1.1757	0.1719	0.1174	0.0411	0.0253	0.0228	0.1326	0.2436	0.0019	0.0217
Urban														
Interstate	0.00	0.0613	0.0277	0.0193	0.0075	0.0014	0.0008	0.0004	0.0002	0.0002	0.0011	0.0020	0.0007	0.0000
Other Frwy & Expwy	0.09	7.2991	3.3382	2.3278	0.9052	0.1732	0.0904	0.0425	0.0261	0.0191	0.1369	0.2393	0.0005	0.0000
Other Principal Arterial	0.11	9.4790	4.3307	3.0199	1.1743	0.2247	0.1173	0.0551	0.0339	0.0248	0.1776	0.3104	0.0044	0.0060
Minor Arterial	0.07	6.2346	2.8479	1.9859	0.7722	0.1477	0.0771	0.0363	0.0223	0.0163	0.1168	0.2041	0.0046	0.0034
Collector	0.03	2.7437	1.2480	0.8703	0.3384	0.0647	0.0338	0.0159	0.0098	0.0071	0.0512	0.0895	0.0117	0.0034
Local	0.07	6.0704	2.8230	1.9686	0.7657	0.1140	0.0765	0.0273	0.0168	0.0149	0.0881	0.1612	0.0011	0.0133
TOTAL	**1.00**	**83.5300**	**38.2851**	**26.6974**	**10.3818**	**1.9007**	**1.0368**	**0.4647**	**0.2857**	**0.2156**	**1.4970**	**2.6361**	**0.0604**	**0.0687**

Table C-11
Prince William County

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.19	21.8225	10.0464	6.9531	2.6794	0.5171	0.2292	0.1285	0.0785	0.0565	0.4119	0.7219	0.0000	0.0000
Other Principal Arterial	0.07	8.6118	3.9637	2.7433	1.0571	0.2040	0.0904	0.0507	0.0310	0.0223	0.1625	0.2848	0.0019	0.0000
Minor Arterial	0.07	7.8396	3.5973	2.4897	0.9594	0.1852	0.0821	0.0460	0.0281	0.0202	0.1475	0.2585	0.0154	0.0103
Major Collector	0.08	9.6871	4.4525	3.0816	1.1875	0.2292	0.1016	0.0570	0.0348	0.0250	0.1825	0.3200	0.0096	0.0058
Minor Collector	0.01	0.9686	0.4388	0.3037	0.1170	0.0226	0.0100	0.0056	0.0034	0.0025	0.0180	0.0315	0.0096	0.0058
Local	0.09	10.4412	4.8928	3.3862	1.3046	0.1928	0.1116	0.0469	0.0287	0.0252	0.1500	0.2776	0.0019	0.0228
Urban														
Interstate	0.10	11.8224	5.4421	3.7665	1.4514	0.2801	0.1241	0.0696	0.0425	0.0306	0.2231	0.3911	0.0011	0.0000
Other Frwy & Expwy	0.00	0.1082	0.0494	0.0342	0.0132	0.0025	0.0011	0.0006	0.0004	0.0003	0.0020	0.0036	0.0007	0.0000
Other Principal Arterial	0.06	7.1461	3.2821	2.2715	0.8753	0.1689	0.0749	0.0420	0.0257	0.0185	0.1345	0.2359	0.0070	0.0099
Minor Arterial	0.20	22.7265	10.4565	7.2370	2.7888	0.5382	0.2385	0.1338	0.0817	0.0588	0.4287	0.7514	0.0074	0.0056
Collector	0.04	4.2828	1.9604	1.3568	0.5228	0.1009	0.0447	0.0251	0.0153	0.0110	0.0804	0.1409	0.0189	0.0056
Local	0.09	10.6762	4.9976	3.4588	1.3325	0.2005	0.1140	0.0489	0.0299	0.0259	0.1563	0.2880	0.0018	0.0219
TOTAL	**1.00**	**116.1329**	**53.5797**	**37.0824**	**14.2892**	**2.6422**	**1.2221**	**0.6548**	**0.4001**	**0.2968**	**2.0974**	**3.7052**	**0.0755**	**0.0875**

Table C-12
Stafford County

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.45	29.2588	13.6337	9.2534	3.4863	0.7262	0.3076	0.1708	0.1038	0.0724	0.5439	0.9607	0.0000	0.0000
Other Principal Arterial	0.08	5.3992	2.5159	1.7076	0.6433	0.1340	0.0568	0.0315	0.0192	0.0134	0.1004	0.1773	0.0000	0.0000
Minor Arterial	0.05	3.1194	1.4515	0.9852	0.3712	0.0773	0.0327	0.0182	0.0111	0.0077	0.0579	0.1023	0.0000	0.0043
Major Collector	0.13	8.5008	3.9600	2.6877	1.0126	0.2109	0.0893	0.0496	0.0301	0.0210	0.1580	0.2791	0.0000	0.0024
Minor Collector	0.01	0.7839	0.3642	0.2472	0.0931	0.0194	0.0082	0.0046	0.0028	0.0019	0.0145	0.0257	0.0000	0.0024
Local	0.08	5.3288	2.5293	1.7169	0.6469	0.1041	0.0571	0.0236	0.0144	0.0123	0.0750	0.1399	0.0000	0.0095
Urban														
Interstate	0.05	3.0501	1.4212	0.9646	0.3634	0.0757	0.0321	0.0178	0.0108	0.0075	0.0567	0.1002	0.0000	0.0000
Other Frwy & Expwy	0.00	0.0141	0.0066	0.0045	0.0017	0.0004	0.0001	0.0001	0.0001	0.0000	0.0003	0.0005	0.0000	0.0000
Other Principal Arterial	0.05	3.3509	1.5609	1.0594	0.3991	0.0831	0.0352	0.0196	0.0119	0.0083	0.0623	0.1100	0.0000	0.0011
Minor Arterial	0.05	3.0735	1.4319	0.9718	0.3661	0.0763	0.0323	0.0179	0.0109	0.0076	0.0571	0.1009	0.0000	0.0006
Collector	0.03	2.0086	0.9357	0.6351	0.2393	0.0498	0.0211	0.0117	0.0071	0.0050	0.0373	0.0659	0.0000	0.0006
Local	0.02	1.4170	0.6718	0.4560	0.1718	0.0281	0.0152	0.0064	0.0039	0.0033	0.0203	0.0378	0.0000	0.0024
TOTAL	**1.00**	**65.3052**	**30.4825**	**20.6894**	**7.7949**	**1.5854**	**0.6877**	**0.3717**	**0.2259**	**0.1605**	**1.1837**	**2.1001**	**0.0000**	**0.0233**

Table C-13
MSA

Total Exhaust Emissions														
Facility Type	**% Emissions**	**Emissions**	**Vehicle Type**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDVBS**
Interstate	0.05	91.5188	42.1028	29.9781	10.7389	2.2027	0.7206	0.5348	0.3238	0.2252	1.7011	2.9844	0.0065	0.0000
Other Principal Arterial	0.05	86.4768	39.5203	28.7129	10.1128	2.0682	0.6101	0.5060	0.3035	0.2116	1.5912	2.8106	0.0296	0.0000
Minor Arterial	0.02	40.1647	18.3037	13.2298	4.7326	0.9550	0.2971	0.2341	0.1416	0.0995	0.7441	1.3046	0.0562	0.0663
Major Collector	0.04	64.0710	29.2824	21.1296	7.5343	1.5305	0.4771	0.3740	0.2259	0.1582	1.1866	2.0836	0.0513	0.0375
Minor Collector	0.01	17.0810	7.7480	5.7227	1.9590	0.4059	0.0937	0.0993	0.0595	0.0411	0.3129	0.5500	0.0513	0.0375
Local	0.03	58.3847	27.1335	19.6484	6.9681	1.1072	0.4176	0.2661	0.1605	0.1348	0.8409	1.5502	0.0103	0.1471
	0.00													
Urban	0.00													
Interstate	0.20	360.0159	163.8672	120.6049	42.8567	8.4483	1.5635	2.1044	1.2758	0.8986	6.6702	11.6747	0.0517	0.0000
Other Frwy & Expwy	0.07	115.3966	52.7318	38.7310	13.4799	2.6987	0.4589	0.6767	0.4078	0.2821	2.1255	3.7467	0.0575	0.0000
Other Principal Arterial	0.17	307.2264	139.7444	102.6079	36.4962	7.1839	1.3148	1.7951	1.0879	0.7657	5.6890	9.9578	0.3685	0.2151
Minor Arterial	0.14	243.5629	110.7432	80.7307	29.1095	5.6819	1.1835	1.4217	0.8632	0.6108	4.5139	7.8976	0.6853	0.1216
Collector	0.06	109.9544	49.4962	36.3518	12.8397	2.5436	0.4545	0.6355	0.3847	0.2694	2.0117	3.5246	1.3212	0.1216
Local	0.15	263.2200	121.2505	88.8995	31.7135	5.2693	1.1386	1.3047	0.7921	0.6302	4.1381	7.4563	0.1500	0.4770
TOTAL	**1.00**	**1757.0732**	**801.9239**	**586.3472**	**208.5412**	**40.0954**	**8.7299**	**9.9523**	**6.0265**	**4.3272**	**31.5252**	**55.5411**	**2.8394**	**1.2239**
														1757.07

2002 Vehicle Miles of Travel

Table D-1
District of Columbia

Vehicle Miles Of Travel														
Facility Type	**% VMT**	**VMT**	**VEHICLE TYPE**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate	0.00	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
Other Principal Arterial	0.00	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
Minor Arterial	0.00	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
Major Collector	0.00	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
Minor Collector	0.00	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
Local	0.00	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
Urban														
Interstate	0.12	1,413	654	473	162	32	0	9	5	3	27	47	1	
Other Frwy & Expwy	0.12	1,440	667	482	165	33	0	9	5	4	27	48	1	
Other Principal Arterial	0.29	3,358	1,553	1,123	385	77	0	20	12	8	63	111	1	3
Minor Arterial	0.24	2,758	1,265	915	314	62	0	17	10	7	51	91	24	2
Collector	0.09	1,039	466	337	116	23	0	6	4	2	19	33	30	2
Local	0.14	1,606	790	572	196	9	0	2	1	0	7	19	3	7
Total	1.00	11,614	5,396	3,902	1,339	236	1	62	37	25	194	349	60	13

Table D-2
Montgomery County

Vehicle Miles Of Travel														
Facility Type	**% VMT**	**VMT**	**VEHICLE TYPE**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate	0.02	591.1637	266.6148	203.8095	67.8650	14.1248	1.1043	3.4696	2.1065	1.4541	11.1184	19.2033	0.2934	
Other Principal Arterial	0.00	1.1738	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.1738	
Minor Arterial	0.03	664.0736	298.0694	227.8544	75.8715	15.7912	1.2346	3.8789	2.3550	1.6257	12.4301	21.4688	1.1738	2.3201
Major Collector	0.03	716.4702	322.0348	246.1744	81.9718	17.0608	1.3339	4.1908	2.5443	1.7564	13.4295	23.1950	1.4672	1.3114
Minor Collector	0.01	188.6704	83.8788	64.1198	21.3508	4.4437	0.3474	1.0916	0.6627	0.4575	3.4979	6.0415	1.4672	1.3114
Local	0.01	179.2577	86.0760	62.2442	21.3428	0.9712	0.0211	0.2304	0.1412	0.0270	0.7111	2.0546	0.2934	5.1446
Urban														
Interstate	0.33	7,828	3,532	2,700	899	187	15	46	28	19	147	254	1	
Other Frwy & Expwy	0.02	495	223	171	57	12	1	3	2	1	9	16	1	
Other Principal Arterial	0.27	6,469	2,904	2,220	739	154	12	38	23	16	121	209	11	22
Minor Arterial	0.16	3,764	1,688	1,290	430	89	7	22	13	9	70	122	11	12
Collector	0.07	1,779	785	600	200	42	3	10	6	4	33	57	28	12
Local	0.06	1,327	631	456	157	7	0	2	1	0	5	15	4	48
Total	1.00	24,005	10,820	8,242	2,749	543	42	133	81	55	427	745	61	105

D-3
Prince Georges County

Vehicle Miles Of Travel														
Facility Type	**% VMT**	**VMT**	**VEHICLE TYPE**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate	0.00	111	51	38	12	3	0	1	0	0	2	4	0	
Other Principal Arterial	0.04	1,010	461	346	112	24	2	6	4	2	19	33	1	
Minor Arterial	0.00	113	51	38	12	3	0	1	0	0	2	4	1	2
Major Collector	0.01	214	97	73	24	5	0	1	1	1	4	7	1	1
Minor Collector	0.00	38	16	12	4	1	0	0	0	0	1	1	1	1
Local	0.00	98	45	34	11	1	0	0	0	0	0	1	0	4
Urban														
Interstate	0.34	8,354	3,816	2,860	930	199	19	50	30	20	154	275	1	
Other Frwy & Expwy	0.17	4,281	1,955	1,466	477	102	10	26	15	10	79	141	1	
Other Principal Arterial	0.20	4,905	2,223	1,667	542	116	11	29	17	12	90	160	9	29
Minor Arterial	0.11	2,852	1,292	968	315	67	6	17	10	7	52	93	9	17
Collector	0.06	1,542	687	515	167	36	3	9	5	4	28	49	22	17
Local	0.05	1,302	602	452	147	7	3	2	1	2	5	14	2	65
Total	1.00	24,820	11,297	3	2,753	564	56	141	84	58	436	782	46	136

Table D-4
Frederick County

Vehicle Miles Of Travel														
Facility Type	**% VMT**	**VMT**	**VEHICLE TYPE**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate	0.29	2,592	1,182	880	292	62	13	15	9	6	48	84	0	
Other Principal Arterial	0.17	1,477	673	501	166	35	8	9	5	4	27	48	0	
Minor Arterial	0.06	503	227	169	56	12	3	3	2	1	9	16	0	5
Major Collector	0.11	995	452	337	112	24	5	6	3	2	18	32	1	3
Minor Collector	0.04	397	180	134	44	9	2	2	1	1	7	13	1	3
Local	0.06	499	238	177	59	3	3	1	0	1	2	5	0	10
Urban														
Interstate	0.07	581	265	197	66	14	3	3	2	1	11	19	0	
Other Frwy & Expwy	0.06	568	259	193	64	14	3	3	2	1	11	18	0	
Other Principal Arterial	0.04	349	158	118	39	8	2	2	1	1	6	11	0	2
Minor Arterial	0.05	425	193	144	48	10	2	2	1	1	8	14	0	1
Collector	0.04	325	148	110	37	8	2	2	1	1	6	10	0	1
Local	0.02	142	67	50	17	1	1	0	0	0	1	2	0	4
Total	1.00	8,855	4,044	3,010	999	200	45	49	29	21	155	273	3	27

Table D-5
Charles County

Vehicle Miles Of Travel															
Facility Type	**% VMT**	**VMT**	**VEHICLE TYPE**												
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**	
Interstate	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	
Other Principal Arterial	0.32	881	401	299	100	21	4	5	3	2	16	29	0		
Minor Arterial	0.09	237	106	79	26	6	1	1	1	1	4	8	0	3	
Major Collector	0.14	381	172	129	43	9	2	2	1	1	7	12	0	2	
Minor Collector	0.04	124	55	41	14	3	1	1	0	0	2	4	0	2	
Local	0.08	234	110	82	27	1	1	0	0	0	1	3	0	7	
Urban															
Interstate	0.00	0	0	0	0	0	0	0	0	0	0	0	0		
Other Frwy & Expwy	0.00	0	0	0	0	0	0	0	0	0	0	0	0		
Other Principal Arterial	0.22	597	271	202	67	14	3	4	2	1	11	19	0	2	
Minor Arterial	0.04	113	51	38	13	3	1	1	0	0	2	4	0	1	
Collector	0.06	166	75	56	19	4	1	1	1	0	3	5	0	1	
Local	0.01	38	17	12	4	0	0	0	0	0	0	0	0	4	
Total	1.00	2,770	857	640	214	40	9	10	6	4	30	55	2	22	

Table D-6
Calvert County

Vehicle Miles Of Travel															
Facility Type	**% VMT**	**VMT**	**VEHICLE TYPE**												
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**	
Interstate	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	
Other Principal Arterial	0.58	797	360	271	92	20	4	5	3	2	14	26	0		
Minor Arterial	0.05	74	31	23	8	2	0	0	0	0	1	2	0	6	
Major Collector	0.10	141	62	47	16	3	1	1	0	0	2	4	0	3	
Minor Collector	0.05	71	31	23	8	2	0	0	0	0	1	2	0	3	
Local	0.15	204	92	69	24	1	1	0	0	0	1	2	0	13	
Urban															
Interstate	0.00	0	0	0	0	0	0	0	0	0	0	0	0		
Other Frwy & Expwy	0.00	0	0	0	0	0	0	0	0	0	0	0	0		
Other Principal Arterial	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	
Minor Arterial	0.03	36	16	12	4	1	0	0	0	0	1	1	0	0	
Collector	0.01	18	8	6	2	0	0	0	0	0	0	1	0	0	
Local	0.02	30	14	11	4	0	0	0	0	0	0	0	0	1	
Total	1.00	1,371	614	462	157	29	6	7	4	3	21	39	1	27	

Table D-7
Arlington County

Vehicle Miles Of Travel														
Facility Type	**% VMT**	**VMT**	**VEHICLE TYPE**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Other Principal Arterial	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Minor Arterial	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Major Collector	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Minor Collector	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Local	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Urban														
Interstate	0.45	2,253	1,029	730	283	53	15	13	8	6	43	74	0	
Other Frwy & Expwy	0.16	804	367	260	101	19	5	5	3	2	15	26	0	
Other Principal Arterial	0.22	1,075	490	348	135	25	7	6	4	3	20	35	1	1
Minor Arterial	0.08	384	175	124	48	9	2	2	1	1	7	13	1	0
Collector	0.04	207	93	66	26	5	1	1	1	1	4	7	2	0
Local	0.05	252	122	86	34	2	2	0	0	1	1	3	0	2
Total	1.00	4,974	2,276	1,614	625	114	32	28	17	13	90	157	4	3

Table D-8
City of Alexandria

Vehicle Miles Of Travel														
Facility Type	**% VMT**	**VMT**	**VEHICLE TYPE**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate	0.00	0	0	0	0	0	0	0	0	0	0	0		
Other Principal Arterial	0.00	0	0	0	0	0	0	0	0	0	0	0		
Minor Arterial	0.00	0	0	0	0	0	0	0	0	0	0	0		
Major Collector	0.00	0	0	0	0	0	0	0	0	0	0	0		
Minor Collector	0.00	0	0	0	0	0	0	0	0	0	0	0		
Local	0.00	0	0	0	0	0	0	0	0	0	0	0		
Urban														
Interstate	0.34	980	441	321	126	23	5	6	4	3	19	32	0	
Other Frwy & Expwy	0.00	1	0	0	0	0	0	0	0	0	0	0	1	
Other Principal Arterial	0.21	591	266	193	76	14	3	3	2	2	11	19	1	0
Minor Arterial	0.24	693	304	221	87	16	4	4	2	2	13	22	19	0
Collector	0.05	143	54	39	15	3	1	1	0	0	2	4	24	0
Local	0.16	467	223	162	64	3	3	1	0	1	2	5	2	1
Total	1.00	2,876	4	3	1	0	0	0	0	0	0	0	47	2

Table D-9
Fairfax County

Vehicle Miles Of Travel														
Facility Type	**% VMT**	**VMT**	**VEHICLE TYPE**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate	0.00	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
Other Principal Arterial	0.00	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
Minor Arterial	0.00	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
Major Collector	0.00	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
Minor Collector	0.00	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
Local	0.00	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
Urban														
Interstate	0.34	10,593	4,801	3,442	1,344	251	75	63	38	29	201	348	1	
Other Frwy & Expwy	0.06	1,912	866	621	242	45	14	11	7	5	36	63	1	
Other Principal Arterial	0.26	8,294	3,746	2,686	1,048	196	59	49	30	22	157	272	6	23
Minor Arterial	0.21	6,536	2,954	2,118	827	154	46	39	24	18	124	214	7	13
Collector	0.06	1,751	780	559	218	41	12	10	6	5	33	57	17	13
Local	0.07	2,236	1,056	757	295	14	17	3	2	5	9	25	2	52
Total	1.00	31,323	4	3	1	0	0	0	0	0	0	0	33	101

Table D-10
Loudoun County

Vehicle Miles Of Travel														
Facility Type	**% VMT**	**VMT**	**VEHICLE TYPE**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
Other Principal Arterial	0.26	1,429	653	455	177	34	18	8	5	4	27	47	1	
Minor Arterial	0.11	615	279	194	76	15	8	4	2	2	12	20	1	4
Major Collector	0.15	813	370	258	100	19	10	5	3	2	15	27	1	2
Minor Collector	0.01	80	35	25	10	2	1	0	0	0	1	3	1	2
Local	0.06	345	163	114	44	2	4	0	0	1	1	4	0	9
Urban														
Interstate	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
Other Frwy & Expwy	0.10	546	249	174	68	13	7	3	2	1	10	18	0	
Other Principal Arterial	0.12	689	314	219	85	16	8	4	2	2	13	23	0	3
Minor Arterial	0.08	421	192	134	52	10	5	2	2	1	8	14	0	1
Collector	0.03	163	73	51	20	4	2	1	1	0	3	5	1	1
Local	0.08	416	200	139	54	3	5	1	0	1	2	5	0	6
Total	1.00	5,518	2,528	1,763	686	119	68	29	18	14	93	165	6	30

Table D-11
Prince William

Vehicle Miles Of Travel															
Facility Type	**% VMT**	**VMT**	**VEHICLE TYPE**												
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**	
Interstate	0.22	1,829	842	582	224	43	19	11	7	5	35	61	0		
Other Principal Arterial	0.08	697	321	222	86	17	7	4	3	2	13	23	0		
Minor Arterial	0.07	593	273	189	73	14	6	4	2	2	11	20	0	1	
Major Collector	0.08	636	293	202	78	15	7	4	2	2	12	21	0	0	
Minor Collector	0.00	34	15	11	4	1	0	0	0	0	1	1	0	0	
Local	0.05	424	207	143	55	3	5	1	0	1	2	5	0	2	
Urban															
Interstate	0.12	987	454	314	121	23	10	6	4	3	19	33	0		
Other Frwy & Expwy	0.00	0	0	0	0	0	0	0	0	0	0	0	0		
Other Principal Arterial	0.07	556	251	174	67	13	6	3	2	1	10	18	2	8	
Minor Arterial	0.22	1,820	835	578	223	43	19	11	7	5	34	60	2	4	
Collector	0.03	277	123	85	33	6	3	2	1	1	5	9	5	4	
Local	0.06	534	254	175	68	3	6	1	0	1	2	6	0	18	
Total	1.00	8,388	3,867	2,676	1,031	182	88	45	28	21	144	257	10	38	

Table D-12
Stafford County

Vehicle Miles Of Travel															
Facility Type	**% VMT**	**VMT**	**VEHICLE TYPE**												
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**	
Interstate	0.48	1,889	879	597	225	47	20	11	7	5	36	63	0		
Other Principal Arterial	0.09	338	157	107	40	8	4	2	1	1	6	11	0		
Minor Arterial	0.05	178	82	56	21	4	2	1	1	0	3	6	0	2	
Major Collector	0.12	481	223	152	57	12	5	3	2	1	9	16	0	1	
Minor Collector	0.01	33	15	10	4	1	0	0	0	0	1	1	0	1	
Local	0.03	131	62	43	17	1	1	0	0	0	1	1	0	4	
Urban															
Interstate	0.05	196	91	62	23	5	2	1	1	0	4	7	0		
Other Frwy & Expwy	0.00	0	0	0	0	0	0	0	0	0	0	0	0		
Other Principal Arterial	0.05	212	98	67	25	5	2	1	1	1	4	7	0	0	
Minor Arterial	0.05	189	88	60	22	5	2	1	1	0	4	6	0	0	
Collector	0.03	121	56	38	14	3	1	1	0	0	2	4	0	0	
Local	0.04	157	77	53	20	1	2	0	0	0	1	2	0	1	
Total	1.00	3,925	1,830	1,244	469	93	41	22	13	10	70	124	0	10	

Table D-13
MSA

Vehicle Miles Of Travel														
Facility Type	**% VMT**	**VMT**	**VEHICLE TYPE**											
Rural			**LDGV**	**LDGT12**	**LDGT34**	**HDGV**	**MC**	**LDDV**	**LDDT1234**	**HDDV2b**	**HDDV345**	**HDDV67**	**HDDBT**	**HDDBS**
Interstate	0.05	7,012	3,220	2,301	822	170	54	41	25	17	132	230	1	0
Other Principal Arterial	0.05	6,631	3,027	2,201	774	160	46	39	24	16	123	217	4	0
Minor Arterial	0.02	2,977	1,346	976	348	71	21	17	11	7	55	97	4	25
Major Collector	0.03	4,378	1,992	1,443	512	105	31	26	16	11	82	143	4	14
Minor Collector	0.01	966	432	320	109	23	5	6	3	2	18	31	4	14
Local	0.02	2,114	1,005	726	258	13	16	3	2	4	8	24	1	55
Urban														
Interstate	0.25	33,187	15,084	11,100	3,953	788	144	197	119	84	624	1,089	4	0
Other Frwy & Expwy	0.08	10,048	4,587	3,366	1,174	238	39	60	36	25	188	330	5	0
Other Principal Arterial	0.21	27,095	12,275	9,016	3,209	639	113	160	97	68	507	886	31	93
Minor Arterial	0.15	19,993	9,052	6,602	2,381	470	95	118	72	51	374	653	72	53
Collector	0.06	7,531	3,349	2,463	866	174	30	44	26	18	138	241	128	53
Local	0.07	8,507	4,053	2,927	1,058	51	38	11	7	11	34	96	14	207
Total	1.00	130,438	59,421	43,441	15,464	2,900	631	721	437	316	2,283	4,037	273	514