

AIR QUALITY CONFORMITY DETERMINATION
OF THE 2012 CONSTRAINED LONG RANGE PLAN
AND THE FY2013-2018
TRANSPORTATION IMPROVEMENT PROGRAM
FOR THE
WASHINGTON METROPOLITAN REGION

July 18, 2012

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NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD
METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS

ABSTRACT

TITLE: Air Quality Conformity Determination Of The 2012 Constrained Long Range Plan For The Washington Metropolitan Region

DATE: July 18, 2012

AGENCY: The Metropolitan Washington Council of Governments is the regional planning organization of the Washington area's major local governments. COG works on finding solutions to regional problems, especially those related to regional growth, transportation, housing, human services, and the environment.

ABSTRACT: This report documents the assessment of the 2012 Constrained Long Range Plan (CLRP) with respect to air quality conformity requirements under the 1990 Clean Air Act Amendments. The assessment used criteria and procedures contained in the Environmental Protection Agency (EPA)'s final conformity rule, published in the November 24, 1993 Federal Register, with subsequent amendments and additional federal guidance published by the Environmental Protection Agency (EPA) and by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). The assessment is a responsibility of the National Capital Region Transportation Planning Board (TPB).

The report presents an overview of the conformity requirements contained in the legislation and subsequent guidance, and documents the technical procedures used in the analysis including travel demand forecasting, emissions calculation procedures and impacts of transportation emission reduction measures. The analysis demonstrates that mobile source emissions for each analysis year of the long range plan, adhere to all carbon monoxide, ozone season volatile organic compound and nitrogen oxide, and fine particle (PM_{2.5}) pollutants (direct PM_{2.5} and precursor nitrogen oxide) emissions budgets established by the Metropolitan Washington Air Quality Committee (MWAQC), which are either approved or under review by the EPA. Additionally, the "action scenario" (forecast year) emissions for fine particles are not greater than the base year 2002 emissions, thus satisfying the requirement for pollutants without an established budget. These results provide a basis for a determination of conformity of the 2012 CLRP.

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EXECUTIVE SUMMARY

This report documents the air quality conformity assessment of the 2012 Constrained Long Range Plan (CLRP) and FY2013-2018 Transportation Improvement Program (TIP) as carried out under the regulations contained in the Environmental Protection Agency's final rule, published in the November 24, 1993 *Federal Register*, with subsequent amendments and additional federal guidance published by the Environmental Protection Agency (EPA) and by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). The process involved consultation with affected agencies such as the EPA, the FHWA, the FTA, and the Metropolitan Washington Air Quality Committee (MWAQC), as well as with the public. The assessment is a responsibility of the National Capital Region Transportation Planning Board.

The following summarizes the pollutants included in this assessment:

- **Ozone Season Volatile Organic Compounds (VOC) and Nitrogen Oxides (NO_x).** Ozone season pollutants must not exceed EPA approved totals from the Metropolitan Washington Air Quality Committee's (MWAQC's) Motor Vehicle Emissions Budgets (MVEBs) from the 8-hour Ozone State Implementation Plan (SIP). MWAQC adopted the 8-hour ozone SIP in May, 2007, and on September 4, 2009, EPA found adequate the 2008 Reasonable Further Progress (RFP) budgets, and stated that the Metropolitan Washington region must use these budgets for future conformity determinations for the 8-hour ozone standard. The RFP budget for VOC is 70.8 tons/day, and for NO_x is 159.8 tons/day.
- **Fine Particles (PM_{2.5}).** In the absence of approved budgets EPA, allows for an assessment that shows emissions in "action" scenarios are no greater than those in a 2002 base. This criterion was established and applied, with the concurrence of MWAQC, in prior PM_{2.5} conformity assessments.
- **Wintertime Carbon Monoxide (CO).** The region is in maintenance for mobile source wintertime CO, and is required to show that pollutants do not exceed the approved budget of 1671.5 tons/day.

Emissions estimates for all pollutants were developed for 2007, 2017, 2020, 2030, and 2040 forecast years, using both network analysis and off-line emissions assessment. The results show that the 2012 CLRP and FY2013-2018 TIP demonstrate adherence to relevant mobile source emissions budgets for all forecast years, and that forecast year fine particles pollutants emissions are not greater than the base year 2002 emissions. This analysis provides a basis for a determination of conformity for the 2012 CLRP and FY2013-2018 TIP.

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LIST OF ACRONYMS

AWDT	Average Weekday Traffic
BMC	Baltimore Metropolitan Council
CAAA	Clean Air Act Amendments of 1990
CAC	Citizens Advisory Committee
CLRP	Constrained Long Range Plan
CMAQ	Congestion Mitigation & Air Quality
CO	Carbon Monoxide
DC DOT	District of Columbia Department of Transportation
DTP	(COG's) Department of Transportation Planning
FAMPO	Fredericksburg Area Metropolitan Planning Organization
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
G/MI	Grams Per Mile
HOV	High Occupancy Vehicle
I/M	Inspection and Maintenance
LOV	Low Occupancy Vehicle
MDOT	Maryland Department of Transportation
MPO	Metropolitan Planning Organization
MSA	Metropolitan Statistical Area
MWAQC	Metropolitan Washington Air Quality Committee
MWCOG	Metropolitan Washington Council of Governments
NO _x	Nitrogen Oxides
P's & A's	Productions and Attractions
PM _{2.5}	Fine Particles
PNR	Park and Ride Lot
SIP	State Implementation Plan
TAD	Transportation Analysis District
TAZ	Transportation Analysis Zone
TCM	Transportation Control Measure
TERM	Transportation Emission Reduction Measure
T/D	Tons Per Day
TIP	Transportation Improvement Program
TPB	Transportation Planning Board
US DOT	United States Department of Transportation
US EPA	United States Environmental Protection Agency
V/C	Volume to Capacity Ratio
VDOT	Virginia Department of Transportation
VDRPT	Virginia Department of Rail and Public Transportation
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds
WMATA	Washington Metropolitan Area Transit Authority

TPB R1-2013
July 18, 2012

NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD
777 North Capitol Street, N.E.
Washington, D.C. 20002

**RESOLUTION FINDING THAT THE 2012 CONSTRAINED LONG RANGE PLAN AND
FY2013-2018 TRANSPORTATION IMPROVEMENT PROGRAM CONFORM WITH
THE REQUIREMENTS OF
THE CLEAN AIR ACT AMENDMENTS OF 1990**

WHEREAS, the National Capital Region Transportation Planning Board (TPB) has been designated by the Governors of Maryland and Virginia and the Mayor of the District of Columbia as the Metropolitan Planning Organization (MPO) for the Washington Metropolitan Area; and

WHEREAS, the U.S. Environmental Protection Agency (EPA), in conjunction with the U.S. Department of Transportation (DOT), under the Clean Air Act Amendments of 1990 (CAAA), issued on November 24, 1993 "Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Funded or Approved Under Title 23 U.S.C. or the Federal Transit Act," and, over the years, subsequently amended these regulations and provided additional guidance, which taken together provide the specific criteria for TPB to make a determination of conformity of its financially Constrained Long Range Transportation Plan (CLRP) and Transportation Improvement Program (TIP) with the state implementation plans (SIPs) for air quality attainment within the Metropolitan Washington non-attainment area; and

WHEREAS, a work program was developed to address all procedures and requirements, including public and interagency consultation, and the work program was released for public comment on January 12th and approved by the TPB at its February 15, 2012 meeting; and

WHEREAS, on February 15, 2012, the TPB approved the projects submitted for inclusion in the air quality conformity assessment for the 2012 CLRP and FY2013-2018 TIP; and

WHEREAS, in each year's update of the CLRP since 2000, the TPB has explicitly accounted for the funding uncertainties affecting the Metrorail system capacity and levels of service beyond 2005 by constraining transit ridership to or through the core area; and

WHEREAS, after accounting for the "Metro Matters" commitments for Metro's near-term funding and the Passenger Rail Investment and Improvement Act of 2008 (PRIIA) legislation and state matching, the current analysis includes the transit ridership constraint to or through the core area at 2020 ridership levels for 2030 and 2040; and

WHEREAS, on June 14, 2012, the draft results of the Air Quality Conformity Determination of the 2012 CLRP and the FY2013-2018 TIP were released for a 30-day public comment period and inter-agency review; and

WHEREAS, the analysis reported in *Air Quality Conformity Determination of the 2012 Constrained Long Range Plan and the FY2013-2018 Transportation Improvement Program for the Washington Metropolitan Region*, dated July 18, 2012, demonstrates adherence to all mobile source emissions budgets for volatile organic compounds, nitrogen oxides, and carbon monoxide, and demonstrates that PM2.5 emissions meet the requirement that such emissions are not greater than 2002 levels, meets all regulatory, planning and interagency consultation requirements, and therefore provides the basis for a finding of conformity of the plan with the requirements of the CAAA; and

WHEREAS, in the attached letter of July 11, 2012, the Metropolitan Washington Air Quality Committee (MWAQC) has provided favorable comments on the Air Quality Conformity Determination of the 2012 Constrained Long Range Plan and FY2013-2018 Transportation Improvement Program for the Washington Metropolitan Region;

NOW, THEREFORE, BE IT RESOLVED THAT THE NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD determines that the 2012 Constrained Long Range Plan and the FY2013-2018 Transportation Improvement Program conform to all requirements of the Clean Air Act Amendments of 1990.

Adopted by the Transportation Planning Board at its regular meeting on July 18, 2012

I. INTRODUCTION

The Washington region is currently designated nonattainment for the federal health standards for ozone and fine particles (PM_{2.5}). Clean air legislation in 1977 provided that a metropolitan planning organization may not approve any transportation project that did not conform to the approved state implementation plan (SIP) for the attainment of clean air standards. This established the responsibility on the part of COG/TPB to review transportation plans and programs and affirm that they conformed to air quality state implementation plans for the region.

This requirement means that TPB plans, programs and projects must be consistent with clean air objectives. In the 1990 Clean Air Act Amendments conformity to an implementation plan is defined as conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards. In addition, Federal activities may not cause or contribute to new violations of air quality standards, exacerbate existing violations, or interfere with timely attainment or required interim emission reductions towards attainment.

II. CONFORMITY REGULATIONS

Background

On November 15, 1990 President Bush signed into law the Clean Air Act Amendments (CAAA) of 1990. The CAAA establishes standards and procedures for reducing human and environmental exposure to a range of pollutants generated by industry and transportation. The law allows EPA to define the boundaries of "nonattainment" areas for various pollutants. These are geographic areas whose air quality does not meet Federal air quality standards. The law also established nonattainment area classifications ranked according to the severity of the area's air pollution problem. These classifications are marginal, moderate, serious, severe, and extreme. EPA assigns each nonattainment area one of these categories, thus triggering various requirements the area must comply with in order to meet a particular standard. The Washington region is currently designated nonattainment for the federal health standards for ozone and fine particles (PM_{2.5}).

The concept of transportation conformity was introduced in the Clean Air Act (CAA) of 1977 which included a provision to ensure that Federal funding and approval goes to those transportation activities that are consistent with air quality goals. These goals are set in each state's air quality implementation plan (SIP). Conformity requirements were made substantially more rigorous in the CAA Amendments of 1990. The transportation conformity regulations (Reference 1) that detail implementation of the CAA requirements were first issued in the November 24, 1993 *Federal Register*, and have been amended several times, most recently on March 14, 2012. The regulations establish the criteria and procedures for transportation agencies to demonstrate that air pollutant

emissions from metropolitan Transportation Plans, Transportation Improvement Programs (TIPs), and projects funded or approved by the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA) are consistent with ("conform to") the State's air quality goals in the SIP.

The conformity regulations are comprehensive, covering definitions and specific technical, procedural, consultation and policy aspects of the analyses. Criteria and procedures to be employed are related to the area's standing with EPA in terms of its status in meeting state implementation plan requirements. Different tests apply depending on the time period and whether SIP revisions have been filed with EPA, which establish emissions budgets leading towards reasonable further progress and attainment of air quality standards.

Consultation

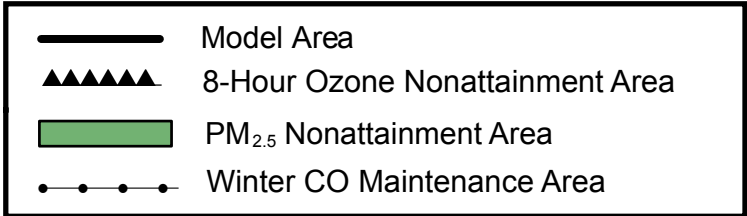
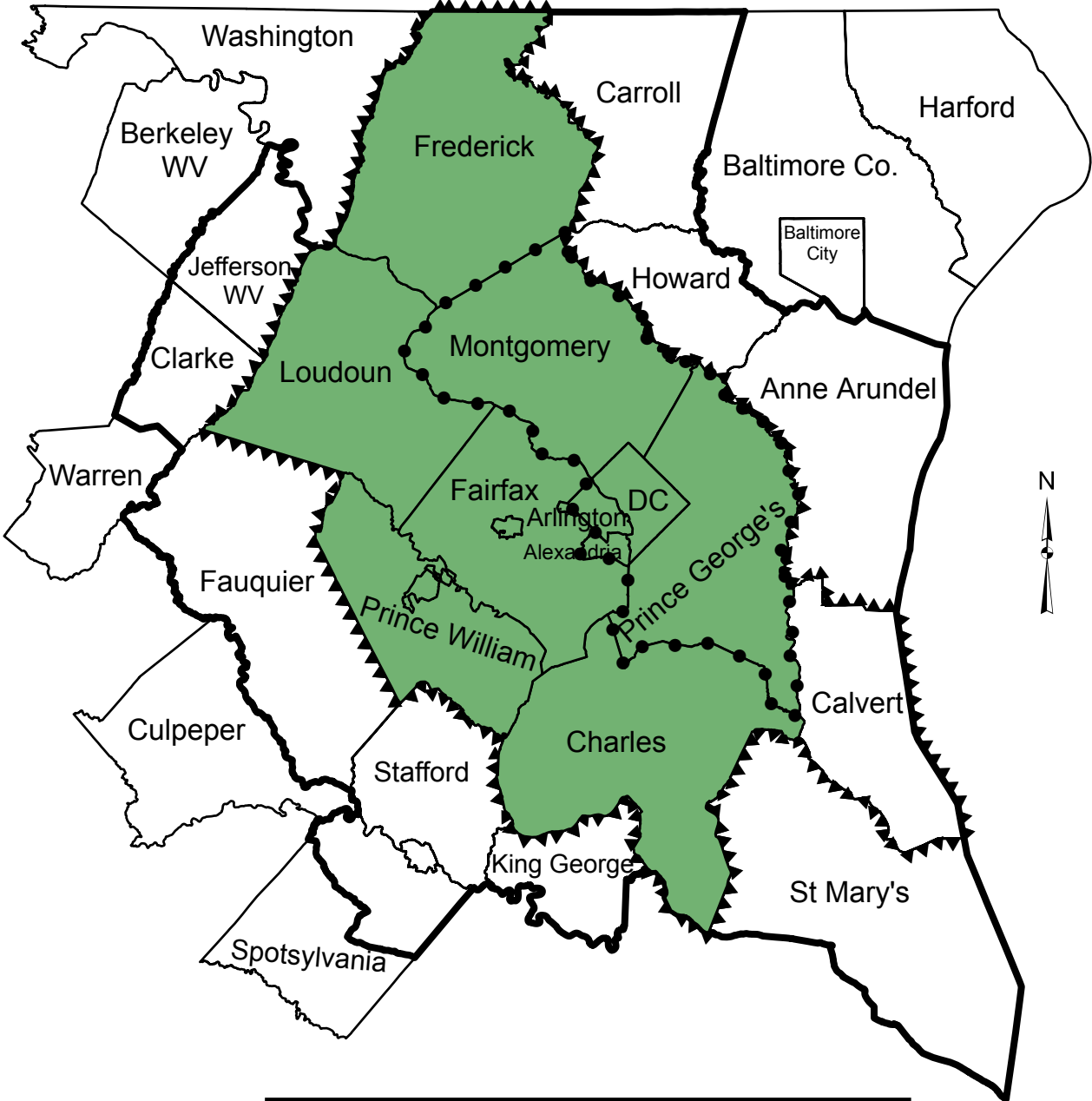
The conformity regulations require that Metropolitan Planning Organizations (MPOs) make Transportation Plans, TIPs, and conformity determinations available to the public, and to accept and respond to public comment. The Transportation Planning Board (TPB) staff went through a lengthy process involving EPA and state and local air quality agencies to develop the region's transportation and air quality conformity consultation procedures. These procedures have been organized into a report, Transportation Planning Board Consultation Procedures with Respect to Transportation Conformity Regulations Governing TPB Plans and Programs (Reference 2). They were adopted by the Board initially on September 21, 1994 and subsequently updated in response to EPA's August 15, 1997 amendments, and formally adopted by the TPB on May 20, 1998. The procedures seek early involvement of the air agencies in the transportation planning process through concurrent mailings to the TPB and consultation agencies of all material relevant to transportation conformity, including announcements of work sessions and public forums in which the materials will be discussed.

III. POLLUTANTS

The Washington Metropolitan Region is currently designated as nonattainment for ozone and fine particles (PM_{2.5}) pollutants. While EPA has issued a Clean Data Determination for both ozone (1997 National Ambient Air Quality Standards- NAAQS) and fine particles pollutants, the region still must adhere to approved mobile budgets until new budgets are set. New budgets could be set, either as part of a redesignation request (as is currently being discussed for fine particles pollutants), or as part of updated NAAQS (EPA recently issued final area designations for the 2008 ozone NAAQS) . The region is designated as a maintenance area for wintertime carbon monoxide (CO). The geography of the nonattainment area varies by pollutant. The map in Exhibit 1 outlines the boundaries of the each pollutant's nonattainment area.

EXHIBIT 1

Washington, D.C.- Maryland - Virginia Planning Areas



Ozone Season Pollutants

On April 15, 2004 EPA designated the Washington, DC - MD - VA region as 'moderate' nonattainment for the 1997 8-hour ozone standard. In 2007 the Metropolitan Washington Air Quality Committee (MWAQC) developed an 8-hour ozone SIP (Reference 14). As part of the 8-hour ozone SIP, MWAQC developed mobile budgets for VOC and NO_x.

As required by federal guidance, MWAQC established 2008 budgets to show "reasonable further progress" (RFP budgets) in addition to the 2009 and 2010 attainment year budgets. EPA found adequate (Reference 18) the 2008 RFP budgets, and stated that the Washington Metropolitan region must use these budgets for future conformity determinations for the 8-Hour ozone standard. EPA formally approved (Reference 19) these budgets on September 20, 2011. The 2008 RFP budget for VOC is 70.8 tons/day, and for NO_x is 159.8 tons/day.

Fine Particles Pollutants

On December 17, 2004 the Environmental Protection Agency (EPA) designated 224 counties, as well as the District of Columbia, that exceeded the health-based standards for fine particles (PM_{2.5}) as nonattainment areas. PM_{2.5} standards refer to particulate matter less than or equal to 2.5 micrometers in diameter. The Washington, DC-MD-VA area was designated nonattainment for PM_{2.5} (see Exhibit 1 for area).

As published in the January 5, 2005 Federal Register, these PM_{2.5} nonattainment designations became effective on April 5, 2005. By this date nonattainment areas were required to submit to EPA a SIP to define the expected methods for reducing the fine particulate matter level in the air and emissions of PM_{2.5} precursors. MWAQC adopted the Plan (Reference 16) on March 7, 2008 and submitted it to EPA prior to the April 5, 2008 deadline. As with other SIPs, MWAQC developed motor vehicle emissions budgets to be used as benchmarks as part of the conformity determination of the CLRP and TIP. EPA never approved those budgets. On January 12, 2009, EPA determined that the region had attained the 1997 PM_{2.5} NAAQS and issued a clean data determination for the area. In early 2012 Virginia, Maryland, and the District of Columbia withdrew the SIP updates, including the mobile budgets. The withdrawal letters are included as Appendix J. In the absence of approved mobile budgets, EPA allows for an assessment that shows emissions in forecast year scenarios are no greater than those in a 2002 base. This criterion was established and applied, with the concurrence of MWAQC, in prior PM_{2.5} conformity assessments.

Wintertime Carbon Monoxide

The Metropolitan Washington DC-MD-VA region attained the federal carbon monoxide standard in the 1990s and submitted a CO maintenance plan covering the period 1996-2007. EPA approved (Reference 20) this maintenance plan effective March 16, 1996. The region was required to submit a second maintenance plan within eight years of its redesignation as an attainment area. This revised plan (Reference 21) was completed on February 19, 2004, and provides for attainment of the CO standard in the Washington DC-MD-VA attainment area through March 16, 2016. As a maintenance area, the region is required to show that pollutants do not exceed the approved mobile budget of 1671.5 tons/day.

IV. TECHNICAL METHODS

Approach

In developing the work program for this year's conformity assessment, contained as Appendix A of this report, staff identified latest planning assumptions and modeling techniques, and considered requirements of the conformity regulations, as well as requirements associated with, and comments received upon, past conformity analyses.

Tasks included: preparation of forecast years representing 2007, 2017, 2020, 2030, and 2040 for ozone season, PM_{2.5} precursors, and wintertime CO analysis; use of current land activity forecasts for the region (new Round 8.1 Cooperative Forecasts- Reference 15); use of the Version 2.3 (Reference 17) travel demand modeling process which includes the 3722 Transportation Analysis Zone (TAZ) structure; use of a refined Mobile Emissions Post-Processor (Appendix E using latest travel demand and mobile emissions planning assumptions including new 2011 vehicle registration data), and Mobile6.2.

Staff drafted a work program for the analysis and presented it to regional technical and policy committees starting in January 2011. Staff also coordinated the draft work program with EPA, FHWA, FTA and the state and local air management agencies through the TPB consultation procedures. This scope was adopted by the TPB on February 15th, 2012. Staff execution of the work activities is described in the following overview.

Technical Work Activities

Technical work activities for the 2012 CLRP and FY2013-2018 TIP included the preparation of: daily ozone season volatile organic compound (VOC) and nitrogen oxide (NO_x) emissions; yearly direct PM_{2.5} and PM_{2.5} precursor NO_x emissions; and daily wintertime carbon monoxide (CO) emissions inventories for specified years (base year 2007 and forecast years 2017, 2020, 2030, and 2040). These inventories address a primary conformity assessment criterion to demonstrate that the plan adheres to

established mobile source emissions budgets for ozone season and wintertime CO pollutants. The inventories also allow the baseline (2002) vs. action (forecast year) comparison for the PM_{2.5} pollutants which have no approved mobile budgets.

The mobile source emissions estimation process utilized in this analysis involved the separate estimation of travel, vehicle and additional components. This structure is shown in Exhibit 2. While lengthy modeling procedures are involved to compute various travel components (number of trips, vehicle miles of travel, system performance, etc.) and rates of emissions (cold start emissions, tailpipe emissions, etc.) for each simulation, the calculation of mobile source emissions ultimately becomes a simple multiplication of a travel component by a rate of emissions associated with that component. As seen in the exhibit, the number of trip origins multiplied by a (gram/trip) cold start emissions rate yields an estimate of startup emissions. Vehicle miles of travel (VMT) multiplied by a (gram/mile) rate yields running emissions, and so on.

Exhibit 2 also illustrates the comprehensive scope of emissions contained in the mobile source inventory, addressing elements not directly available from current travel demand modeling procedures. This includes emissions associated with the number of vehicles in the region, "auto access" emissions and bus emissions.

Emissions impacts associated with Congestion Mitigation and Air Quality (CMAQ) projects were also analyzed, in an off-line basis primarily by the sponsoring agencies, as a requirement associated with their use. These projects, and other similar projects funded by categories other than CMAQ, are also specifically considered in the analysis for the emissions budget and emissions reductions tests. Exhibit 3 presents an overview of the network analysis work activities and shows their interrelationship. This schematic illustrates the major operations only. It is useful, however, in conveying an overview of the major steps of the emissions calculation process from a data processing vantage. The "post-processor" is the emissions calculation software in use at COG for conformity analyses and SIP planning. Spreadsheets 1 - 3 address calculations required in assessing vehicle, auto access, school bus, and transit bus emissions, respectively.

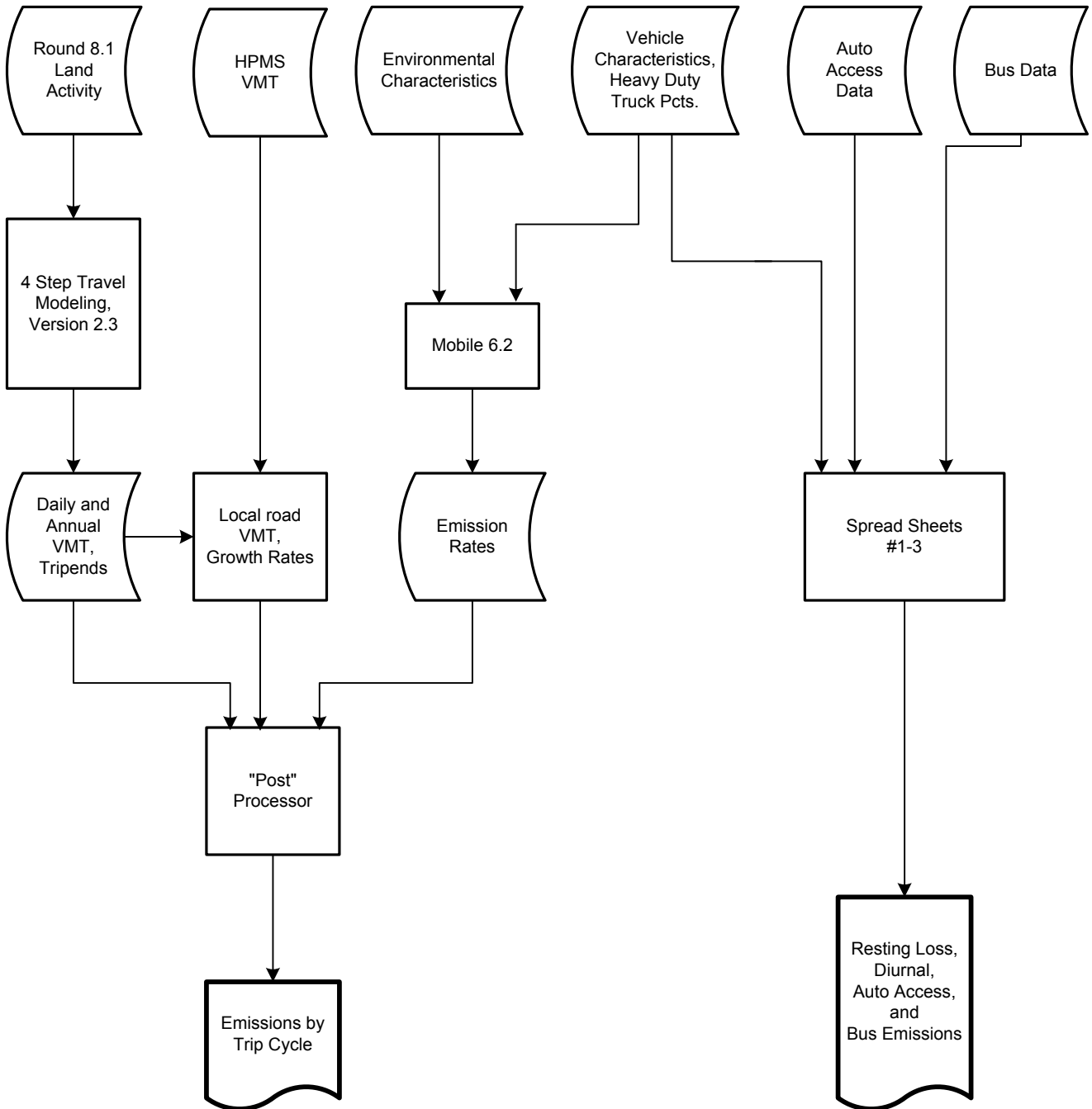
EXHIBIT 2

Analysis Structure for On-Road Mobile Source Emissions

	<u>Transportation Component</u>	X	<u>Emission Factor</u>	=	<u>Emissions</u>
A. Network	1. Trip origins		Cold start rate (g/trip)		Startup
	2. VMT		Stabilized rate (g/mile)		Running
	3. Trip destinations		Hot soak (g/trip)		Hot soak
B. Off-Network	4. Number of vehicles (gasoline fueled)		Diurnal rate (g/day)		Diurnal evaporative
	5. Number of vehicles (gasoline fueled)		Resting loss (g/day)		Resting loss
	6. Auto access to transit		Travel components (above)		Startup, running, hot soak
	7. School & transit bus VMT		(HDDV) Stabilized rate (g/mile)		Running
	8. Local Road VMT		Stabilized Rate (g/mile)		Running

EXHIBIT 3

ON-ROAD MOBILE SOURCE EMISSIONS CALCULATIONS



12CLRPEXH3.VSD

V. TRAVEL FORECASTS

As mentioned above, the preparation of travel forecasts for each of the conformity alternatives was carried out using the Version 2.3 travel modeling process. As part of the technical methods originally employed in 2000, transit capacity constraint procedures, constraining trips to and through the regional core at 2020 levels, were applied to better relate transit forecast levels with transit carrying ability. These procedures are documented in Reference 22.

As in recent years' analyses, in addition to existing toll facilities, the 2012 CLRP and FY2013-2018 TIP includes the ICC in Maryland, and portions of the Virginia beltway and Shirley highway as managed facilities, with time-of-day tolls used to ensure that a high level of service is maintained throughout the day. References 10 and 17 document these procedures.

Ozone season and wintertime CO pollutants are reported for an average weekday (tons per day). However PM_{2.5} pollutants are reported using annual totals, which also requires the application of seasonal travel adjustment factors. Since seasonal travel totals have to include weekend travel as well as weekday travel, it was necessary to prepare adjustment factors to represent ADT occurring in each season of the year. The lower table in Exhibit 10 presents the seasonal adjustment factor necessary to develop ADT VMT for each season.

Network Development

Work on this task began last winter with the request for project inputs to the 2012 CLRP and FY2013-2018 TIP. All project submissions were reviewed and organized by DTP staff into transportation networks for appropriate forecast years, according to the project's completion date as estimated by the programming agency. The TPB approved the final project inputs at its February meeting.

Summaries of key assumptions for each forecast year are contained as Exhibits 4 - 6. Exhibit 4 shows major transit elements. Exhibit 5 shows coded HOV & HOT improvements. Exhibit 6 presents mileage summaries for the highway system, according to LOV and HOV/HOT lane miles, and for the rail transit system.

These projects, summarized by state, agency, project characteristics and completion date are contained as Appendix B to this report. The list contains transit, highway, and HOV/HOT projects. Each project submission was reviewed and, where appropriate, coded into gravity model, modal choice and assignment networks. In many cases the project inputs could not be coded into a regional network since such projects did not involve changes in capacity (e.g., transit operating assistance, highway rehabilitation, bridge reconstruction) or were too small to show up at the regional level (e.g., intersection improvements, improvements to a facility which is not contained in the regional networks).

EXHIBIT 4**MAJOR TRANSIT IMPROVEMENTS FROM 2002 BASE**

	SERVICE	LIMIT
2007:		
	MARC	Frederick to Pt. of Rocks
	Metrorail	Addison Road to Largo
	Metrorail	Ny Avenue Station
2017:		
		SAME AS 2007, PLUS
	MetroRail / Marc	Silver Spring Intermodal Transit Facility/Phase II
	Metrorail	Dulles Corridor (East Falls Church to VA 772)
	Metrorail	Potomac Yards Station
	Streetcar	Anacostia Streetcar Phase I/Extension (Firth Sterling/S. Capitol St. to Good Hope Rd. and MLK Jr. Avenue SE)
	Streetcar	H St. / Benning Rd Streetcar (Union Station to 45th Street/Benning Road Metro)
	Streetcar	Columbia Pike (Skyline Center to Pentagon City)
	Transitway	K St. (Mt. Vernon Sq./7th St. NW to Wash. Circle/ 23rd St. NW)
	VRE	Cherry Hill Commuter Rail Station
	Bus	Georgia Avenue Rapid Bus (Eastern Ave./Silver Spring Metro Station to Archives Navy Memorial Metro Station)
	Bus	Pennsylvania Avenue Rapid Bus (Archives Navy Memorial Metro Station to Naylor Rd Metro Station)

EXHIBIT 4**MAJOR TRANSIT IMPROVEMENTS FROM 2002 BASE**

	SERVICE	LIMIT
	Bus	New and Modified Service for Beltway HOT lanes-2013 level
	Busway	Crystal City/Potomac Yards Busway (Glebe Road Ext. to Crystal City Metro)
	Busway	Potomac Yard Transit Bus Lanes (Four Mile Run to Braddock Road)
	Bus Rapid Transit (BRT)	Van Dorn- Pentagon BRT (Van Dorn Street Metro to Pentagon)
2020:		
		SAME AS 2017, PLUS
	Rail	Purple Line Transitway (Bethesda to New Carrollton)
	Corridor Cities Transitway	Shady Grove to Comsat
	Streetcar	Route 1 Corridor (Vicinity of Glebe Rd. Ext.-City/County line to Pentagon City Metro Station)
	VRE	Manassas & Fredericksburg lines Service Improvements
	Bus	New and Modified Service for Beltway HOT lanes-2020 level
2030		
		SAME AS 2020, PLUS
	Bus	New and Modified Service for Beltway HOT lanes-2030 level
	BRT	Duke Street BRT (King Street Metro to Fairfax County Line)

EXHIBIT 5

05/16/2012

CODED HOV/HOT IMPROVEMENTS FROM 2002 BASE:

	FACILITY	IMPROVEMENT	LIMITS	DEFINITION
2007:				
	US 50	Construct	E. of US 301 / MD 3 to E. of I-95/I-495	2+
	I-66	Widen	VA 234 (Prince Wm. Parkway) to VA 234 Business (Sudley Road)	2+
2017:				
	I-95 Wilson Bridge	Construct	SAME AS 2007, PLUS US 1 (VA) to MD 210	2+
	I-66	Widen	US 29 (Gainesville) to VA 234 (Prince William Parkway)	2+
	I-95/I-395	Widen/Construct	Approx. 2 mi. N of I-495 to VA 610 (Garrisonville Rd) in Stafford County	3+
	I-495	Construct	1mi.east of I-395/I-95 to S. of George Washington Parkway (HOT)	3+
2020:				
	I-66	Widen	SAME AS 2017, PLUS US 15 to US 29 (Gainesville)	3+
	I-95	Construct	VA 610 (Garrisonville Rd.) in Stafford County to VA 17 (Spotsylvania County exit 126)	3+
2030:				
	I-270	Const./Re-sign	SAME AS 2020, PLUS Shady Grove Metro to Biggs Ford Road	3+
	I-495	Construct	American Legion Bridge to S. of George Washington Parkway (HOT)	3+
	Fran./Sprfld. Pkwy.	Construct	Ffx. County Pkwy. to Frontier Drive	3+
	Fran./Sprfld. Pkwy.	Upgrade	VA 638 (Rolling Rd.) to VA 617 (Backlick Rd.)	3+
2040:				
	Fairfax Co. Pkwy	Construct	SAME AS 2030, PLUS VA 267 (Dulles Toll Rd) to I-66	3+

NOTE: All HOV facilities assumed HOV 3+ by 2020

EXHIBIT 6
RAIL AND ROAD MILES
 (modeled area)

	LOV	HOV/HOT	METRORAIL	MD/DC*	VA**
	LANE MILES	LANE MILES	MILES	NON-METRO RAIL MILES	NON-METRO RAIL MILES
	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL
2007	22,154	219	106	116	90
2017	23,213	341	131	139	95
2020	23,647	341	131	169	97
2030	24,174	372	131	169	97
2040	24,355	372	131	169	97

* Includes MARC, Purple Line Transitway, and Corridor Cities Transitway in Maryland, and Anacostia, H St., & Benning Rd. Street Cars in the District of Columbia

** Includes VRE and Arlington Streetcar (Columbia Pike & Route 1 Corridor)

The COG modeled area includes counties outside the MSA to enable better simulation results within the MSA. Project inputs from these outer counties are provided by their respective MPOs, state DOTs, or county DOTs, and are coded, when appropriate, into the highway and transit networks. While travel demand estimates include all counties in the modeled area, emissions estimates are only tabulated for the defined nonattainment area for each pollutant. As stated above, the modeled area, and the nonattainment areas for each pollutant analyzed, are shown in Exhibit 1.

Transportation/Land Use Interaction

The COG Board approved the draft Round 8.1 Cooperative Forecasts for use in the air quality conformity analysis of the 2012 CLRP and FY2013-2018 TIP in February, 2012. The forecasts reflect both the small area land use distributions throughout the Washington region, and also the latest planning assumptions for areas that are outside the Washington region. The 8.1 Forecasts were adjusted based on 2010 Census data, and reflect the current economic slow-down. Exhibit 7 presents Round 8.1 household data for each of the years in the conformity assessment. Exhibit 8 presents similar data for the employment assumptions. The employment data reflect census adjustments (see Reference 23).

Trip Table Development

After coding the networks, staff proceeded with the trip generation and trip distribution steps within the travel forecasting process. The travel modeling process utilized in this work represents a trip generation and distribution model set based upon results obtained through analysis of the 2007/2008 Household Travel Survey, WMATA on-board transit surveys, and 2007 HPMS traffic count data in model calibration, as well as 2010 external (traffic in and out of the region) traffic count data. Separate person trip tables were prepared for home based work and nonwork purposes (for input to the mode choice modeling process) and for all other travel, i.e., taxi, visitor/tourist, school and through trips. The work and nonwork person trip tables were input to the mode choice process, and the output vehicle trip tables from that process were subsequently merged with the other trip purposes for each forecast year and used in traffic assignment. Capacity restrained speeds which are output from the traffic assignment process were then fed back into trip distribution and iterations of the entire process occur until equilibrium travel time conditions are achieved throughout the modeling process. Summary mode choice results are shown in Exhibit 9. Summary results from the last iteration of the process, for all trip purposes, are shown in the upper table of Exhibit 10. This table shows vehicle trips in the region increasing by 43%, from 14.8 million in 2002 to 21.1 million in the year 2040. As mentioned above, the lower table in Exhibit 10 presents the seasonal adjustment factor necessary to convert AAWDT to ADT for each season, for use in emissions calculations.

EXHIBIT 7
HOUSEHOLD DATA

MSA:	2007	2017	2020	2030	2040	2040/2007
D.C.	258726	291838	298115	318252	339889	1.31
MONTGOMERY	352913	384816	397237	436202	461469	1.31
PR.GEORGES	301540	328583	336404	359878	379317	1.26
ARLINGTON	94543	107838	111190	116788	119761	1.27
ALEXANDRIA	67041	73485	76426	83831	92155	1.37
FAIRFAX	393784	426728	440826	478759	500832	1.27
LOUDOUN	94321	123843	132843	154159	162971	1.73
PR. WILLIAM	140727	172975	183321	210450	229944	1.63
FREDERICK	81614	89590	92740	107686	119564	1.46
CHARLES	48845	60235	64299	75847	85901	1.76
STAFFORD	37504	52701	57388	73383	87679	2.34
CALVERT	30760	34991	36027	38348	40301	1.31
SUBTOTAL	1,902,318	2,147,623	2,226,816	2,453,583	2,619,783	1.38
ADDITIONAL COUNTIES:						
HOWARD	103132	120864	125600	135486	137773	1.34
ANNE ARUNDEL	196402	213647	217782	229371	234332	1.19
CARROLL	60279	67260	69614	76111	81464	1.35
FREDERICKSBURG (VA) &N. SPOTSYLVANIA	40347	52447	56137	68763	79050	1.96
CLARKE&JEFFERSON	24873	30840	32679	40562	49835	2.00
FAUQUIER	24731	32882	35730	47502	63154	2.55
K. GEORGE	7912	10371	11228	14358	17125	2.16
ST. MARY'S	36573	46408	49352	58143	66509	1.82
SUBTOTAL	494,249	574,719	598,122	670,296	729,242	1.48
TOTAL	2,396,567	2,722,342	2,824,938	3,123,879	3,349,025	1.40

SOURCE:

MWCOG Round 8.1 Cooperative Forecasts

BMC Round 7-C Cooperative Forecasts

GWRC/FAMPO Regional Demographic Control Forecasts for 2035 CLRP, June 2008

Tri-County Council for Southern Maryland data for Calvert, Charles and St. Mary's

EXHIBIT 8

EMPLOYMENT DATA

MSA:	2007	2017	2020	2030	2040	2040/2007
D.C.	763530	834060	865726	929641	982647	1.29
MONTGOMERY	504045	559355	585363	684284	737364	1.46
PR. GEORGES	345777	365324	377879	427514	497652	1.44
ARLINGTON	206400	258626	275862	302588	308376	1.49
ALEXANDRIA	105870	118783	122551	142738	155012	1.46
FAIRFAX	655611	747569	785619	875216	935411	1.43
LOUDOUN	132849	183113	206465	257212	285449	2.15
PR. WILLIAM	141076	172538	186215	230047	278151	1.97
FREDERICK	86542	101182	103862	109755	114907	1.33
CHARLES	60039	69758	71731	77537	83138	1.38
STAFFORD	40114	54328	57505	70172	84144	2.10
CALVERT	33512	42422	44457	47159	48955	1.46
SUBTOTAL	3,075,365	3,507,058	3,683,235	4,153,863	4,511,206	1.47
ADDITIONAL COUNTIES:						
HOWARD	155565	186679	194977	221168	231902	1.49
ANNE ARUNDEL	278707	317528	329042	358320	370904	1.33
CARROLL	63773	70099	70813	72456	74090	1.16
FREDERICKSBURG (VA) & N. SPOTSYLVANIA	61620	84827	89210	103673	119691	1.94
CLARKE & JEFFERSON	26062	32017	33800	39225	45298	1.74
FAUQUIER	25422	32604	35762	43360	52578	2.07
K. GEORGE	10519	18431	19370	22501	25740	2.45
ST. MARY'S	56173	65350	67268	71969	75862	1.35
SUBTOTAL	677,841	807,535	840,242	932,672	996,065	1.47
TOTAL	3,753,206	4,314,593	4,523,477	5,086,535	5,507,271	1.47

SOURCE:

MWCOG Round 8.1 Cooperative Forecasts

BMC Round 7-C Cooperative Forecasts

GWRC/FAMPO Regional Demographic Control Forecasts for 2035 CLRP, June 2008

Tri-County Council for Southern Maryland data for Calvert, Charles and St. Mary's

NOTE: Includes Census Adjustment

EXHIBIT 9A

**2012 CLRP AND FY2013-2018 TIP AIR QUALITY CONFORMITY
DAILY REGIONAL HOME BASED WORK PURPOSE MODE ANALYSIS BY YEAR
(Based on Mode Choice Output - 4th Iteration)**

YEAR	HBW MOTORIZED PERSON	TOTAL HBW AUTO PSN	HBW SINGLE OCCUPANT AUTO PSN	HBW MULTIPLE OCCUPANT AUTO PSN	TOTAL HBW AUTO DRV	HBW CAR OCC.	HBW TRANSIT	HBW TRANSIT (%)
2002	3,416,996	2,691,684	2,298,111	393,573	2,474,699	1.09	725,312	21.23%
2007	3,682,678	2,905,495	2,473,577	431,918	2,665,811	1.09	777,183	21.10%
2017	4,142,685	3,238,699	2,747,237	491,462	2,964,235	1.09	903,986	21.82%
2020	4,294,186	3,347,371	2,806,187	541,184	3,032,472	1.10	946,815	22.05%
2030	4,740,736	3,719,511	3,061,110	658,401	3,325,405	1.12	1,021,225	21.54%
2040	5,078,626	3,995,829	3,265,604	730,225	3,555,167	1.12	1,082,797	21.32%

EXHIBIT 9B

**2012 CLRP AND FY2013-2018 TIP AIR QUALITY CONFORMITY
DAILY REGIONAL ANALYSIS BY YEAR FOR ALL TRIP PURPOSES
(Based on Mode Choice Output - 4th Iteration)**

YEAR	TOTAL MOTORIZED PERSON	TOTAL AUTO PSN	SINGLE OCCUPANT AUTO PSN	MULTIPLE OCCUPANT AUTO PSN	TOTAL AUTO DRV	TOTAL CAR OCC.	TOTAL TRANSIT	TRANSIT (%)
2002	16,937,717	15,845,227	8,292,091	7,553,136	11,348,559	1.40	1,092,489	6.45%
2007	18,212,604	17,054,094	8,856,865	8,197,228	12,166,176	1.40	1,158,511	6.36%
2017	20,335,124	18,973,340	9,709,773	9,263,567	13,433,832	1.41	1,361,783	6.70%
2020	21,021,763	19,596,023	9,950,620	9,645,403	13,812,197	1.42	1,425,740	6.78%
2030	23,038,223	21,496,262	10,749,719	10,746,544	15,027,601	1.43	1,541,961	6.69%
2040	24,525,805	22,895,452	11,340,941	11,554,511	15,925,990	1.44	1,630,353	6.65%

*Note: Starting in 2020, all HOV facilities are HOV3+

EXHIBIT 10

2012 CLRP / FY2013-2018 TIP AIR QUALITY CONFORMITY MODELED AREA TRIPS AND VEHICLE MILES TRAVELED AVERAGE WEEKDAY TRAFFIC (AWDT) (Based on Final Iteration)

YEAR	WORK AND NON-WORK AUTO DRV	TRUCKS (Med + Hvy)	MISC + THRU TRIPS	COMMERCIAL VEHICLES	TOTAL VEH. TRIPS	TOTAL VMT
2002	12,189,746	656,922	724,160	1,252,029	14,822,857	149,388,892
2007	13,114,895	680,047	787,938	1,284,895	15,867,775	159,299,027
2017	14,451,910	751,257	901,404	1,435,256	17,539,827	174,806,093
2020	14,878,275	777,165	944,030	1,488,447	18,087,917	180,153,736
2030	16,265,356	851,208	1,075,062	1,638,390	19,830,016	200,136,351
2040	17,269,784	907,616	1,186,909	1,752,243	21,116,552	212,923,598

Adjustment Factors to Convert AWDT to Appropriate Season:

Ozone Season AWDT: 1.03

Winter Season AWDT: 0.96

PM_{2.5} Annual:

Season (ADT)	Factor
Season 1 (Jan- Apr)	0.9177
Season 2 (May- Sept)	0.9751
Season 3 (Oct- Dec)	0.9212

NOTE: AWDT reflects a five day average

ADT reflects a seven day average

Modal Choice

Transit networks were coded for all forecast years and mode choice analyses were executed based upon specific transit representations for 2007, 2017, 2020, 2030, and 2040. Transit capacity constraint procedures, in which 2020 constrains later years (Reference 22), were executed for the 2030 and 2040 forecast years.

Transit fares include the latest assumptions for all coded transit service. Transit fares reflect policies such as price differentials for those who use SmarTrip vs. those who use paper fare cards or cash, and surcharges for those who travel in the peak-of-the-peak. The 2012 CLRP and FY2013-2018 TIP shows growth in transit trips, with approximately a 49% increase in transit travel from 2002 to the year 2040.

Traffic Assignment

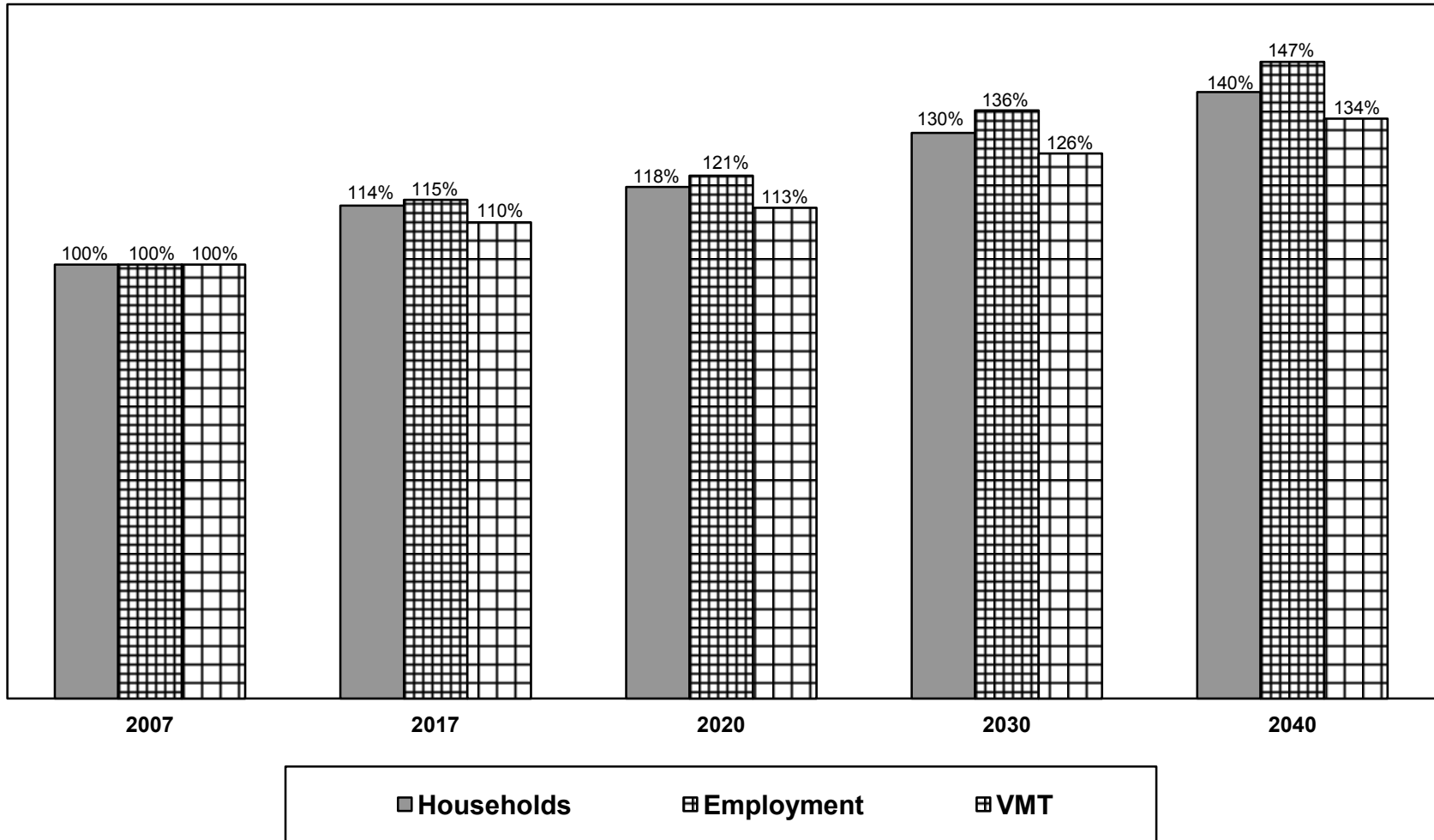
Following the preparation of total vehicle travel demands, the resulting table was applied in traffic assignment to estimate vehicle loadings on each facility in the region. After multiple iterations of the process using the speed feedback procedures, this concluded the traditional travel forecasting elements of the conformity analysis. VMT summaries, showing a 43% increase from 2002 to 2040, are contained in Exhibit 10. Exhibit 11 shows percentage changes in vehicle miles traveled (VMT) through time compared with percentage changes in households and jobs.

VI. EMISSIONS

Rates

In conjunction with COG's Department of Environmental Programs staff and with consultant assistance of E.H. Pechan and Associates, Transportation Planning staff developed mobile source emission factors for PM_{2.5} pollutants, wintertime CO, and ozone precursors. These factors represented the rates of volatile organic compounds, carbon monoxide, direct particles, and nitrogen oxides produced by cars and trucks on the highway system. This work involved the application of EPA's MOBILE6.2 model, using vehicular and other characteristics specific to the Washington region, to develop factors which would be applied to the travel estimates associated with each forecast year. The model estimates the pollution rates based upon a variety of different vehicle characteristics (vehicle age, type, weight, fuel, speed, inspection/maintenance program) and environmental characteristics (ambient temperature, humidity). This year's emission factors include the use of new 2011 vehicle registration data.

EXHIBIT 11 DAILY VMT vs CHANGES IN LAND ACTIVITY (Modeled Area)



The rates for each pollutant, shown using Fairfax County data as an illustration in Exhibits 12 and 13 for VOC and NO_x, respectively, were developed following execution of the model in one mph speed increments, by jurisdiction, for each analysis year. The charts show significantly reduced rates through time, primarily due to the impacts of having cleaner vehicles in the fleet. Exhibit 14 presents direct PM_{2.5} emissions rates through time, by season; data are arrayed in a bar chart since these emissions rates do not vary by vehicle speed.

Appendix D documents the input assumptions and Appendix E documents the emission factor results of this work.

Calculations

While travel demand forecasts are prepared for the modeled area, emissions summaries are calculated for each pollutant's specified nonattainment area (or maintenance area, in the case of winter CO). Each of these planning areas is shown in Exhibit 1.

Two types of calculations are made for each pollutant. The first involves applying emissions rates directly to the travel demand results, to yield origin, network running, and destination emissions. The second deals with preparing estimates of emissions associated with diurnals, resting losses, auto access to transit, and buses. These are addressed on an off-line basis since they are not directly derived from the TPB travel demand modeling process. The technical methods associated with performing these off-line assessments are contained in Appendices F to H. Exhibit 3 provides an overview of the analysis structure and emissions calculation process and also identifies where each calculation takes place.

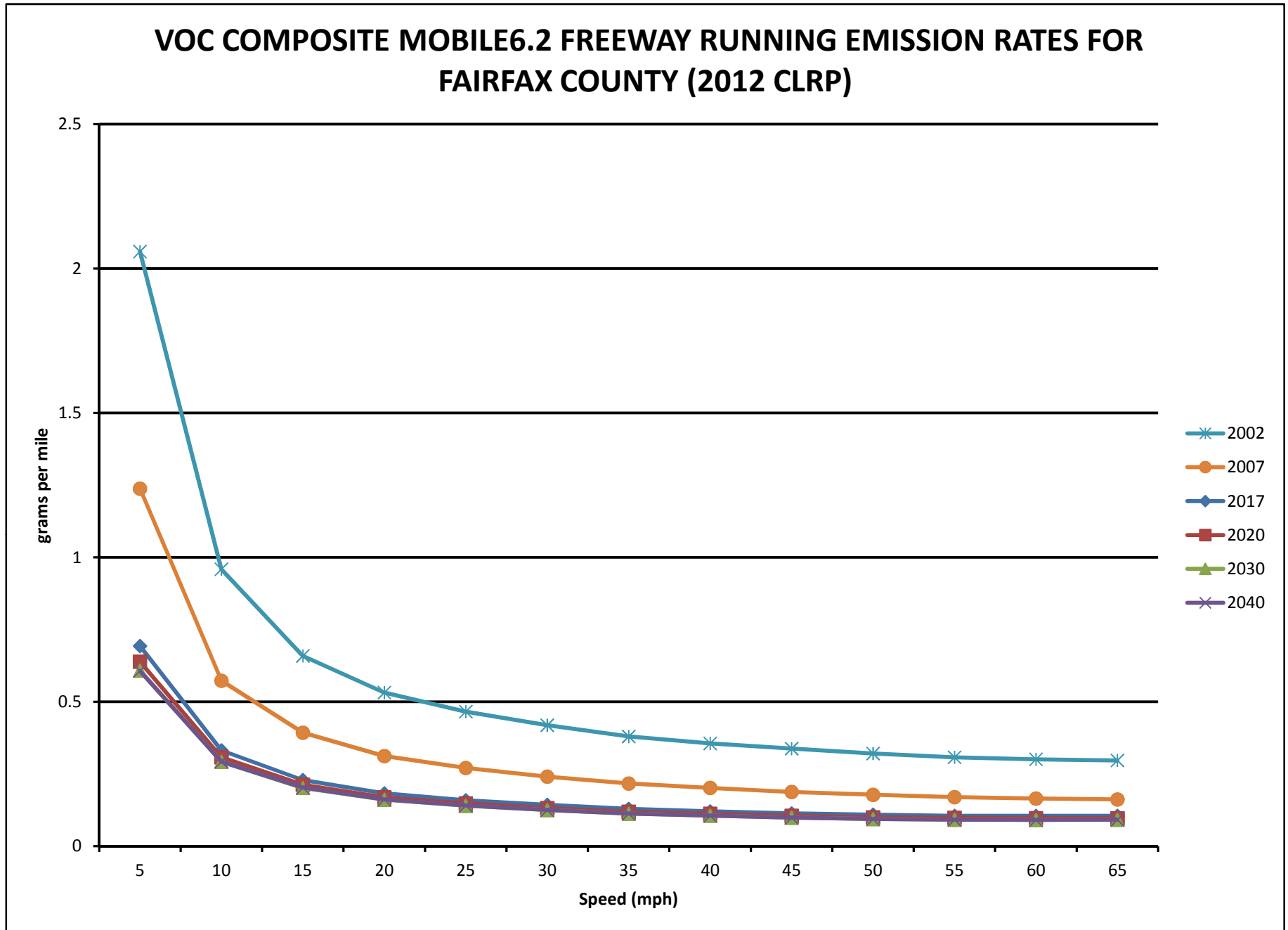


EXHIBIT 13

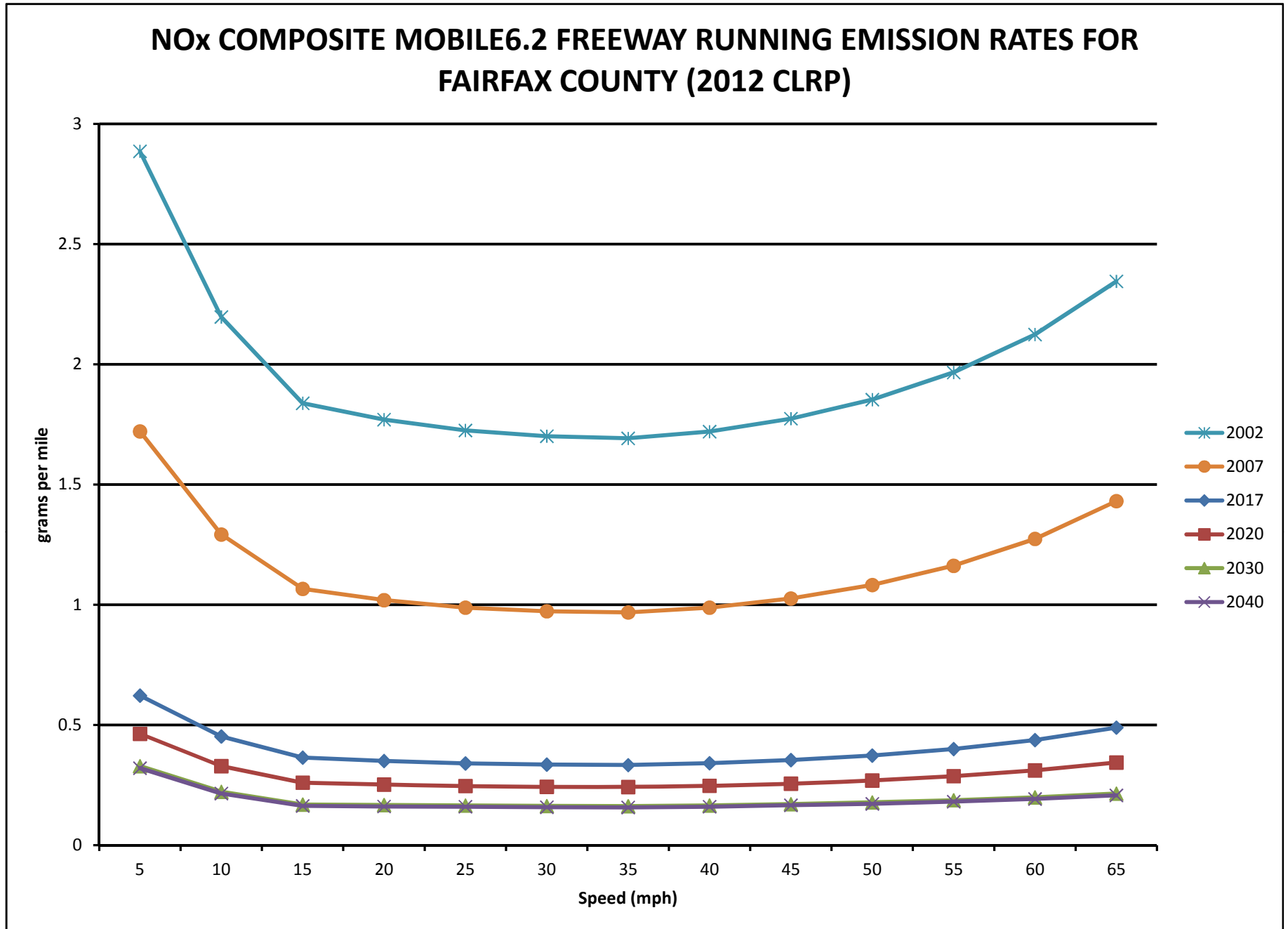
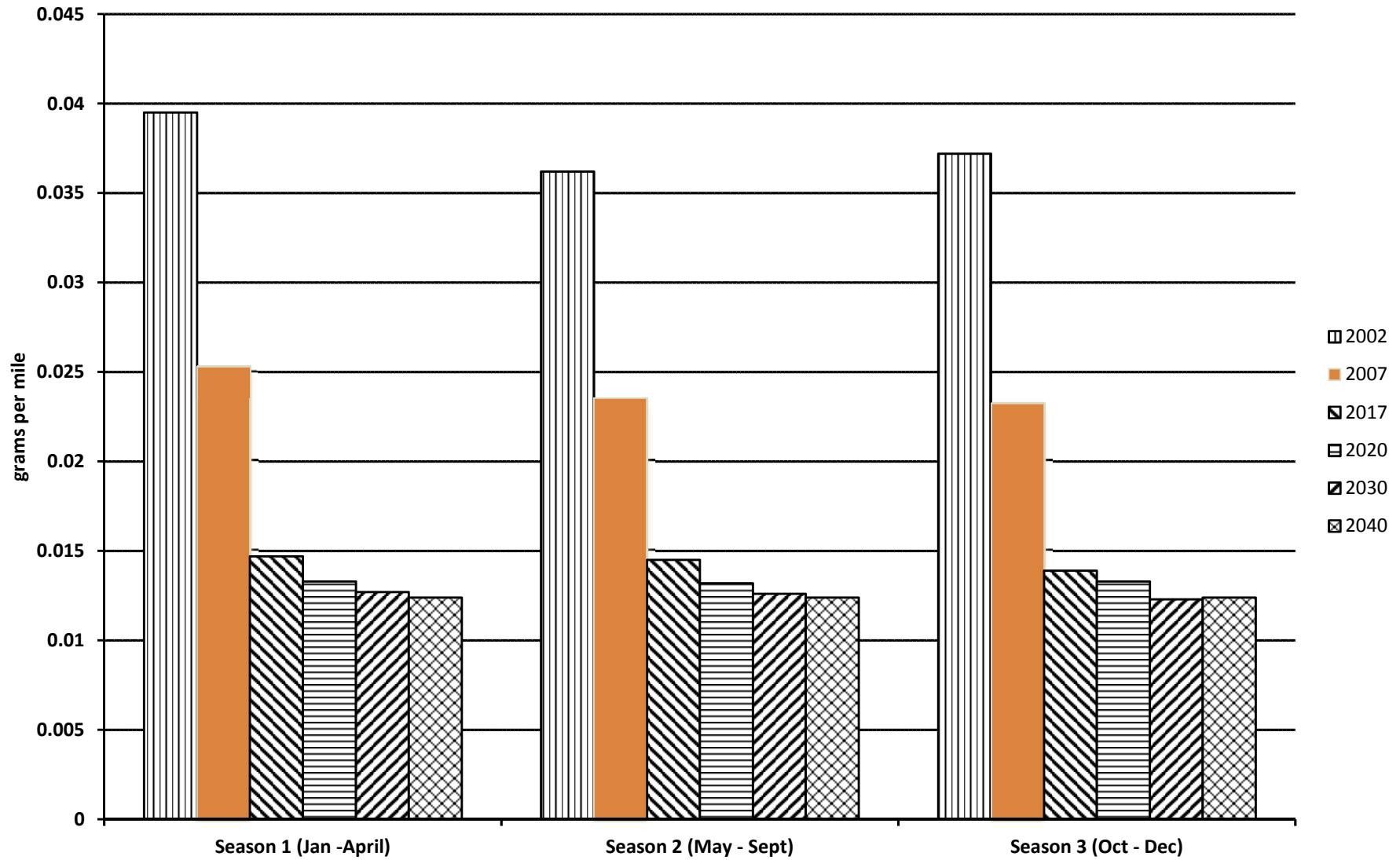


Exhibit 14 DIRECT PM_{2.5} EMISSION RATES FOR FAIRFAX COUNTY (MAJOR ROADS NETWORK)



As mentioned earlier, each pollutant is assessed based on varying criteria. The approved mobile emissions budget for ozone season VOC is 70.8 tons/day, and for NO_x is 159.8 tons/day. With no approved mobile budgets for PM_{2.5} pollutants, EPA allows for an assessment that shows emissions in “action” scenarios are no greater than those in a 2002 base. This criterion was established and applied, with the concurrence of MWAQC, in all PM_{2.5} conformity assessments done to date. The region is in maintenance for mobile source wintertime CO and is required to show that pollutant levels do not exceed the approved budget of 1671.5 tons/day.

Mobile Emissions Inventories

Prior to calculation of daily mobile source emissions, the above (AAWDT) travel forecasts were first factored by seasonal adjustments (a 1.03 ozone season factor or a 0.96 winter season factor) to yield VMT appropriate to each season being analyzed. Staff then applied the appropriate Mobile6.2 emissions factors to the travel demand forecasts to prepare mobile source emissions inventories for each forecast year. Exhibit 15 shows, for purposes of illustration, emissions for each jurisdiction in the 8-hour ozone nonattainment area. The categories of emissions also include the additional elements of: running emissions on local streets, and vehicle related emissions for diurnals and resting loss; and regional estimates of auto access emissions, and bus emissions.

The emissions results for ozone season pollutants are summarized in Exhibit 16. This chart contains VOC and NO_x emissions for network and off-network components for each analysis year, and also compares totals against emissions budgets where relevant. The table shows dramatic reductions throughout time. 2040 VOC and NO_x emissions represent about 14 percent and less than 10 percent, respectively, of their 1990 levels. The results reflect the impact of the cleaner fleet (continuing fleet turnover) and related programs, with slowing VMT growth rates through time. Net emissions for each forecast year are shown as the bottom line of the summary table. Both VOC and NO_x emissions are within the mobile budgets for all forecast years.

Exhibit 15
Eight-Hour Ozone Area
 FOR 2012 CLRP AND THE FY 2013-2018 TIP
 DAILY MOBILE SOURCE EMISSIONS
 BY JURISDICTION AND TRIP CYCLE
 Year: 2017
 VOC TONS PER DAY

JURISDICTION	ORIGIN	RUNNING		DESTINATION	VEHICLE RELATED EMISSIONS		TOTAL CYCLE
		NETWORK	LOCAL		DIURNAL	REST. LOSS	
District of Columbia	0.66	2.24	0.77	0.62	0.08	0.43	4.81
Montgomery	1.06	3.78	0.50	0.93	0.20	0.91	7.39
Prince George's	0.94	4.25	0.72	0.92	0.23	1.12	8.17
Calvert	0.14	0.37	0.08	0.16	0.05	0.26	1.06
Charles	0.24	0.65	0.12	0.27	0.07	0.37	1.70
Frederick	0.31	1.44	0.26	0.34	0.10	0.53	2.97
Arlington	0.28	0.80	0.12	0.24	0.03	0.17	1.64
Fairfax	1.32	4.82	0.57	1.08	0.23	1.09	9.11
Loudoun	0.42	1.33	0.20	0.34	0.07	0.34	2.70
Pr. William	0.58	1.75	0.40	0.50	0.12	0.58	3.92
City of Alexandria	0.18	0.45	0.05	0.14	0.03	0.12	0.97
Sub Total	6.13	21.88	3.78	5.53	1.21	5.91	44.44
AUTO ACCESS							0.52
TRANSIT BUS							0.14
SCHOOL BUS							0.25
TOTAL EMISSIONS							45.34

EXHIBIT 16

**AIR QUALITY CONFORMITY
Summary Table - 8-Hour Ozone Nonattainment Area
Mobile Source Emissions Inventories
for 2012 CLRP and the FY 2013-2018 TIP
(Tons/Day)**

	2002		2007		2017		2020		2030		2040	
	VOC	NOx	VOC	NOx	VOC	NOx	VOC	NOx	VOC	NOx	VOC	NOx
I Network												
Start	18.66	9.46	10.47	5.66	6.13	3.20	5.49	2.46	5.10	1.89	5.28	1.94
Running	54.72	219.02	33.01	142.85	21.88	57.24	20.47	41.88	21.19	29.33	22.90	29.71
Soak	8.53	-----	7.80	-----	5.53	-----	4.71	-----	3.86	-----	4.07	-----
II Off-Network												
Diurnal	2.36	-----	2.05	-----	1.21	-----	1.07	-----	0.71	-----	0.80	-----
Resting Loss	11.93	-----	9.43	-----	5.91	-----	4.52	-----	3.02	-----	3.41	-----
Local Roads	9.91	11.39	5.96	7.89	3.78	3.64	3.52	2.87	3.59	2.40	3.79	2.50
School Buses	0.42	5.97	0.43	5.64	0.25	2.61	0.22	1.92	0.17	0.63	0.16	0.27
Transit Buses	0.38	6.51	0.25	5.36	0.14	1.85	0.13	1.28	0.13	0.44	0.13	0.28
Auto Access	1.29	1.59	0.77	0.94	0.52	0.49	0.47	0.41	0.43	0.35	0.45	0.37
Total	108.20	253.93	70.17	168.35	45.34	69.02	40.60	50.82	38.20	35.04	40.99	35.05

TCMs	-0.36	-0.078	-0.3	-0.19	-0.18	-0.41	-0.13	-0.28	-0.13	-0.27	-0.13	-0.27
Net Emissions	107.84	253.85	69.87	168.16	45.17	68.62	40.47	50.54	38.07	34.77	40.86	34.78

Mobile Emissions Budgets:					70.80	159.80	70.80	159.80	70.80	159.80	70.80	159.80
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Budget Adherence Margin:					25.63	91.18	30.33	109.26	32.73	125.03	29.94	125.02
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To develop the yearly total PM_{2.5} emissions, travel and emissions were estimated throughout the year by applying (three) seasonal factors to the primary travel data, followed by applying emissions rates for each of the seasons, and summarizing to obtain yearly totals. Direct PM_{2.5} and precursor NO_x emissions are shown in Exhibits 17 and 18 and exhibit similar dramatic reductions through time despite the steady increases in vehicle trips and VMT in the forecast years. These reductions are largely attributable to Tier II vehicle standards, cleaner fuels, and the heavy duty engine rule, and will continue to generate additional emissions reductions through time as fleet turnover replaces older vehicles / truck engines with much cleaner ones.

Wintertime CO emissions are shown in Exhibit 19. These same general trends through time of dramatic emissions reductions are also seen here; levels are easily within the CO emissions budget level.

Exhibits 20 and 21 present the VOC and NO_x results in a graphical format, which perhaps illustrates even better the steady and significant downward trends occurring in both VOC and NO_x emissions. Historical emissions reductions from the clean air act amendments 1990 base have been well documented in the past (especially VOC emissions which dropped from about 295 tons per day (T/D) to about 108 T/D in 2002, but NO_x emissions have also dropped by more than 100 T/D from 367 to 254 T/D). From 2002 to year 2017, VOC emissions will be cut further, more than in half, from 108 T/D to about 45 T/D, and NO_x emissions experience even greater reductions, from 254 T/D to 69 T/D. Exhibit 22 presents precursor NO_x results. Exhibit 23 presents direct PM_{2.5} results. The data show emissions much lower than base year 2002 conditions.

Exhibit 24 portrays similar information for wintertime CO conditions. These exhibits show that the mobile source inventories for the CLRP, for each pollutant in each analysis year and scenario, adhere to each relevant emissions budget.

The data in exhibits 16 - 24 show that estimated emissions are either within the mobile source emissions budget for each pollutant, or meet emissions reduction requirements in the case of PM_{2.5} pollutants. In recognition of the fact that estimated emissions are within the mobile source budget for each pollutant, no additional transportation emissions reduction measures are required to demonstrate conformity.

EXHIBIT 17
AIR QUALITY CONFORMITY SUMMARY TABLE
Direct PM_{2.5} Emissions
Mobile Source Emissions Inventories
for 2012 CLRP and the FY 2013-2018 TIP
(Tons)

SEASON 1 (JAN-APR)		Days	Direct PM _{2.5}											
			2002		2007		2017		2020		2030		2040	
			Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal
	Major Roads	120	4.09	490.32	2.70	324.00	1.89	226.68	1.73	208.08	1.78	213.36	1.85	221.88
	Local Roads	120	0.22	26.04	0.14	16.20	0.15	17.64	0.15	17.52	0.16	18.96	0.17	20.04
	School Buses	76	0.33	25.08	0.36	27.04	0.08	5.74	0.03	2.20	0.02	1.43	0.01	1.03
	Transit Buses	120	0.25	30.00	0.14	16.48	0.03	3.53	0.01	1.72	0.01	1.26	0.01	1.11
	Auto Access	83	0.01	0.83	0.01	0.79	0.01	0.85	0.01	0.89	0.01	0.96	0.01	1.02
	Total (Daily)		4.89		3.34		2.15		1.93		1.98			
	SEASON TOTAL			572.27		384.50		254.44		230.40		235.97		245.07

SEASON 2 (MAY-SEP)		Days	Direct PM _{2.5}											
			2002		2007		2017		2020		2030		2040	
			Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal
	Major Roads	153	4.02	614.60	2.62	401.01	1.99	303.86	1.83	280.30	1.88	287.79	1.96	300.03
	Local Roads	153	0.21	32.13	0.14	21.27	0.15	23.56	0.15	23.41	0.17	25.86	0.18	26.93
	School Buses	83	0.32	26.56	0.36	29.50	0.07	6.02	0.03	2.33	0.02	1.53	0.01	1.12
	Transit Buses	153	0.25	38.25	0.13	19.59	0.03	4.36	0.01	2.14	0.01	1.59	0.01	1.40
	Auto Access	107	0.01	1.07	0.01	1.08	0.01	1.17	0.01	1.23	0.01	1.33	0.01	1.40
	Total (Daily)		4.81		3.25		2.25		2.04		2.09			
	SEASON TOTAL			712.61		472.45		338.96		309.40		318.09		330.88

SEASON 3 (OCT-DEC)		Days	Direct PM _{2.5}											
			2002		2007		2017		2020		2030		2040	
			Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal
	Major Roads	92	3.85	354.29	2.52	231.38	1.77	162.93	1.71	157.14	1.74	160.45	1.85	170.57
	Local Roads	92	0.21	19.32	0.13	11.96	0.15	13.34	0.15	13.43	0.16	14.54	0.17	15.36
	School Buses	55	0.27	14.85	0.32	17.38	0.04	2.13	0.03	1.52	0.01	0.74	0.01	0.74
	Transit Buses	92	0.22	20.24	0.12	11.48	0.02	1.63	0.01	1.17	0.01	0.84	0.01	0.84
	Auto Access	61	0.01	0.61	0.01	0.57	0.01	0.63	0.01	0.66	0.01	0.71	0.01	0.75
	Total (Daily)		4.56		3.10		1.98		1.91		1.94			
	SEASON TOTAL			409.31		272.77		180.66		173.92		177.28		188.27

ANNUAL TOTAL			1,694.19		1,129.72		774.07		713.73		731.34		764.21
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NOTE: With no approved mobile budgets for Direct PM_{2.5}, it is necessary to show that forecast year emission levels are no greater than the 2002 base year emissions of 1,694.19 tons/year.

EXHIBIT 18
AIR QUALITY CONFORMITY SUMMARY TABLE
PM_{2.5} Precursor Emissions: NOx
Mobile Source Emissions Inventories
for 2012 CLRP and the FY 2013-2018 TIP
(Tons)

SEASON 1 (JAN-APR)		Days	Precursor NOx											
			2002		2007		2017		2020		2030		2040	
			Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal
	Major Roads-Starts	120	15.65	1877.40	8.52	1022.76	4.85	581.76	3.61	432.72	2.68	321.48	2.68	322.08
	Major Roads-VMT	120	253.10	30372.48	157.97	18956.52	61.13	7335.60	44.40	5327.88	31.16	3738.84	31.54	3784.92
	Local Roads	120	14.48	1737.60	8.89	1066.44	3.94	472.20	3.02	361.92	2.43	291.84	2.53	303.60
	School Buses	76	4.86	369.36	4.55	345.77	2.20	167.06	1.62	122.77	0.52	39.73	0.21	16.31
	Transit Buses	120	6.04	724.80	5.24	628.27	1.76	211.67	1.21	145.78	0.42	49.83	0.25	30.36
	Auto Access	83	2.09	173.47	0.79	65.40	0.39	32.04	0.31	25.68	0.23	19.43	0.36	29.65
	Total (Daily)		296.22		185.95		74.26		54.16		37.44			
	SEASON 1 TOTAL			35,255.11		22,085.16		8,800.33		6,416.75		4,461.15		4,486.92

SEASON 2 (MAY-SEP)		Days	Precursor NOx											
			2002		2007		2017		2020		2030		2040	
			Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal
	Major Roads-Starts	153	10.32	1578.50	6.00	918.15	3.49	533.97	2.63	402.24	1.99	304.47	2.00	306.46
	Major Roads-VMT	153	216.30	33094.36	134.34	20554.33	53.58	8198.35	39.00	5966.85	27.13	4150.74	27.41	4194.34
	Local Roads	153	11.40	1744.05	7.17	1096.40	3.27	500.46	2.56	391.99	2.11	323.14	2.20	336.14
	School Buses	83	4.81	399.23	4.55	377.43	2.10	174.57	1.55	128.49	0.51	42.18	0.21	17.81
	Transit Buses	153	5.99	916.47	4.98	762.50	1.70	259.97	1.17	179.58	0.41	62.46	0.25	38.71
	Auto Access	107	1.48	158.36	0.58	62.47	0.30	31.92	0.24	26.13	0.23	24.51	0.29	31.15
	Total (Daily)		250.30		157.62		64.45		47.16		32.38			
	SEASON 2 TOTAL			37,890.97		23,771.28		9,699.25		7,095.27		4,907.49		4,924.62

SEASON 3 (OCT-DEC)		Days	Precursor NOx											
			2002		2007		2017		2020		2030		2040	
			Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal
	Major Roads-Starts	92	14.52	1335.84	7.43	683.38	4.04	371.40	3.24	298.36	2.54	233.22	2.57	236.07
	Major Roads-VMT	92	237.16	21819.00	139.27	12813.12	52.33	4814.27	39.57	3640.62	29.47	2711.52	30.50	2805.63
	Local Roads	92	13.66	1257.09	7.67	705.82	3.39	311.97	2.70	248.77	2.31	212.34	2.42	223.01
	School Buses	55	4.77	262.35	4.21	231.69	2.02	110.93	1.48	81.18	0.37	20.62	0.21	11.80
	Transit Buses	92	5.78	531.76	4.92	452.92	1.56	143.23	1.01	92.96	0.36	32.94	0.25	23.28
	Auto Access	61	1.99	121.39	0.67	41.01	0.33	20.41	0.28	17.19	0.25	15.36	0.34	20.95
	Total (Daily)		277.89		164.18		63.67		48.29		35.30			
	SEASON 3 TOTAL			25,327.42		14,927.94		5,772.21		4,379.09		3,226.00		3,320.74

ANNUAL TOTAL			98,473.50		60,784.38		24,271.78		17,891.10		12,594.64		12,732.28
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NOTE: With no approved mobile budgets for Precursor NOx, it is necessary to show that forecast year emission levels are no greater than the 2002 base year emissions of 98,473.5 tons/year.

EXHIBIT 19
Summary Table
Mobile Source Emissions Inventories - Winter CO
CO Maintenance Area
for 2012 CLRP and the FY 2013-2018 TIP
(Tons/Day)

	1990 Winter CO	2017 Winter CO	2020 Winter CO	2030 Winter CO	2040 Winter CO
I Network					
Start	1051.80	231.97	222.86	229.11	238.59
Running	1403.80	289.97	278.47	285.85	297.45
II Off-Network					
Local Roads	97.90	26.91	26.19	27.09	28.21
School Buses	1.20	0.33	0.22	0.12	0.06
Transit Buses	3.50	0.62	0.33	0.18	0.14
Auto Access	31.30	11.57	11.43	11.78	12.45
TOTAL	2589.5	561.4	539.5	554.1	576.9
CO Budget		1671.50	1671.50	1671.50	1671.50

EXHIBIT 20

Mobile Source VOC Emissions for the 8-Hour Ozone Nonattainment Area 2012 CLRP & FY 2013-2018 TIP



EXHIBIT 21

Mobile Source NOx Emissions for the 8-Hour Ozone Nonattainment Area 2012 CLRP & FY2013-2018 TIP

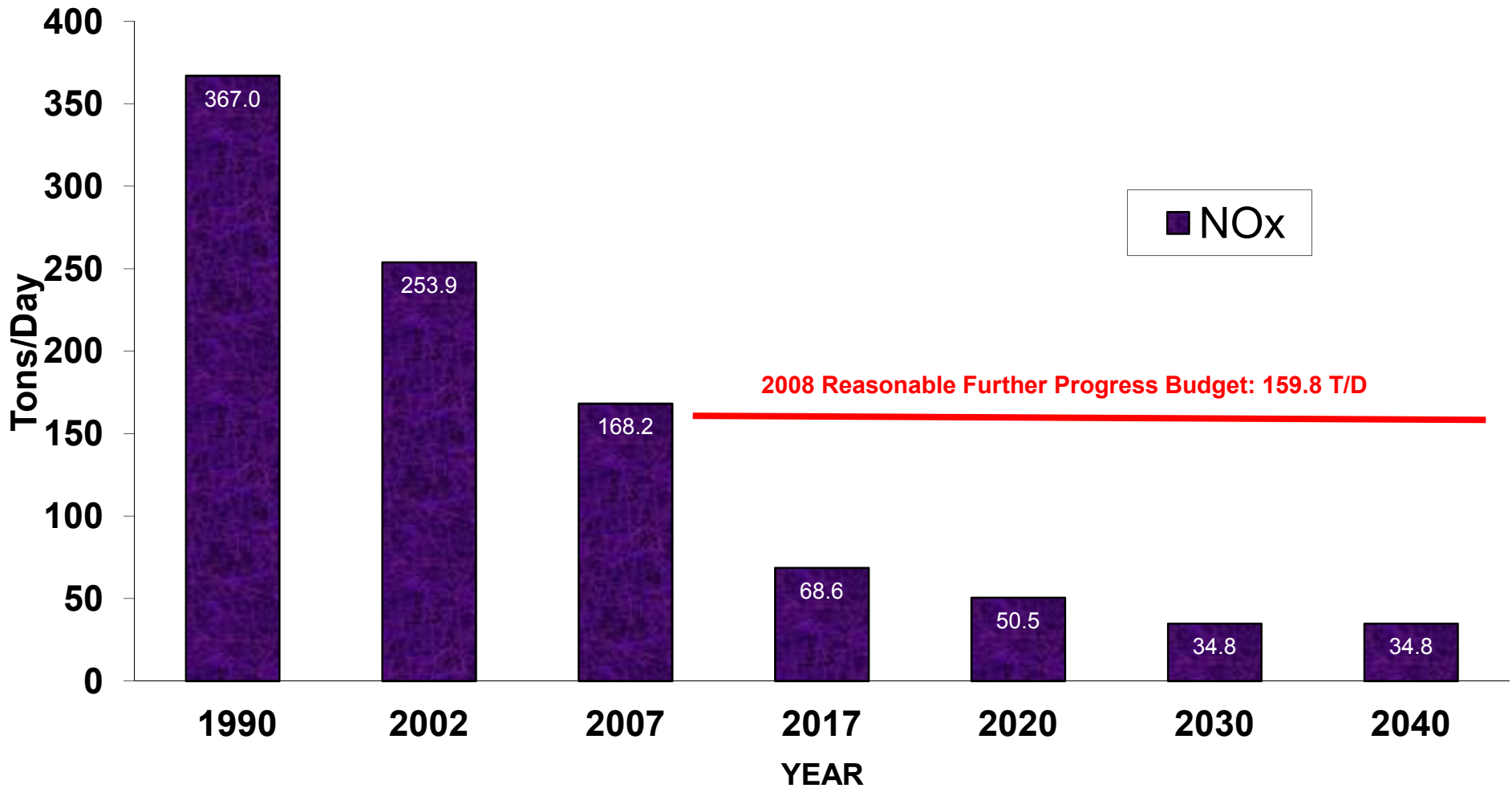


EXHIBIT 22

Mobile Source Emissions

PM_{2.5} Precursor: NOx

(tons/year in thousands)

2012 CLRP & FY2013-2018 TIP

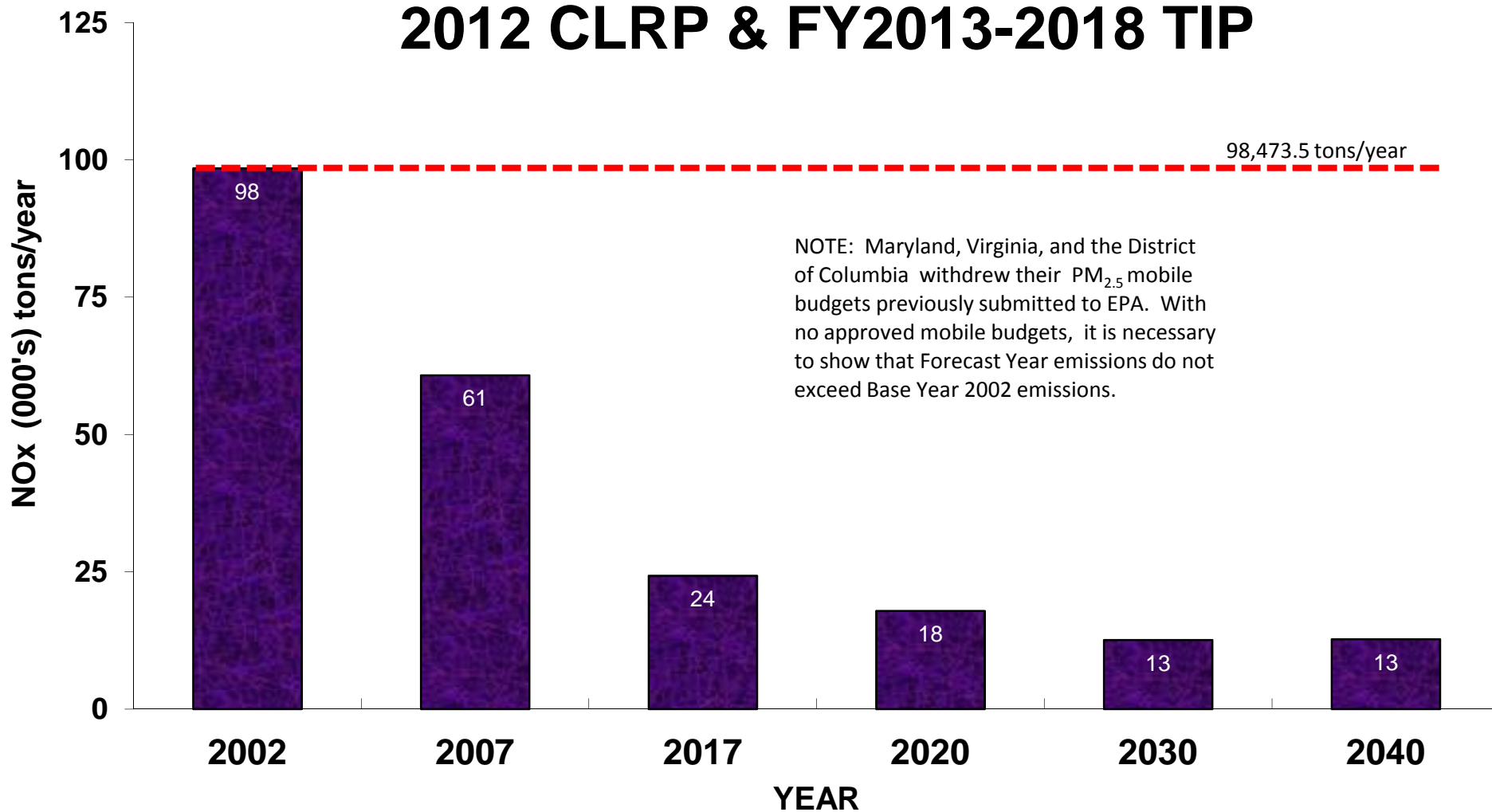


EXHIBIT 23

Mobile Source Emissions

Direct PM_{2.5} (tons/year)

2012 CLRP & FY2013-2018 TIP

1694.19 tons/year

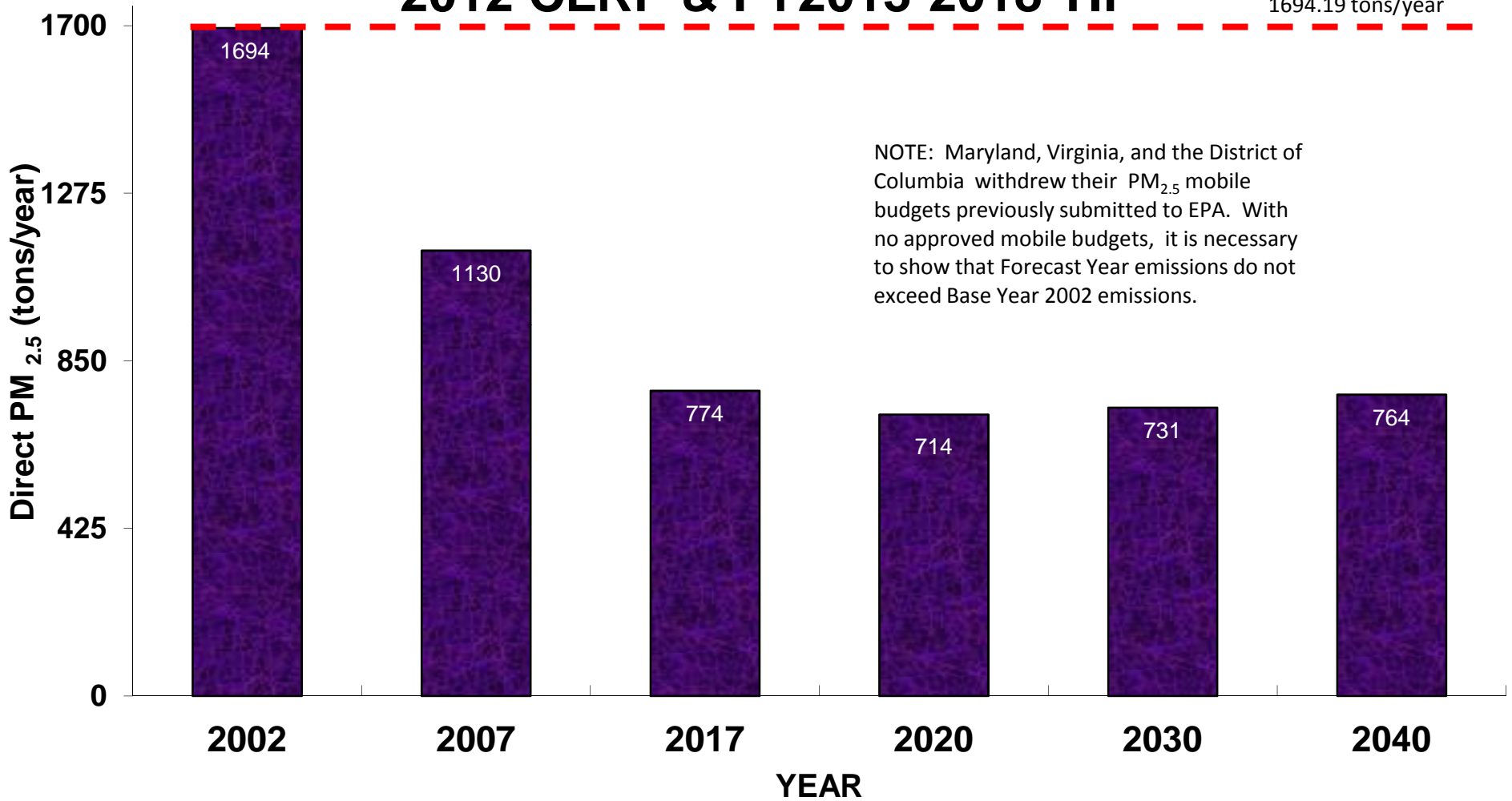
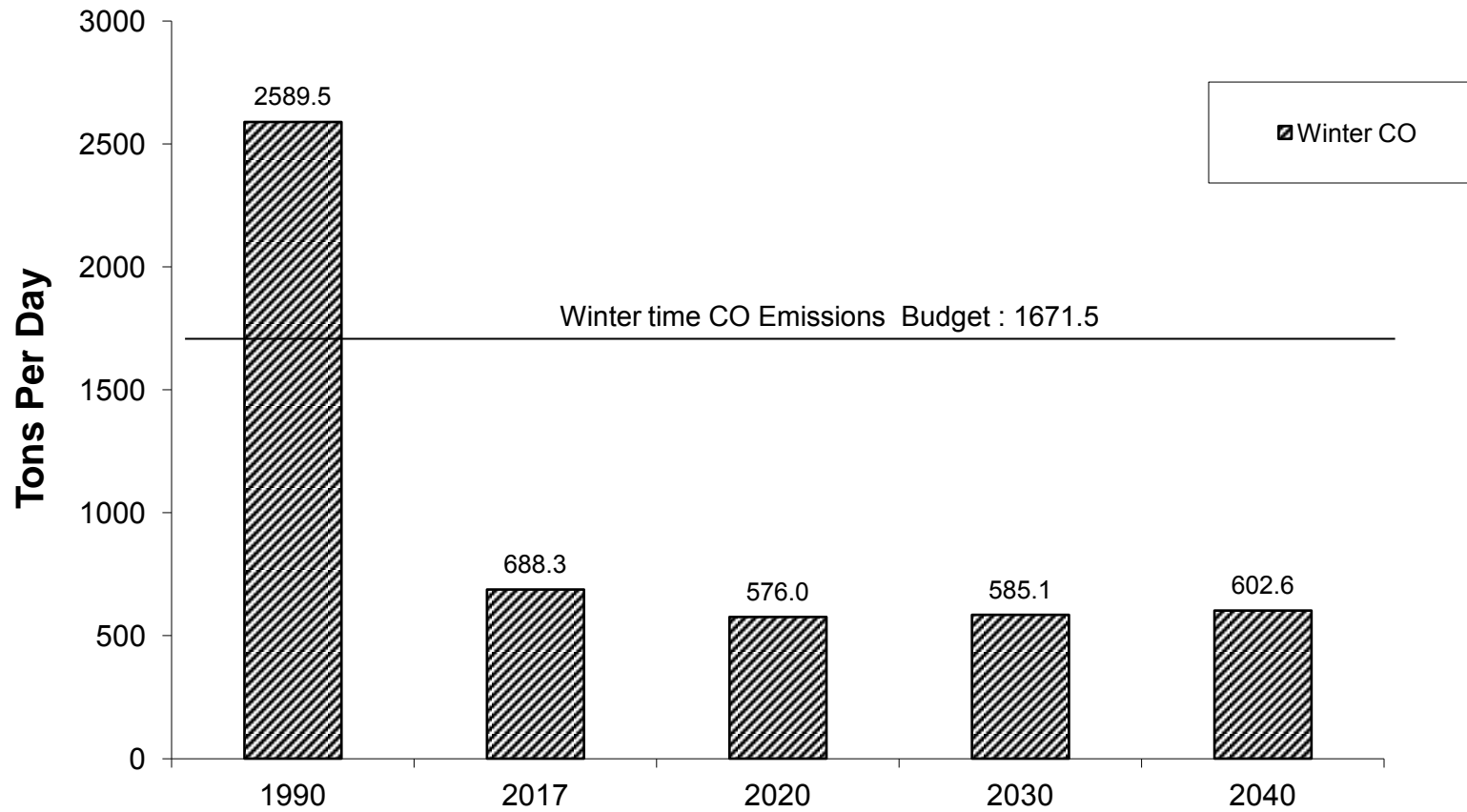


Exhibit 24 Mobile Source Winter CO Emissions 2012 CLRP and FY 2013-2018 TIP CO Maintenance Area



Transportation Emissions Reduction Measures

The emissions inventory data contained in the previous summary tables reflect total mobile source network and off-network emissions. However, there are also emissions benefits associated with certain other transportation programs and projects. These benefits, estimated on an off-line basis, are also creditable in conformity analyses. Exhibit 25 represents a summary table of these transportation emissions reduction measures, or TERMS, which have been previously planned or programmed by the TPB. They are arrayed in a 'Tracking Sheet' format to document the implementation status of each, with part A of the table documenting ozone season and part B documenting PM_{2.5} pollutants. The summary result of these measures, shown as the bottom line for each section of the table, amounts to additional reductions in each forecast year. Only those projects which have been affirmed by the implementing agency as having been completed, or are on a realistic schedule towards implementation, are being credited in this emissions analysis. These summary tables were prepared following COG staff's review of implementation status reports prepared by programming agencies; the agency status reports are contained in Appendix I. Combining network and off-network emissions results shown in each summary table with the additional reductions from TERMS would further improve the emissions margins for each pollutant.

TERM TRACKING SHEET
TRANSPORTATION EMISSION REDUCTION MEASURES (TIP Projects)
Part A - Daily Ozone Precursor Emissions

* Project Category: TR - Traffic Stream, C - Commute, H - Heavy Duty Vehicles (Engine Technology), SP- Specific Vehicle Type, TCM - Transportation Control Measures

NOs	CREDIT TAKEN	TIP CREDITED	AGENCY	PROJECT	IMPLEMENTATION STATUS				ORIGINAL COMPLETION DATE	ACTUAL COMPLETION DATE	TONS/DAY REDUCTION								Project Category *	
					FULL	SCALED-BACK	UNDER-WAY	REM			2017		2020		2030		2040			
											VOC	NOX	VOC	NOX	VOC	NOX	VOC	NOX		
9	X	1994-99	MDOT	Park & Ride Lot - MD 210/ MD 373	X				2000	2003	0.0004	0.0008	0.0003	0.0005	0.0003	0.0005	0.0003	0.0005	C	
19	X	1994-99	PRTC	VRE Woodbridge Parking Expansion (add 500 spaces)	X					2002-2003	n/a	n/a	n/a	n/a	n/a	n/a			-	
20	X	1994-99	ALEX	King St. Metrorail access improvements	X					2006	0.0008	0.0008	0.0007	0.0005	0.0006	0.0005	0.0006	0.0005	C	
38	X	1995-00	MDOT	Signal Systems - MD 85 Executive Way to MD 355	X				1996	Pre 2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	TR	
39	X	1995-00	MDOT	Signal Systems - MD 355 I-70 ramps to Grove Rd.	X				1996	n/a	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	TR	
44	X	1995-00	MDOT	Signal Systems - MD 410, 62nd Ave. to Riverdale Rd.	X				1996	2002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	TR	
48	X	1995-00	MDOT	MARC Replacement Coaches	X				1999	2004	0.0004	0.0008	0.0003	0.0005	0.0003	0.0005	0.0003	0.0005	C (TCM)	
49	X	1995-00	MDOT	MARC Expansion Coaches	X				1999	2004	0.0038	0.0072	0.0029	0.0051	0.0026	0.0042	0.0026	0.0042	C (TCM)	
51	X	1995-00	VDOT	Alexandria Telecommuting Pilot Program	X					2000 & 2001	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000	C	
52	X	1995-00	VDOT	Fairfax County Bus Shelter (Fairfax Co. TDM program)				X	2000	2001	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000	C	
54	X	1995-00	VDOT	City of Fairfax Bus Shelters	X				1999	2004	0.0000	0.0003	0.0000	0.0002	0.0000	0.0002	0.0000	0.0002	C (TCM)	
56	X	1995-00	VDOT	Cherry Hill VRE Access				X		Jul-08	0.0029	0.0062	0.0023	0.0044	0.0020	0.0036	0.0020	0.0036	C (TCM)	
58	X	1995-00	WMATA	Bus Replacement (172 buses)	X				1998	1998	0.0488	0.1383					0.0000	0.0000	SP (TCM)	
59	X	1995-00	MCG	Shady Grove West Park and Ride				X	2010		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	C	
60	X	1995-00	MCG	White Oak Park and Ride				X	2010		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	C	
61	X	1995-00	MCG	Bicycle Facilities				X	FY99		0.0013	0.0005	0.0010	0.0004	0.0009	0.0003	0.0009	0.0003	C	
62	X	1995-00	MCG	Pedestrian Facilities to Metrorail				X			0.0021	0.0021	0.0016	0.0015	0.0015	0.0012	0.0015	0.0012	C	
63	X	1995-00	MDOT	MARC Replacement Coaches	X				1999	2004	0.0017	0.0031	0.0013	0.0022	0.0012	0.0018	0.0012	0.0018	C	
64	X	1995-00	MDOT	MARC Expansion Coaches	X				1999	2004	0.0133	0.0269	0.0104	0.0189	0.0094	0.0157	0.0093	0.0157	C (TCM)	
66	X	1995-00	VDOT	Commuter Lots - District Wide	X				varies	1995, 2001	0.0046	0.0085	0.0036	0.0060	0.0032	0.0050	0.0032	0.0050	C	
67	X	1995-00	VDOT	I-66 and Stringfellow Rd. Park and Ride	X				2000	2000 end	0.0042	0.0052	0.0033	0.0036	0.0029	0.0030	0.0029	0.0030	C	
68	X	1995-00	VDOT	Lake Ridge Park and Ride (now called Tacketts Mill lot)	X					1999/2000	0.0000	0.0026	0.0000	0.0018	0.0000	0.0015	0.0000	0.0015	C	
69	X	1995-00	VDOT	Bicycle Trails and Facilities (Arlington & Fairfax Co - 7 locations)				X	varies	2010-12	0.0008	0.0044	0.0007	0.0031	0.0006	0.0026	0.0006	0.0026	C	
70	X	1995-00	VDOT	Improved Access to Metrorail Stations (VRE 2 Stn)				X	varies	2000-2012	0.0002	0.0003	0.0002	0.0002	0.0001	0.0002	0.0001	0.0002	C	
71	X	1995-00	VDOT	I-66 HOV access at Monument Dr.	X					1997	0.0021	0.0026	0.0033	0.0036	0.0029	0.0030	0.0029	0.0030	C	
72	X	1995-00	DC	Bicycle Facilities	X						0.0100	0.0052	0.0078	0.0036	0.0070	0.0030	0.0070	0.0030	C	
73	X	1995-00	REGION	COG Regional Ridesharing Support	X					on-going	0.0315	0.0436	0.0249	0.0309	0.0227	0.0257	0.0225	0.0257	C	
74	X	1995-00	REGION	M-47 Integrated Ridesharing	X					on-going	0.0089	0.0124	0.0071	0.0088	0.0064	0.0074	0.0064	0.0073	C	
75	X	1995-00	REGION	M-92 Telecommuting Support	X					on-going	0.0472	0.0600	0.0371	0.0424	0.0334	0.0352	0.0332	0.0351	C	
77		1996-01	VDOT	Duke Street Pedestrian Bridge	X				2005	2007	n/a	n/a	n/a	n/a	n/a	n/a			-	
79	X	1996-01	VDOT	Fairfax County Bus Shelters (30 shelters with project #85)				X	1999	Summer 2001	0.0008	0.0008	0.0007	0.0005	0.0006	0.0005	0.0006	0.0005	C	
81	X	1996-01	VDOT	Arlington County Metrocheck Program	X				1997	1997 Onwards	0.0008	0.0008	0.0007	0.0005	0.0006	0.0005	0.0006	0.0005	C	
82	X	1996-01	VDOT	Old Dominion Drive Bike Trail				X	2000	2010-11	0.0004	0.0003	0.0003	0.0002	0.0003	0.0002	0.0003	0.0002	C	
83	X	1996-01	WMATA	Bus Replacement (see line 58, above)	X					1998	Credit taken in line 58, above								SP	
85	X	1996-01	VDOT	Fairfax County Bus Shelters (30 shelters with project #79)	X				1999	2001	0.0004	0.0003	0.0003	0.0002	0.0003	0.0002	0.0003	0.0002	C	
90	X	1996-01	REGION	M-47c Employer Outreach / Guaranteed Ride Home	X					on-going	0.3666	0.4640	0.2878	0.3274	0.2594	0.2721	0.2578	0.2714	C	
91	X	1996-01	REGION	M-70a Bicycle Parking				X	1999		0.0029	0.0018	0.0023	0.0013	0.0020	0.0011	0.0020	0.0011	C	
92	X	STADIUM ANALYSIS	M-92 Telecommuting Support ¹	Combined with item #75								0.0000	0.0000							C
95	X	1997-02	MCG	Germantown Transit Center	X				2005		0.0021	0.0049	0.0016	0.0035	0.0015	0.0029	0.0015	0.0029	C (TCM)	
102	X	1997-02	PG	Prince George's County Bus Replacement	X				1998	1998	0.0021	0.0049							SP (TCM)	

TERM TRACKING SHEET
TRANSPORTATION EMISSION REDUCTION MEASURES (TIP Projects)
Part A - Daily Ozone Precursor Emissions

* Project Category: TR - Traffic Stream, C - Commute, H - Heavy Duty Vehicles (Engine Technology), SP- Specific Vehicle Type, TCM - Transportation Control Measures

NOs	CREDIT TAKEN	TIP CREDITED	AGENCY	PROJECT	IMPLEMENTATION STATUS				ORIGINAL COMPLETION DATE	ACTUAL COMPLETION DATE	TONS/DAY REDUCTION								Project Category *
					FULL	SCALED-BACK	UNDER-WAY	REM			2017		2020		2030		2040		
											VOC	NOX	VOC	NOX	VOC	NOX	VOC	NOX	
106	X	1997-02	VDOT	PRTC Employer Commuting Outreach Program	X					1977 on-going	0.0008	0.0001	0.0007	0.0001	0.0006	0.0001	0.0006	0.0001	C
107	X	1997-02	VDOT	PRTC Multimodal Strategic Marketing Implementation Plan	X					1977 on-going	0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	C
108	X	1997-02	MDOT	M-103 Taxicab Replacement in Maryland ²	X				2005	Stopped	0.0564	0.1468	0.1340	0.1827	0.3120	0.4810			SP
109	X	1997-02	REGION	M-70b Employer Outreach for Bicycles	X				1998	on going	0.0004	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	C
110		1997-02	VDOT	M-77b Vanpool Incentive Programs in Virginia				X	1999	delayed	n/a	n/a	n/a	n/a	n/a	n/a			C
111	X	1998-03	WMATA	Bus Replacement (108 buses)	X				1999	1999	0.0318	0.0887							SP
112	X	1998-03	MCG	Montgomery County Bus Replacement	X					Ongoing	0.0057	0.0148							SP
113	X	1998-03	PG	Prince George's County Bus Replacement	X				1998	Ongoing	0.0007	0.0011							SP
114	X	1998-03	FDC	Frederick County Bus Replacement	X						0.0007	0.0000							SP
117	X	1998-03	VDOT	Arlington County Four Mile Run Bike Trail	X				1999	2009	0.0004	0.0003	0.0003	0.0002	0.0003	0.0002	0.0003	0.0002	C
118	X	1998-03	VDOT	Northern Virginia Turn Bays	X				2000	1998	0.0004	0.0005	0.0003	0.0003	0.0003	0.0002	0.0003	0.0002	TR
119	X	1998-03	VDOT	Fairfax City Bus Replacement	X				2001	2003	n/a	n/a							SP
121	X	1998-03	WMATA	WMATA Bus Replacement (252 buses)	X				2001	2001	0.0750	0.2118							SP
122	X	97 & 98 TIP	REGION	M-101a Mass Marketing Campaign (Consumer)			X			2005	0.0187	0.0205	0.0145	0.0144	0.0129	0.0119	0.0128	0.0118	C
123	X	1999-04	MDOT	Various Park and Ride Lots(I-270/MD124, 450 & I-170/MD-75, 54 spaces)		X			2001/1999	2001	0.0033	0.0093	0.0026	0.0066	0.0023	0.0054	0.0023	0.0054	C
124	X	1999-04	MDOT	Signal Systems (197/MD-198, MD-382 TO US-301,US301)	X				2000	2002	0.0052	-0.0010	0.0041	-0.0005	0.0037	-0.0004	0.0037	-0.0003	TR
125	X	1999-04	VDOT	Transit Center at 7 Corners	X				2002	2001	0.0004	0.0005	0.0003	0.0004	0.0003	0.0003	0.0003	0.0003	C
126	X	1999-04	VDOT	Falls Church Clean Diesel Bus Service	X				2000	2003	0.0028	0.0027							SP
127	X	1999-04	VDOT	VA 234 Bike Trail			X		2001	2010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	C
128	X	1999-04	VDOT	PRTC Ridesharing	X				on-going	2000 ongoing	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	C
130	X	1996-01	VDOT	M-14: I-66 Feeder Bus Fare Buy Down	X					1998 onward	0.0104	0.0142	0.0082	0.0100	0.0073	0.0083	0.0073	0.0083	C
131	X	2000-05	MDOT	Various park and Ride Lots	x				2002	2003	0.0029	0.0084	0.0023	0.0059	0.0020	0.0049	0.0020	0.0049	C
132	X	2000-05	MDOT	Signal Systems	X				Varies	on-going	0.0013	0.0000	0.0016	0.0000	0.0009	0.0000	0.0009	0.0000	TR
133	X	2000-05	VDOT	250 Spaces at Gambrell/Hoopes Rds, Park and Ride	X				2002	2004	0.0029	0.0047	0.0023	0.0033	0.0020	0.0027	0.0020	0.0027	C
134	X	2000-05	VDOT	300 Spaces at Backlick Rd	X				2003	2007	0.0021	0.0034	0.0016	0.0024	0.0015	0.0020	0.0015	0.0020	C
135	X	2000-05	VDOT	Accotink-Gateway Connector Trail	X				2002	2005	0.0029	0.0026	0.0023	0.0018	0.0020	0.0015	0.0020	0.0015	C
136	X	2000-05	VDOT	Columbia Pike Trail	X				2000	2009	0.0025	0.0021	0.0020	0.0015	0.0018	0.0012	0.0017	0.0012	C
137	X	2000-05	VDOT	Lee Highway trail	X				2000	2007	0.0013	0.0010	0.0010	0.0007	0.0009	0.0006	0.0009	0.0006	C
138	X	2000-05	VDOT	Arlington Bus Shelter Improvements	X				2005	2005	0.0004	0.0003	0.0003	0.0002	0.0003	0.0002	0.0003	0.0002	C
139	X	2000-05	VDOT	Pentagon Metrostation Improvements	X					2003	0.0033	0.0044	0.0026	0.0031	0.0023	0.0026	0.0023	0.0026	C
140	X	2000-05	MDOT	East/West Intersection Improvements			X		2005	2005	0.0171	0.0065	0.0134	0.0046	0.0120	0.0038	0.0119	0.0038	C
141	X	2001-06	Feds	Federal Transit/Ridesharing subsidy	X				on-going		0.0425	0.0494	0.0333	0.0348	0.0298	0.0288	0.0296	0.0288	C
142	X	2002-07	WMATA	100 CNG buses	X				2002		0.0000	0.0745							SP (TCM)
143	X	2002-07	WMATA	ULSD with CRT filters	X				2006	Jun-06	0.1485	0.0000	0.4300	0.0000	0.4300	0.0000	0.4271	0.0000	H (TCM)
144		2003-08	DC	Replace 23 12 Taxicabs with CNG cabs				X	2005	2006	0.0063	0.0086							H
145	X	2003-08	DC	D.C.Incident Response & TrafficManagement System	X				2005	2004	0.0120	0.0209	0.0094	0.0130	0.0085	0.0089	0.0084	0.0089	TR
146	X	2003-08	DC	Bicycle Lane in D. C. (35 Mile)	X				2005	2008	0.0069	0.0046	0.0054	0.0032	0.0049	0.0027	0.0048	0.0027	C (TCM)
147	X	2003-08	DC	Bicycle Racks in D. C. (500)	X				2005	2004	0.0010	0.0005	0.0008	0.0004	0.0007	0.0003	0.0007	0.0003	C (TCM)
148	X	2003-08	DC	External Bicycle Racks on WMATA Buses in D. C. (600)	X				2005	2003	0.0014	0.0017	0.0011	0.0012	0.0010	0.0010	0.0010	0.0010	C (TCM)
149		2003-08	DC	CNG Rental Cars (18)				X	2005		0.0000	0.0001							SP

TERM TRACKING SHEET
TRANSPORTATION EMISSION REDUCTION MEASURES (TIP Projects)
Part A - Daily Ozone Precursor Emissions

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NOs	CREDIT TAKEN	TIP CREDITED	AGENCY	PROJECT	IMPLEMENTATION STATUS				ORIGINAL COMPLETION DATE	ACTUAL COMPLETION DATE	TONS/DAY REDUCTION								Project Category *
					FULL	SCALED-BACK	UNDER-WAY	REM			2017		2020		2030		2040		
											VOC	NOX	VOC	NOX	VOC	NOX	VOC	NOX	
150	X	2003-08	DC	Sidewalks in D.C. (\$ 5 million)	X				2005	2004	0.0261	0.0303	0.0204	0.0213	0.0183	0.0177	0.0182	0.0176	C
151	X	2003-08	DC	CNG Refuse Haulers (2)	X				2005	2004	0.0000	0.0011							H (TCM)
152	X	2003-08	DC	Circulator /Feeder Bus Routes	X				2005	2003	0.0095	0.0109	0.0074	0.0077	0.0067	0.0064	0.0066	0.0064	C
153	X	2003-08	MDOT	Commuter Tax Credit	X				2005	n/a	0.0569	0.0667	0.0445	0.0470	0.0399	0.0390	0.0397	0.0389	C
155		2003-08	MDOT	Employer Vanpool Program (WWB)				X	2005		0.0013	0.0023							C
156	X	2003-08	MDOT	Green Line Link			X		2005	n/a	0.0019	0.0026	0.0015	0.0018	0.0013	0.0015	0.0013	0.0015	C
157	X	2003-08	MDOT	Park & Ride Lots - Southern Maryland			X		2005	2005	0.0036	0.0059	0.0028	0.0042	0.0025	0.0035	0.0025	0.0035	C
158	X	2003-08	MDOT	Prince George's County- Bus Exp			X		2005	n/a	0.0261	0.0358	0.0204	0.0252	0.0183	0.0209	0.0182	0.0209	C
159	X	2003-08	MDOT	MTA - Bus Service Expansion			X		2005	n/a	0.0059	0.0086	0.0046	0.0060	0.0041	0.0050	0.0041	0.0050	C
160	X	2003-08	MDOT	Ride-On - Super Discount			X		2005	n/a	0.0007	0.0008	0.0005	0.0005	0.0005	0.0005	0.0005	0.0004	C
161	X	2003-08	Regional	Regional Traveler Information Systems			X		2005	A:2000 before	0.0750	0.3139	0.0594	0.1701	0.0533	0.1157	0.0530	0.1154	TR
162	X	2003-08	MDOT	Universal Transportation Access (MD + WMATA)			X		2005	n/a	0.0117	0.0136	0.0091	0.0096	0.0082	0.0079	0.0081	0.0079	C
163	X	2003-08	MCG	Construction of 1300 additional Parking Spaces at Grosvenor Metro Garage	X				2004		0.0033	0.0057	0.0026	0.0040	0.0025	0.0036	0.0024	0.0036	C (TCM)
164	X	2003-08	MCG	Bethesda Shuttle Bus Services	X				2004		0.0023	0.0026	0.0018	0.0018	0.0016	0.0015	0.0016	0.0015	C
165	X	2003-08	MCG	External Bicycle Racks on Ride-On Buses in Montgomery County	X				2004		0.0004	0.0005	0.0003	0.0004	0.0003	0.0003	0.0003	0.0003	C
166	X	2003-08	MCG	New CNG Powered Light Duty Vehicle fleet in the County	X				2004		0.0000	0.0001							SP
167	X	2003-08	MCG	Free Bus Service on Selected Routes on I-270	X				2004		0.0008	0.0009	0.0006	0.0006	0.0005	0.0005	0.0005	0.0005	C
168	X	2003-08	MCG	Annual Sidewalk Program	X				2004		0.0124	0.0144	0.0097	0.0102	0.0087	0.0084	0.0087	0.0084	C
169		2003-08	MDOT	Bethesda Breeze/International Express Metrobus				X	2005	Removed	0.0027	0.0029	0.0021	0.0020	0.0019	0.0017	0.0019	0.0017	C
170		2003-08	MDOT	Bethesda-8, Silver Spring Downtown Dasher and Prince Georges Co. Shuttles at 3 PNR lot				X	2005	Removed	0.0064	0.0057	0.0050	0.0040	0.0045	0.0033	0.0045	0.0033	C
171		2003-08	MDOT	Proposed Transportation Management District in Montgomery County (Rockville and Gaithersburg)				X	2005	Removed	0.0042	0.0043	0.0033	0.0030	0.0029	0.0025	0.0029	0.0025	C
172	X	2003-08	MDOT	Sidewalks (Bikes/Pedestrian) at / near Rail Stations	X				2005	2002	0.0068	0.0080	0.0053	0.0057	0.0048	0.0047	0.0047	0.0047	C
173	X	2003-08	MDOT	Neighborhood Sidewalks Improvements (Bike/Pedestrian)	X				2005	2004	0.0024	0.0009	0.0018	0.0006	0.0017	0.0005	0.0016	0.0005	C
174	X	2003-08	MDOT	Neighborhood Conservation Program - Neighborhood Sidewalks Improvements (Bikes/Pedestrian)		X			2005	Ongoing	0.0021	0.0008	0.0016	0.0006	0.0015	0.0005	0.0014	0.0005	C
175	X	2003-08	MDOT	Maryland bus Transit Service Expansion	X				2005	2004	0.0103	0.0176	0.0080	0.0124	0.0072	0.0103	0.0072	0.0103	C
176	X	2003-08	VDOT	Universal Transportation Access Program	X				2005	2005-07	0.0009	0.0010	0.0007	0.0007	0.0006	0.0006	0.0006	0.0006	C
177	X	2003-08	VDOT	Interactive Rideshare & Kiosk Initiative			X		2008 onward		0.0003	0.0004	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	C
178	X	2003-08	VDOT	Mobile Commuter Stores	X				2005	2005	0.0016	0.0021	0.0012	0.0015	0.0011	0.0012	0.0011	0.0012	C
179	X	2003-08	VDOT	Telework Incentive Program (Telework VA) ¹	X				2005	Fall 2006	0.0005	0.0007	0.0004	0.0005	0.0004	0.0004	0.0004	0.0004	C
180	X	2003-08	VDOT	Commuter Choice	X				2005		0.0007	0.0008	0.0005	0.0005	0.0005	0.0004	0.0005	0.0004	C
181		2003-08	VDOT	Employer Shuttle Services				X	2005		0.0083	0.0091	0.0065	0.0064	0.0058	0.0053	0.0058	0.0053	C
184	X	2003-08	VDOT	Van Start / Van Save	X				2005	till 2006	0.0010	0.0014							C
185	X	2003-08	VDOT	Metro Shuttle Bus			X		2005	1999-2005	0.0009	0.0014	0.0007	0.0010	0.0006	0.0008	0.0006	0.0008	C
187	X	2003-08	VDOT	VRE Mid-Day Train Service	X				2005	2002	0.0011	0.0016	0.0009	0.0011	0.0008	0.0009	0.0008	0.0009	C
190	X	2003-08	VDOT	Employer Vanpool Program (Bridge deck)	X				2005	2004 - 2008	0.0000	0.0000							C
191	X	2003-08	VDOT	Town of Leesburg P&R Lot	X				2005	2010	0.0014	0.0021	0.0011	0.0015	0.0010	0.0012	0.0010	0.0012	C
192	X	2003-08	VDOT	District-wide P&R Lots	X				2005	2001-2005	0.0082	0.0122	0.0064	0.0086	0.0058	0.0071	0.0057	0.0071	C
193	X	2003-08	VDOT	Additional Parking at 4 Metro stations	X				2005	2005	0.0106	0.0182	0.0083	0.0128	0.0074	0.0106	0.0074	0.0106	C
196	X	2003-08	WMATA	64 CNG Buses (Purchased in 2001)	X				2005	2004	0.0015	0.0478							SP (TCM)
197	X	2003-08	WMATA	250 CNG Buses (175 buses by Dec. 2004; 75 buses by mid 2006)	X				2005	Jun-06	0.0058	0.1866							SP

TERM TRACKING SHEET
TRANSPORTATION EMISSION REDUCTION MEASURES (TIP Projects)
Part A - Daily Ozone Precursor Emissions

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					FULL	SCALED-BACK	UNDER-WAY	REM			2017		2020		2030		2040			
											VOC	NOX	VOC	NOX	VOC	NOX	VOC	NOX		
198	X	2003-08	WMATA	60 Engine Replacement (MY 1992 & 1993 MY buses)	X				2004	2004	0.0098	0.0414								SP
199	X	2003-08	WMATA	Car Sharing Program	X				2005	2004	0.0006	0.0010	0.0005	0.0007	0.0004	0.0006	0.0004	0.0006		C
200	X	2003-08	WMATA	Bikes Racks on WMATA Buses in VA (372 Bike Racks)	X				2005	2004	0.0009	0.0010	0.0007	0.0007	0.0006	0.0007	0.0006	0.0007		C (TCM)
202		2003-08	MDOT	Fleet Replacement (state auto fleet, gas to hybrid, 250 vehicles)				X	2005		0.004	0.007	0.0055	0.0133						SP
203	X	2003-08	MDOT	Replace 55 Montgomery County 10 yr. old buses w/ new CNG buses			X		2005	Ongoing	0.0325	0.0893	0.0459	0.1628						SP
204		2003-08	MDOT	Neighborhood Bus Shuttle (5 circulator routes)				X	2005		0.005	0.007	0.0043	0.0047	0.0038	0.0039	0.0038	0.0039		C
205	X	2003-08	MDOT	New Surface Parking at Transit Centers (500 spaces)			X		2005	2005	0.0019	0.0033	0.0015	0.0023	0.0013	0.0019	0.0013	0.0019		C
206		2003-08	MDOT	Additional Bike Lockers at Metro-Stations				X	2005		0.0096	0.0114	0.0075	0.0080	0.0067	0.0067	0.0067	0.0066		C
207	X	2003-08	MDOT	Bike Facilities at PnR Lots or other similar location			X		2005	2005	0.0068	0.0090	0.0053	0.0064	0.0048	0.0053	0.0047	0.0053		C
208		2003-08	MDOT	CNG Fueling Stations				X	2005		0.0898	0.0642								SP
209		2003-08	MDOT	Gas cap replacements (ROP Credit)			X		2005		N/A	N/A	N/A	N/A	N/A	N/A				SP
210		2003-08	MDOT	Gas can turnover (ROP Credit)			X		2005		N/A	N/A	N/A	N/A	N/A	N/A				SP
211	X	2003-08	MDOT	External Bicycle Racks on WMATA Buses (486 MD buses)	X				2005	2002	0.0010	0.0012	0.0008	0.0008	0.0007	0.0007	0.0007	0.0007	0.0007	C (TCM)
212	X	2003-08	MDOT	Bike \ Pedestrian Trail - Anacostia River Walk			X		2005	Ongoing	0.0004	0.0003	0.0003	0.0002	0.0003	0.0001	0.0003	0.0001		C
213		2003-08	MDOT	Transit Prioritization - Queue Jumps				X	2005		0.002	0.002	0.0018	0.0014	0.0016	0.0012	0.0016	0.0012		C
214	X	2003-08	MDOT	Commuter Choice Benefit/Tax Credit - Marketing Expansion	X				2005	Ongoing	0.0398	0.0469	0.0311	0.0330	0.0279	0.0274	0.0277	0.0273		C
215	X	2003-08	MDOT	Improvements to Pedestrian Access in TOD areas (4 locations)			X		2005	Ongoing	0.0043	0.0047	0.0034	0.0033	0.0030	0.0028	0.0030	0.0028		C
216	X	2003-08	MDOT	Telecommuting Expansion ¹	X				2005	Ongoing	0.0470	0.0659	0.0367	0.0464	0.0330	0.0385	0.0327	0.0384		C
217		2003-08	MDOT	Replace older Diesel Engine in Public Sector vehicles				X	2005		0.0168	0.0713								H
218	X	2003-08	VDOT	MV-92 Telecommuting Program - Expanded ¹	X				2005	2005	0.0502	0.0704	0.0392	0.0496	0.0352	0.0411	0.0350	0.0410		C
219	X	2003-08	VDOT	MV-123 Employer Outreach for Public Sector Employees ²	X				2005	2003	0.0111	0.0129	0.0087	0.0091	0.0078	0.0076	0.0078	0.0075		C
220	X	2003-08	REGION	Signal System Optimization	X				2005	2005	0.3174	0.0762	0.2509	0.0475	0.2252	0.0324	0.2194	0.0310		TR
221	X	2007-12	MDOT	Two P & R Lots in Frederick County (99 spaces)	X				2007	2008	0.0006	0.0009	0.0005	0.0007	0.0005	0.0005	0.0004	0.0005		C
222	X	2007-12	MDOT	MDOT P & R Lots at US 340 (66-99 spaces, Frederick Co.)	X				2007	2007	Credits shown in TS 221 (for 99 spaces)									
223	X	2008-13	MDOT	MCG/MDOT P & R Lots at US 340 & Mt Zion Rd. (37 spaces)	X				2008	2008	0.0005	0.0007	0.0004	0.0005	0.0003	0.0004	0.0003	0.0004		
224	X	2008-13	MDOT	MCG/MDOT P & R Lots at US 340 & Mt Zion Rd. - expansion (39 spaces)			X		2011	2011	Credits included in TS 224 (for 37+ 39 spaces)									
225	X	2008-13	MDOT	MCG/MDOT P & R Lots at I 70 & MD 355 (100 spaces)			X		2010	2010	0.0006	0.0009	0.0005	0.0007	0.0005	0.0006	0.0005	0.0006		
226	X	2008-13	MDOT	MCG/MDOT P & R Lots at I 270 & MD 80 (164 spaces)	X				2009	2009	0.0010	0.0015	0.0008	0.0011	0.0007	0.0009	0.0007	0.0009		
227	X	2008-13	MDOT	MDOT Sygla System Reviewing			X		2010	on-going	Credits shown in Regional signal TERM - TS 220									
228	X	2008-13	MDOT	MDOT Takoma Langely Transit Center			X		2012	2012	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
Available Emissions Credits											1.810	2.707	1.483	1.167	1.335	0.800	1.322	0.796		

**TRANSPORTATION EMISSION REDUCTION MEASURES (CLRP Projects Only)
Part A - Daily Ozone Precursor Emissions**

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					FULL	SCALED-BACK	UNDER-WAY	REM			2017		2020		2030		2040		
											VOC	NOx	VOC	NOx	VOC	NOx	VOC	NOx	
221	X	1995-00 TIP	REGION	M-24 Speed Limit Adherence	X				2010		-0.0053	0.1501	-0.0021	0.1206	0.0005	0.0377	0.0005	0.0376	TR
222		1996-01 TIP	MGC	Rock Spring Park Pedestrian Amenities				X			0.0007	0.0022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-
223	X	1996-01 TIP	MGC	Olney Transit Center Park and Ride					2015		0.0014	0.0044	0.0009	0.0030	0.0003	0.0007	0.0003	0.0007	C
224	X	1996-01 TIP	MGC	Damascus Park and Ride						2003	0.0007	0.0022	0.0004	0.0015	0.0001	0.0003	0.0001	0.0003	C
225		1996-01 TIP	DC	M-103 Taxicab Replacement (DC)				X	2015		0.0000	0.0000	0.1745	0.3000	0.3490	0.6000	0.3467	0.5984	H
226		STADIUM ANALYSIS		M-103 Taxicab Replacement (MD)				X	2008		0.0000	0.0000	0.1560	0.2400	0.1560	0.2400	0.1550	0.2394	H
227		1997-02 TIP	MDOT	Shady Grove West Transit Center Park and Ride				X			0.0000	0.0055	0.0000	0.0038	0.0000	0.0009	0.0000	0.0009	C
228	X	1997-02 TIP	MGC	Olney Transit Center Park and Ride					2015		0.0000	0.0000	0.0004	0.0012	0.0003	0.0007	0.0003	0.0007	C
229	X	1997-02 TIP	MGC	White Oak Park and Ride					2008		0.0000	0.0110	0.0000	0.0076	0.0000	0.0017	0.0000	0.0017	C
230	X	1997-02 TIP	MGC	Damascus Park and Ride						2003	0.0000	0.0000	0.0002	0.0005	0.0001	0.0003	0.0001	0.0003	C
231	X	1997-02 TIP	MGC	Four Corners Transit Center					2015		0.0000	0.0005	0.0000	0.0004	0.0000	0.0001	0.0000	0.0001	C
232		1997-02 TIP	MGC	Burtonsville Transit Center				X			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-
233	X	1997-02 TIP	MGC	Silver Spring Transit Access							0.0000	0.0005	0.0000	0.0003	0.0000	0.0002	0.0000	0.0002	C
234	X	1997-02 TIP	MGC	Shady Grove Parking Construction						2003	0.0035	0.0104	0.0021	0.0072	0.0007	0.0017	0.0007	0.0017	C

CLRP TOTAL						0.0004	0.1792	0.0019	0.1424	0.0022	0.0434	0.0021	0.0432
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CLRP + TIP TOTAL						1.811	2.886	1.485	1.310	1.337	0.843	1.324	0.840
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DEFINITIONS: Project Numbers implemented fully prior to 2000 were removed from the TERM Tracking Sheet

CREDIT TAKEN (X means emissions reduction credits taken):

TIP - Emissions credits are taken for projects being implemented, according to the progress reporting schedules provided by the implementing agencies (contained in Appendix J of Conformity Document). No credit has been taken for projects in which only some components of the measure have been implemented.

CLRP - Credit is taken for each of these elements of the CLRP according to the schedule provided by the implementing agency.

IMPLEMENTATION STATUS:

FULL = project is completed as planned at the time of analysis.

SCALED BACK = project is completed, but at a different level than assumed at the time of analysis (i.e., purchased 50 buses instead of 100)

UNDERWAY = project is not complete, but is close enough that credit may be taken (i.e., under construction, NOT just out for bid)

REMOVED = project no longer expected to be implemented or constructed

COMPLETION DATE:

PROJECTED = project completion date originally expected (i.e., at time of emissions analysis)

ACTUAL = actual year project was open for use, or expected to be open for use if under construction

REMOVED

projects Emissions credits are not counted in total available emissions credits

1 Line items 218, 216, 179, 92 are all credited as part of M-92 Regional Telecommute Support TERM, line item # 75

2 Line item 108 & 219 credits are taken only for year 2010

TERM TRACKING SHEET
TRANSPORTATION EMISSION REDUCTION MEASURES (TIP Projects)
Part B - Yearly PM_{2.5} and Precursor NOx Emissions

* Project Category: TR - Traffic Stream, C - Commute, H - Heavy Duty Vehicles (Engine Technology), SP - Specific Vehicle Type, TCM - Transportation Control Measures

NOs	CREDIT TAKEN	TIP CREDITED	AGENCY	PROJECT	IMPLEMENTATION STATUS				ORIGINAL COMPLETION DATE	ACTUAL COMPLETION DATE	TONS/YEAR REDUCTION								Project Category *
					FULL	SCALED BACK	UNDERWAY	REMAINING			2017		2020		2030		2040		
											PM _{2.5}	Precursor NOx	PM _{2.5}	Precursor NOx	PM _{2.5}	Precursor NOx	PM _{2.5}	Precursor NOx	
9	X	1994-99	MDOT	Park & Ride Lot - MD 210/ MD 373	X				2000	2003	0.0095	0.1444	0.0095	0.1000	0.0095	0.0830	0.0095	0.0689	C
19	X	1994-99	PRTC	VRE Woodbridge Parking Expansion (add 500 spaces)	X					2002-2003	n/a	n/a	n/a	n/a	n/a				-
20	X	1994-99	ALEX	King St. Metrorail access improvements	X					2006	0.0095	0.1444	0.0095	0.1000	0.0095	0.0830	0.0095	0.0689	C
38	X	1995-00	MDOT	Signal Systems - MD 85 Executive Way to MD 355	X				1996	Pre 2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	TR
39	X	1995-00	MDOT	Signal Systems - MD 355, I-70 ramps to Grove Rd.	X				1996	n/a	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	TR
44	X	1995-00	MDOT	Signal Systems - MD 410, 62nd Ave. to Riverdale Rd.	X				1996	2002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	TR
48	X	1995-00	MDOT	MARC Replacement Coaches	X				1999	2004	0.0095	0.1444	0.0095	0.1000	0.0095	0.0830	0.0095	0.0689	C (TCM)
49	X	1995-00	MDOT	MARC Expansion Coaches	X				1999	2004	0.0891	1.3479	0.0891	0.9332	0.0891	0.7745	0.0891	0.6428	C (TCM)
51	X	1995-00	VDOT	Alexandria Telecommuting Pilot Program	X					2000 & 2001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	C
52	X	1995-00	VDOT	Fairfax County Bus Shelter (Fairfax Co. TDM program)			X		2000	2001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	C
54	X	1995-00	VDOT	City of Fairfax Bus Shelters	X				1999	2004	0.0032	0.0481	0.0032	0.0333	0.0032	0.0277	0.0032	0.0230	C (TCM)
56	X	1995-00	VDOT	Cherry Hill VRE Access			X			Jul-08	0.0764	1.1554	0.0764	0.7999	0.0764	0.6639	0.0764	0.5510	C (TCM)
58	X	1995-00	WMATA	Bus Replacement (172 buses)	X				1998	1998									SP (TCM)
59	X	1995-00	MCG	Shady Grove West Park and Ride			X		2010		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	C
60	X	1995-00	MCG	White Oak Park and Ride			X		2010		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	C
61	X	1995-00	MCG	Bicycle Facilities			X		FY99		0.0064	0.0963	0.0064	0.0667	0.0064	0.0553	0.0064	0.0459	C
62	X	1995-00	MCG	Pedestrian Facilities to Metrorail			X				0.0255	0.3851	0.0255	0.2666	0.0255	0.2213	0.0255	0.1837	C
63	X	1995-00	MDOT	MARC Replacement Coaches	X				1999	2004	0.0382	0.5777	0.0382	0.4000	0.0382	0.3319	0.0382	0.2755	C
64	X	1995-00	MDOT	MARC Expansion Coaches	X				1999	2004	0.3309	5.0066	0.3309	3.4663	0.3309	2.8768	0.3309	2.3875	C (TCM)
66	X	1995-00	VDOT	Commuter Lots - District Wide			X		varies	1995, 2001	0.1050	1.5886	0.1050	1.0999	0.1050	0.9128	0.1050	0.7576	C
67	X	1995-00	VDOT	I-66 and Stringfellow Rd. Park and Ride	X				2000	2000 end	0.0636	0.9628	0.0636	0.6666	0.0636	0.5532	0.0636	0.4591	C
68	X	1995-00	VDOT	Lake Ridge Park and Ride (now called Tacketts Mill lot)	X					1999/2000	0.0318	0.4814	0.0318	0.3333	0.0318	0.2766	0.0318	0.2296	C
69	X	1995-00	VDOT	Bicycle Trails and Facilities (Arlington & Fairfax Co - 7 locations)			X		varies	2010-12	0.0541	0.8184	0.0541	0.5666	0.0541	0.4702	0.0541	0.3903	C
70	X	1995-00	VDOT	Improved Access to Metrorail Stations (VRE 2 Stn)			X		varies	2000-2012	0.0032	0.0481	0.0032	0.0333	0.0032	0.0277	0.0032	0.0230	C
71	X	1995-00	VDOT	I-66 HOV access at Monument Dr.	X				1997		0.0636	0.9628	0.0636	0.6666	0.0636	0.5532	0.0636	0.4591	C
72	X	1995-00	DC	Bicycle Facilities	X						0.0636	0.9628	0.0636	0.6666	0.0636	0.5532	0.0636	0.4591	C
73	X	1995-00	REGION	COG Regional Ridesharing Support	X					on-going	1.7913	8.0999	1.7913	5.6245	1.7913	4.6985	1.7913	3.8994	C
74	X	1995-00	REGION	M-47 Integrated Ridesharing	X					on-going	0.6199	2.3115	0.6199	1.6052	0.6199	1.3412	0.6199	1.1131	C
75	X	1995-00	REGION	M-92 Telecommuting Support	X					on-going	1.2883	11.1658	1.2883	7.7400	1.2883	6.4410	1.2883	5.3456	C
77		1996-01	VDOT	Duke Street Pedestrian Bridge	X				2005	2007	n/a	n/a	n/a	n/a	n/a				-
79	X	1996-01	VDOT	Fairfax County Bus Shelters (30 shelters with project #85)			X		1999	Summer 2001	0.0095	0.1444	0.0095	0.1000	0.0095	0.0830	0.0095	0.0689	C
81	X	1996-01	VDOT	Arlington County Metrocheck Program	X				1997	1997 Onwards	0.0095	0.1444	0.0095	0.1000	0.0095	0.0830	0.0095	0.0689	C
82	X	1996-01	VDOT	Old Dominion Drive Bike Trail			X		2000	2010-11	0.0032	0.0481	0.0032	0.0333	0.0032	0.0277	0.0032	0.0230	C
83	X	1996-01	WMATA	Bus Replacement (see line 58, above)	X					1998									SP
85	X	1996-01	VDOT	Fairfax County Bus Shelters (30 shelters with project #79)	X				1999	2001	0.0032	0.0481	0.0032	0.0333	0.0032	0.0277	0.0032	0.0230	C
90	X	1996-01	REGION	M-47c Employer Outreach / Guaranteed Ride Home	X					on-going	3.7262	86.3012	3.7262	59.8168	3.7262	49.7675	3.7262	41.3035	C
91	X	1996-01	REGION	M-70a Bicycle Parking			X		1999		0.0223	0.3370	0.0223	0.2333	0.0223	0.1936	0.0223	0.1607	C
92	X		STADIUM ANALYSIS	M-92 Telecommuting Support ¹															C
95	X	1997-02	MCG	Germantown Transit Center	X				2005		0.0605	0.9147	0.0605	0.6333	0.0605	0.5256	0.0605	0.4362	C (TCM)
102	X	1997-02	PG	Prince George's County Bus Replacement	X				1998	1998									SP (TCM)

TERM TRACKING SHEET
TRANSPORTATION EMISSION REDUCTION MEASURES (TIP Projects)
Part B - Yearly PM_{2.5} and Precursor NOx Emissions

* Project Category: TR - Traffic Stream, C - Commute, H - Heavy Duty Vehicles (Engine Technology), SP - Specific Vehicle Type, TCM - Transportation Control Measures

NOs	CREDIT TAKEN	TIP	AGENCY	PROJECT	IMPLEMENTATION STATUS				ORIGINAL COMPLETION DATE	ACTUAL COMPLETION DATE	TONS/YEAR REDUCTION								Project Category *
					FULL	SCALED BACK	UNDERWAY	REM			2017		2020		2030		2040		
											PM _{2.5}	Precursor NOx	PM _{2.5}	Precursor NOx	PM _{2.5}	Precursor NOx	PM _{2.5}	Precursor NOx	
106	X	1997-02	VDOT	PRTC Employer Commuting Outreach Program	X				1977 on-going	0.0016	0.0241	0.0016	0.0167	0.0016	0.0138	0.0016	0.0115	C	
107	X	1997-02	VDOT	PRTC Multimodal Strategic Marketing Implementation Plan	X				1977 on-going	0.0016	0.0241	0.0016	0.0167	0.0016	0.0138	0.0016	0.0115	C	
108	X	1997-02	MDOT	M-103 Taxicab Replacement in Maryland ²	X			2005	Stopped									SP	
109	X	1997-02	REGION	M-70b Employer Outreach for Bicycles	X			1998	on going	0.0035	0.0591	0.0035	0.0406	0.0035	0.0331	0.0035	0.0274	C	
110		1997-02	VDOT	M-77b Vanpool Incentive Programs in Virginia				X	1999	delayed	n/a	n/a	n/a	n/a	n/a	n/a		C	
111	X	1998-03	WMATA	Bus Replacement (108 buses)	X				1999	1999								SP	
112	X	1998-03	MCG	Montgomery County Bus Replacement	X				Ongoing									SP	
113	X	1998-03	PG	Prince George's County Bus Replacement	X				1998	Ongoing								SP	
114	X	1998-03	FDC	Frederick County Bus Replacement	X													SP	
117	X	1998-03	VDOT	Arlington County Four Mile Run Bike Trail	X				1999	2009	0.0032	0.0481	0.0032	0.0333	0.0032	0.0277	0.0032	0.0230	C
118	X	1998-03	VDOT	Northern Virginia Turn Bays	X				2000	1998	0.0056	0.0847	0.0056	0.0587	0.0056	0.0487	0.0056	0.0404	TR
119	X	1998-03	VDOT	Fairfax City Bus Replacement	X				2001	2003									SP
121	X	1998-03	WMATA	WMATA Bus Replacement (252 buses)	X				2001	2001									SP
122	X	97 & 98 TIP	REGION	M-101a Mass Marketing Campaign (Consumer)					X	2005	0.21571884	3.8259	0.2157	2.6432	0.2157	2.1831	0.2157	1.8119	C
123	X	1999-04	MDOT	Various Park and Ride Lots(I-270/MD124, 450 & I-170/MD-75, 54 spaces)		X			2001/1999	2001	0.1146	1.7331	0.1146	1.1999	0.1146	0.9958	0.1146	0.8265	C
124	X	1999-04	MDOT	Signal Systems (197/MD-198, MD-382 TO US-301,US301)	X				2000	2002	-0.0112	-0.1695	-0.0112	-0.1173	-0.0112	-0.0974	-0.0112	-0.0808	TR
125	X	1999-04	VDOT	Transit Center at 7 Corners	X				2002	2001	0.0064	0.0963	0.0064	0.0667	0.0064	0.0553	0.0064	0.0459	C
126	X	1999-04	VDOT	Falls Church Clean Diesel Bus Service	X				2000	2003									SP
127	X	1999-04	VDOT	VA 234 Bike Trail				X	2001	2010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	C
128	X	1999-04	VDOT	PRTC Ridesharing	X				on-going	2000 ongoing	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	C
130	X	1996-01	VDOT	M-14: I-66 Feeder Bus Fare Buy Down	X					1998 onward	0.1750	2.6477	0.1750	1.8331	0.1750	1.5214	0.1750	1.2626	C
131	X	2000-05	MDOT	Various park and Ride Lots	X				2002	2003	0.1035	1.5651	0.1035	1.0836	0.1035	0.8993	0.1035	0.7464	C
132	X	2000-05	MDOT	Signal Systems	X				Varies	on-going	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	TR
133	X	2000-05	VDOT	250 Spaces at Gambrell/Hoos Rds. Park and Ride	X				2002	2004	0.0573	0.8665	0.0573	0.5999	0.0573	0.4979	0.0573	0.4132	C
134	X	2000-05	VDOT	300 Spaces at Backlick Rd	X				2003	2007	0.0414	0.6258	0.0414	0.4333	0.0414	0.3596	0.0414	0.2984	C
135	X	2000-05	VDOT	Accotink-Gateway Connector Trail	X				2002	2005	0.0318	0.4814	0.0318	0.3333	0.0318	0.2766	0.0318	0.2296	C
136	X	2000-05	VDOT	Columbia Pike Trail				X	2000	2009	0.0255	0.3851	0.0255	0.2666	0.0255	0.2213	0.0255	0.1837	C
137	X	2000-05	VDOT	Lee Highway trail	X				2000	2007	0.0127	0.1926	0.0127	0.1333	0.0127	0.1106	0.0127	0.0918	C
138	X	2000-05	VDOT	Arlington Bus Shelter Improvements	X				2005	2005	0.0032	0.0481	0.0032	0.0333	0.0032	0.0277	0.0032	0.0230	C
139	X	2000-05	VDOT	Pentagon Metrostation Improvements	X				2003	2003	0.0541	0.8184	0.0541	0.5666	0.0541	0.4702	0.0541	0.3903	C
140	X	2000-05	MDOT	East/West Intersection Improvements				X	2005	2005	0.0795	1.2035	0.0795	0.8332	0.0795	0.6915	0.0795	0.5739	C
141	X	2001-06	Feds	Federal Transit/Ridesharing subsidy	X				on-going		0.6078	9.1949	0.6078	6.3660	0.6078	5.2833	0.6078	4.3848	C
142	X	2002-07	WMATA	100 CNG buses	X				2002										SP (TCM)
143	X	2002-07	WMATA	ULSD with CRT filters	X				2006	Jun-06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	H (TCM)
144		2003-08	DC	Replace 23 Taxicabs with CNG cabs				X	2005	2006									H
145	X	2003-08	DC	D.C.Incident Response & TrafficManagement System	X				2005	2004	0.2761	4.1774	0.2761	2.8922	0.2761	2.4003	0.2761	1.9921	TR
146	X	2003-08	DC	Bicycle Lane in D. C. (35 Mile)	X				2005	2008	0.0428	0.8824	0.0428	0.6134	0.0428	0.4896	0.0428	0.4064	C (TCM)
147	X	2003-08	DC	Bicycle Racks in D. C. (500)	X				2005	2004	0.0040	0.1004	0.0040	0.0699	0.0040	0.0547	0.0040	0.0454	C (TCM)
148	X	2003-08	DC	External Bicycle Racks on WMATA Buses in D. C. (600)	X				2005	2003	0.0206	0.3135	0.0206	0.2171	0.0206	0.1800	0.0206	0.1494	C (TCM)
149		2003-08	DC	CNG Rental Cars (18)				X	2005										SP

TERM TRACKING SHEET
TRANSPORTATION EMISSION REDUCTION MEASURES (TIP Projects)
Part B - Yearly PM_{2.5} and Precursor NOx Emissions

* Project Category: TR - Traffic Stream, C - Commute, H - Heavy Duty Vehicles (Engine Technology), SP - Specific Vehicle Type, TCM - Transportation Control Measures

NOs	CREDIT TAKEN	TIP CREDITED	AGENCY	PROJECT	IMPLEMENTATION STATUS				ORIGINAL COMPLETION DATE	ACTUAL COMPLETION DATE	TONS/YEAR REDUCTION								Project Category *
					FULL	SCALED BACK	UNDERWAY	REMOVED			2017		2020		2030		2040		
											PM _{2.5}	Precursor NOx	PM _{2.5}	Precursor NOx	PM _{2.5}	Precursor NOx	PM _{2.5}	Precursor NOx	
150	X	2003-08	DC	Sidewalks in D.C. (\$ 5 million)	X				2005	2004	0.3688	5.6474	0.3688	3.9106	0.3688	3.2400	0.3688	2.6889	c
151	X	2003-08	DC	CNG Refuse Haulers (2)	X				2005	2004									H (TCM)
152	X	2003-08	DC	Circulator /Feeder Bus Routes	X				2005	2003	0.1325	2.0370	0.1325	1.4106	0.1325	1.1681	0.1325	0.9694	c
153	X	2003-08	MDOT	Commuter Tax Credit	X				2005	n/a	0.8145	12.4326	0.8145	8.6087	0.8145	7.1356	0.8145	5.9220	c
155		2003-08	MDOT	Employer Vanpool Program (WWB)				X	2005										c
156	X	2003-08	MDOT	Green Line Link			X		2005	n/a	0.0326	0.4735	0.0326	0.3276	0.0326	0.2735	0.0326	0.2270	c
157	X	2003-08	MDOT	Park & Ride Lots - Southern Maryland			X		2005	2005	0.0704	0.9732	0.0704	0.6728	0.0704	0.5660	0.0704	0.4697	c
158	X	2003-08	MDOT	Prince George's County- Bus Exp			X		2005	n/a	0.4574	6.6401	0.4574	4.5942	0.4574	3.8360	0.4574	3.1836	c
159	X	2003-08	MDOT	MTA - Bus Service Expansion			X		2005	n/a	0.1108	1.5837	0.1108	1.0955	0.1108	0.9168	0.1108	0.7609	c
160	X	2003-08	MDOT	Ride- On - Super Discount			X		2005	n/a	0.0094	0.1437	0.0094	0.0995	0.0094	0.0824	0.0094	0.0684	c
161	X	2003-08	Regional	Regional Traveler Information Systems			X		2005	VA:2000 before	3.6007	54.4758	3.6007	37.7158	3.6007	31.3014	3.6007	25.9780	TR
162	X	2003-08	MDOT	Universal Transportation Access (MD + WMATA)			X		2005	n/a	0.1654	2.5321	0.1654	1.7534	0.1654	1.4527	0.1654	1.2056	c
163	X	2003-08	MCG	Construction of 1300 additional Parking Spaces at Grosvenor Metro Garage	X				2004		0.0765	1.0500	0.0765	0.7258	0.0765	0.6113	0.0765	0.5073	c (TCM)
164	X	2003-08	MCG	Bethesda Shuttle Bus Services	X				2004		0.0316	0.4855	0.0316	0.3362	0.0316	0.2784	0.0316	0.2310	c
165	X	2003-08	MCG	External Bicycle Racks on Ride-On Buses in Montgomery County	X				2004		0.0064	0.0978	0.0064	0.0677	0.0064	0.0561	0.0064	0.0466	c
166	X	2003-08	MCG	New CNG Powered Light Duty Vehicle fleet in the County	X				2004										SP
167	X	2003-08	MCG	Free Bus Service on Selected Routes on I-270	X				2004		0.0110	0.1682	0.0110	0.1164	0.0110	0.0965	0.0110	0.0801	c
168	X	2003-08	MCG	Annual Sidewalk Program	X				2004		0.1756	2.6892	0.1756	1.8622	0.1756	1.5428	0.1756	1.2804	c
169		2003-08	MDOT	Bethesda Breeze/International Express Metrobus				X	2005	Removed	0.0345	0.5435	0.0345	0.3765	0.0345	0.3107	0.0345	0.2579	c
170		2003-08	MDOT	Bethesda-8, Silver Spring Downtown Dasher and Prince Georges Co. Shuttles at 3 PNR lot				X	2005	Removed	0.0623	1.0708	0.0623	0.7427	0.0623	0.6058	0.0623	0.5028	c
171		2003-08	MDOT	Proposed Transportation Management District in Montgomery County (Rockville and Gaithersburg)				X	2005	Removed	0.0496	0.7982	0.0496	0.5531	0.0496	0.4550	0.0496	0.3776	c
172	X	2003-08	MDOT	Sidewalks (Bikes/Pedestrian) at / near Rail Stations	X				2005	2002	0.0983	1.4944	0.0983	1.0347	0.0983	0.8581	0.0983	0.7122	c
173	X	2003-08	MDOT	Neighborhood Sidewalks Improvements (Bike/Pedestrian)	X				2005	2004	0.0038	0.1800	0.0038	0.1259	0.0038	0.0944	0.0038	0.0783	c
174	X	2003-08	MDOT	Neighborhood Conservation Program - Neighborhood Sidewalks Improvements (Bikes/Pedestrian)		X			2005	Ongoing	0.0033	0.1575	0.0033	0.1102	0.0033	0.0826	0.0033	0.0685	c
175	X	2003-08	MDOT	Maryland bus Transit Service Expansion	X				2005	2004	0.2366	3.2465	0.2366	2.2442	0.2366	1.8900	0.2366	1.5685	c
176	X	2003-08	VDOT	Universal Transportation Access Program	X				2005	2005-07	0.0124	0.1899	0.0124	0.1315	0.0124	0.1090	0.0124	0.0904	c
177	X	2003-08	VDOT	Interactive Rideshare & Kiosk Initiative			X		2008 onward		0.0049	0.0717	0.0049	0.0496	0.0049	0.0414	0.0049	0.0344	c
178	X	2003-08	VDOT	Mobile Commuter Stores	X				2005	2005	0.0273	0.3966	0.0273	0.2744	0.0273	0.2291	0.0273	0.1901	c
179	X	2003-08	VDOT	Telework Incentive Program (Telework VA) ¹	X				2005	Fall 2006	0.0080	0.1212	0.0080	0.0839	0.0080	0.0696	0.0080	0.0578	c
180	X	2003-08	VDOT	Commuter Choice	X				2005		0.0091	0.1426	0.0091	0.0988	0.0091	0.0816	0.0091	0.0677	c
181		2003-08	VDOT	Employer Shuttle Services				X	2005		0.1081	1.6924	0.1081	1.1723	0.1081	0.9682	0.1081	0.8035	c
184	X	2003-08	VDOT	Van Start / Van Save	X				2005	till 2006									c
185	X	2003-08	VDOT	Metro Shuttle Bus			X		2005	1999-2005	0.0188	0.2595	0.0188	0.1794	0.0188	0.1509	0.0188	0.1253	c
187	X	2003-08	VDOT	VRE Mid-Day Train Service	X				2005	2002	0.0204	0.2948	0.0204	0.2040	0.0204	0.1704	0.0204	0.1414	c
190	X	2003-08	VDOT	Employer Vanpool Program (Bridge deck)	X				2005	2004 - 2008									c
191	X	2003-08	VDOT	Town of Leesburg P&R Lot	X				2005	2010	0.0280	0.3948	0.0280	0.2730	0.0280	0.2289	0.0280	0.1900	c
192	X	2003-08	VDOT	District-wide P&R Lots	X				2005	2001-2005	0.1589	2.2560	0.1589	1.5604	0.1589	1.3072	0.1589	1.0848	c
193	X	2003-08	VDOT	Additional Parking at 4 Metro stations	X				2005	2005	0.2440	3.3488	0.2440	2.3149	0.2440	1.9495	0.2440	1.6180	c
196	X	2003-08	WMATA	64 CNG Buses (Purchased in 2001)	X				2005	2004									SP (TCM)
197	X	2003-08	WMATA	250 CNG Buses (175 buses by Dec. 2004; 75 buses by mid 2006)	X				2005	Jun-06									SP

TERM TRACKING SHEET
TRANSPORTATION EMISSION REDUCTION MEASURES (TIP Projects)
Part B - Yearly PM_{2.5} and Precursor NOx Emissions

* Project Category: TR - Traffic Stream, C - Commute, H - Heavy Duty Vehicles (Engine Technology), SP - Specific Vehicle Type, TCM - Transportation Control Measures

NOs	CREDIT TAKEN	TIP CREDITED	AGENCY	PROJECT	IMPLEMENTATION STATUS				ORIGINAL COMPLETION DATE	ACTUAL COMPLETION DATE	TONS/YEAR REDUCTION								Project Category *
					FULL	SCALED BACK	UNDER-WAY	REM			2017		2020		2030		2040		
											PM _{2.5}	Precursor NOx	PM _{2.5}	Precursor NOx	PM _{2.5}	Precursor NOx	PM _{2.5}	Precursor NOx	
198	X	2003-08	WMATA	60 Engine Replacement (MY 1992 & 1993 MY buses)	X				2004	2004									SP
199	X	2003-08	WMATA	Car Sharing Program	X				2005	2004	0.0133	0.1821	0.0133	0.1259	0.0133	0.1060	0.0133	0.0880	C
200	X	2003-08	WMATA	Bikes Racks on WMATA Buses in VA (372 Bike Racks)	X				2005	2004	0.0128	0.1949	0.0128	0.1350	0.0128	0.1119	0.0128	0.0929	C (TCM)
202		2003-08	MDOT	Fleet Replacement (state auto fleet, gas to hybrid, 250 vehicles)				X	2005		0.0492	0.7446	0.0492	0.5155					SP
203	X	2003-08	MDOT	Replace 55 Montgomery County 10 yr. old buses w/ new CNG buses				X	2005	Ongoing	0.6024	9.1145	0.6024	6.3103					SP
204		2003-08	MDOT	Neighborhood Bus Shuttle (5 circulator routes)				X	2005		0.0824	1.2393	0.0824	0.8580	0.0824	0.7126	0.0824	0.5914	C
205	X	2003-08	MDOT	New Surface Parking at Transit Centers (500 spaces)				X	2005	2005	0.0436	0.5993	0.0436	0.4143	0.0436	0.3488	0.0436	0.2895	C
206		2003-08	MDOT	Additional Bike Lockers at Metro-Stations				X	2005		0.1395	2.1210	0.1395	1.4685	0.1395	1.2179	0.1395	1.0107	C
207	X	2003-08	MDOT	Bike Facilities at PnR Lots or other similar location				X	2005	2005	0.1144	1.6752	0.1144	1.1592	0.1144	0.9667	0.1144	0.8023	C
208		2003-08	MDOT	CNG Fueling Stations				X	2005										SP
209		2003-08	MDOT	Gas cap replacements (ROP Credit)				X	2005		N/A	N/A	N/A	N/A	N/A	N/A			SP
210		2003-08	MDOT	Gas can turnover (ROP Credit)				X	2005		N/A	N/A	N/A	N/A	N/A	N/A			SP
211	X	2003-08	MDOT	External Bicycle Racks on WMATA Buses (486 MD buses)	X				2005	2002	0.0148	0.2247	0.0148	0.1556	0.0148	0.1290	0.0148	0.1071	C (TCM)
212	X	2003-08	MDOT	Bike \ Pedestrian Trail - Anacostia River Walk				X	2005	Ongoing	0.0022	0.0487	0.0022	0.0339	0.0022	0.0268	0.0022	0.0223	C
213		2003-08	MDOT	Transit Prioritization - Queue Jumps				X	2005		0.0225	0.3827	0.0225	0.2654	0.0225	0.2168	0.0225	0.1799	C
214	X	2003-08	MDOT	Commuter Choice Benefit/Tax Credit - Marketing Expansion	X				2005	Ongoing	0.5732	8.7314	0.5732	6.0457	0.5732	5.0126	0.5732	4.1601	C
215	X	2003-08	MDOT	Improvements to Pedestrian Access in TOD areas (4 locations)				X	2005	Ongoing	0.0567	0.8868	0.0567	0.6142	0.0567	0.5074	0.0567	0.4211	C
216	X	2003-08	MDOT	Telecommuting Expansion ¹	X				2005	Ongoing	0.8466	12.2123	0.8466	8.4488	0.8466	7.0611	0.8466	5.8602	C
217		2003-08	MDOT	Replace older Diesel Engine in Public Sector vehicles				X	2005										H
218	X	2003-08	VDOT	MV-92 Telecommuting Program - Expanded ¹	X				2005	2005	0.9041	13.0421	0.9041	9.0228	0.9041	7.5408	0.9041	6.2584	C
219	X	2003-08	VDOT	MV-123 Employer Outreach for Public Sector Employees ²	X				2005	2003	0.1574	2.4102	0.1574	1.6690	0.1574	1.3828	0.1574	1.1476	C
220	X	2003-08	REGION	Signal System Optimization	X				2005	2005	1.0065	15.2268	1.0065	10.5421	1.0065	8.7492	1.0065	7.2612	TR
221	X	2007-12	MDOT	Two P & R Lots in Frederick County (99 spaces)	X				2007	2008	0.0121	0.1720	0.0086	0.0831	0.0086	0.0709	0.0086	0.0589	C
222	X	2007-12	MDOT	MDOT P & R Lots at US 340 (66-99 spaces, Frederick Co.)	X				2007	2007									
223	X	2008-13	MDOT	MCG/MDOT P & R Lots at US 340 & Mt Zion Rd. (37 spaces)	X				2008	2008	0.0093	0.1321	0.0093	0.0913	0.0093	0.0765	0.0093	0.0635	
224	X	2008-13	MDOT	MCG/MDOT P & R Lots at US 340 & Mt Zion Rd. - expansion (39 spaces)				X	2011	2011									
225	X	2008-13	MDOT	MCG/MDOT P & R Lots at I 70 & MD 355 (100 spaces)				X	2010	2010	0.0123	0.1738	0.0123	0.1202	0.0123	0.1007	0.0123	0.0836	
226	X	2008-13	MDOT	MCG/MDOT P & R Lots at I 270 & MD 80 (164 spaces)	X				2009	2009	0.0201	0.2850	0.0201	0.1971	0.0201	0.1652	0.0201	0.1371	
227	X	2008-13	MDOT	MDOT Sygal System Reviewing				X	2010	on-going									
228	X	2008-13	MDOT	MDOT Takoma Langely Transit Center				X	2012	2012	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Available Emissions Credits											17.655	314.694	15.744	198.753	15.141	159.918	15.141	132.721	

**TRANSPORTATION EMISSION REDUCTION MEASURES (CLRP Projects Only)
Part B - Yearly PM_{2.5} and Precursor NOx Emissions**

Project Category: TR - Traffic Stream, C - Commute, H - Engine Technology (Heavy Duty Vehicles), SP- Specific Vehicle Type

NOs	CREDIT TAKEN	TIP CREDITED	AGENCY	PROJECT	IMPLEMENTATION STATUS				PROJECTED COMPLETION DATE	ACTUAL COMPLETION DATE	TONS/YEAR REDUCTION								Project Category
					FULL	SCALED-BACK	UNDERWAY	REMOVED			2016		2020		2030		2040		
											PM _{2.5}	Precursor NOx	PM _{2.5}	Precursor NOx	PM _{2.5}	Precursor NOx	PM _{2.5}	Precursor NOx	
221	X	1995-00 TIP	REGION	M-24 Speed Limit Adherence					2010		1.8471	27.9451	2.1072	22.0719	0.7941	6.9030	0.7941	5.7290	TR
222		1996-01 TIP	MGC	Rock Spring Park Pedestrian Amenities				X			0.0270	0.4086	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-
223	X	1996-01 TIP	MGC	Olney Transit Center Park and Ride					2015		0.0540	0.8172	0.0531	0.5559	0.0147	0.1279	0.0147	0.1062	C
224	X	1996-01 TIP	MGC	Damascus Park and Ride						2003	0.0270	0.4086	0.0285	0.2780	0.0074	0.0640	0.0074	0.0531	C
225		1996-01 TIP	DC	M-103 Taxicab Replacement (DC)				X	2015		0.0000	0.0000	5.2412	54.8984	12.6415	109.8936	12.6415	91.2039	H
226		STADIUM ANALYSIS		M-103 Taxicab Replacement (MD)				X	2008		0.0000	0.0000	4.1929	43.9187	5.0566	43.9574	5.0566	36.4816	H
227		1997-02 TIP	MDOT	Shady Grove West Transit Center Park and Ride				X			0.0675	1.0215	0.0663	0.6949	0.0184	0.1599	0.0184	0.1327	C
228	X	1997-02 TIP	MGC	Olney Transit Center Park and Ride					2015		0.0000	0.0000	0.0218	0.2280	0.0147	0.1279	0.0147	0.1062	C
229	X	1997-02 TIP	MGC	White Oak Park and Ride					2008		0.1350	2.0430	0.1327	1.3898	0.0368	0.3199	0.0368	0.2655	C
230	X	1997-02 TIP	MGC	Damascus Park and Ride						2003	0.0000	0.0000	0.0082	0.0855	0.0055	0.0480	0.0055	0.0398	C
231	X	1997-02 TIP	MGC	Four Corners Transit Center					2015		0.0068	0.1022	0.0066	0.0695	0.0018	0.0160	0.0018	0.0133	C
232		1997-02 TIP	MGC	Burtonsville Transit Center				X			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-
233	X	1997-02 TIP	MGC	Silver Spring Transit Access							0.0068	0.1022	0.0054	0.0570	0.0037	0.0320	0.0037	0.0265	C
234	X	1997-02 TIP	MGC	Shady Grove Parking Construction						2003	0.1283	1.9409	0.1261	1.3204	0.0350	0.3039	0.0350	0.2522	C
CLRP TOTAL											0.3579	33.3591	0.3804	26.0561	0.1196	7.9425	0.1196	6.5917	
CLRP + TIP TOTAL											18.013	348.053	16.124	224.809	15.261	167.861	15.261	139.313	

DEFINITIONS: Project Numbers implemented fully prior to 2000 were removed from the TERM Tracking Sheet

CREDIT TAKEN (X means emissions reduction credits taken):

TIP - Emissions credits are taken for projects being implemented, according to the progress reporting schedules provided by the implementing agencies (contained in Appendix J of Conformity Document). No credit has been taken for projects in which only some components of the measure have been implemented.

CLRP - Credit is taken for each of these elements of the CLRP according to the schedule provided by the implementing agency.

IMPLEMENTATION STATUS:

FULL = project is completed as planned at the time of analysis.

SCALED BACK = project is completed, but at a different level than assumed at the time of analysis (i.e., purchased 50 buses instead of 100)

UNDERWAY = project is not complete, but is close enough that credit may be taken (i.e., under construction, NOT just out for bid)

REMOVED = project no longer expected to be implemented or constructed

COMPLETION DATE:

PROJECTED = project completion date originally expected (i.e., at time of emissions analysis)

ACTUAL = actual year project was open for use, or expected to be open for use if under construction

REMOVED

projects Emissions credits are not counted in total available emissions credits

- 1 Line items 218, 216, 179, 92 are all credited as part of M-92 Regional Telecommute Support TERM, line item # 75
- 2 Line item 108 & 219 credits are taken only for year 2010

VII. CONFORMITY ASSESSMENT - CRITERIA AND PROCEDURES

EPA's conformity regulations identify criteria and procedures for the determination of conformity. These regulations vary according to pollutants and to different actions being considered and according to the time period and the area's standing with EPA in terms of meeting SIP milestone requirements. The March 14, 2012 amendments to EPA's regulations represent the current transportation conformity requirements. The following sections indicate: (1) the appropriate sections of the regulations which must be adhered to in this conformity analysis, and (2) the manner in which the regulations have been met.

Conformity Criteria

This section identifies the criteria (sections of the regulations) which the CLRP must meet in order to conform to current implementation plans in the District of Columbia, Maryland and Virginia. Exhibit 26 lists all sections of the regulations relevant at this time to assessment of the 2012 CLRP and FY2013-2018 TIP. The following discussion indicates the manner in which each criterion was met.

Sec. 93.110 Criteria and procedures: Latest planning assumptions.

The conformity assessment is based upon the most current planning assumptions available for the Washington region. Round 8.1 Cooperative Forecasts were approved for use in the conformity analysis of the 2012 CLRP and FY2013-2018 TIP. These forecasts were developed and reviewed with an explicit perspective on transportation and land use interaction.

Travel demand modeling methods incorporating the latest travel time refinements were used in this study. Other refinements include development and use of a comprehensive set of transit and HOV networks. As with previous conformity analyses, transit fares are modeled explicitly in the modal choice process. The analysis includes actual fares for the base year simulation, with forecast year fares based on current (March 2012) fares with increases through time as a function of increases in the consumer price index. Base year fares are modeled to reflect the WMATA tariff and other actual charges levied by each transit provider; the updated fare tariffs provided the basis for future analysis years. Transit operating policies, such as hours and frequency of service, are updated annually and modeled explicitly to reflect actual conditions in the peak and off-peak hours. The overall travel demand modeling process is continually monitored and refined as needed to reflect changing conditions, whether related to travel patterns, TERM effectiveness or other changes, as new data become available.

Exhibit 26

Conformity Criteria

All Actions at all times:

Sec. 93.110	Latest planning assumptions.
Sec. 93.111	Latest emissions model.
Sec. 93.112	Consultation.

Transportation Plan:

Sec. 93.113(b)	TCMs.
Sec. 93.118 and/or	Emissions budget and /or Interim
Sec. 93.119	emissions.

TIP:

Sec. 93.113(c)	TCMs.
Sec. 93.118 and/or	Emissions budget and /or Interim
Sec. 93.119	emissions.

Project (From a Conforming Plan and TIP):

Sec. 93.114	Currently conforming plan and TIP.
Sec. 93.115	Project from a conforming plan and TIP.
Sec. 93.116	CO, PM ₁₀ , and PM _{2.5} hot spots.
Sec. 93.117	PM ₁₀ and PM _{2.5} control measures.

Project (Not From a Conforming Plan and TIP):

Sec. 93.113(d)	TCMs.
Sec. 93.114	Currently conforming plan and TIP.
Sec. 93.116	CO, PM ₁₀ , and PM _{2.5} hot spots.
Sec. 93.117	PM ₁₀ and PM _{2.5} control measures.
Sec. 93.118 and/or	Emissions budget and/or Interim
Sec. 93.119	emissions

Sec. 93.111 Criteria and procedures: Latest emissions model.

The current analysis used MOBILE6.2, the latest emission factor model specified by EPA for use in preparation of state implementation plans and conformity assessments.

Sec. 93.112 Criteria and procedures: Consultation.

The TPB offers many opportunities for public comment. Since the initial consultation procedures were developed, TPB has expanded the opportunity for public involvement through a series of initiatives. Examples include: the public comment period at the start of each TPB meeting; regular public forums and workshops on major topics; a monthly newsletter; and the institution of the Citizens Advisory Committee. The procedures are summarized into a report called the TPB Participation Plan (Reference 24).

Exhibit 27 lists the schedule for public involvement/consultation opportunities associated with the conformity analysis of the 2012 CLRP and FY2013-2018 TIP. Additional materials are contained as Appendix C.

Sec. 93.113 Criteria and procedures: Timely implementation of TCMs.

The policy element of the 2012 CLRP and FY2013-2018 specifically addresses the implementation of projects and measures designed to achieve air quality attainment goals. Previous TIPs contained CMAQ-funded TERMS and TCM projects which are elements of the regional ozone attainment plan. As a means of addressing this section of the conformity regulations, implementing agencies prepared progress reports on the implementation status of each of these projects. Appendix I contains the responses from each implementing agency, which document the implementation progress. Some are subject to normal delays associated with the programming process.

Sec. 93.114 Criteria and procedures: Currently conforming transportation plan and TIP.

There is a currently conforming plan and program in the Washington region. This current conformity analysis is designed to update and supersede the (conforming) 2011 CLRP, adopted by the TPB in November, 2011.

Exhibit 27



Schedule for the 2012 Financially Constrained Long-Range Transportation Plan (CLRP) and the FY2013-2018 Transportation Improvement Program (TIP)

*September 21, 2011	TPB is Briefed on Draft Call for Projects
*October 19, 2011	TPB Releases Final Call for Projects - Transportation Agencies Begin Submitting Project Information through On-Line Database
December 16, 2011	<u>DEADLINE:</u> Transportation Agencies Complete On-Line Submission of Draft Project Inputs.
January 6, 2012	Technical Committee Reviews Draft CLRP & TIP Project Submissions and Draft Scope of Work for the Air Quality Conformity Assessment
January 12, 2012	CLRP & TIP Project Submissions and Draft Scope of Work Released for Public Comment
*January 18, 2012	TPB is Briefed on Project Submissions and Draft Scope of Work
February 11, 2012	Public Comment Period Ends
*February 15, 2012	TPB Reviews Public Comments and is asked to Approve Project Submissions and Draft Scope of Work
May 1, 2012	<u>DEADLINE:</u> Transportation Agencies Finalize Congestion Management Documentation Forms (where needed) and CLRP & TIP Forms ¹ . (Submissions must not impact conformity inputs; note that the deadline for changes affecting conformity inputs was February 15, 2012).
June 14, 2012	Draft CLRP & TIP and Conformity Assessment Released for Public Comment at Citizens Advisory Committee (CAC)
*June 20, 2012	TPB Briefed on the Draft CLRP & TIP and Conformity Assessment
July 14, 2012	Public Comment Period Ends
*July 18, 2012	TPB Reviews Public Comments and Responses to Comments, and is Presented the Draft CLRP & TIP and Conformity Assessment for Adoption
*TPB Meeting	

¹By this date, the CLRP forms must include information on the Planning Factors, Environmental Mitigation, Congestion Management Information, and Intelligent Transportation Systems; separate Congestion Management Documentation Forms (where needed) must also be finalized.

Sec. 93.115 Criteria and procedures: Projects from a plan and TIP.

All projects advanced for implementation will come from a conforming plan and program.

Sec. 93.116 Criteria and procedures: Localized CO and PM₁₀ violations (hot spots).

Any project advanced in the current TIP must first have met this criterion as an element of its environmental study. (The Washington area is now in attainment for both carbon monoxide and PM₁₀.)

Sec. 93.117 Criteria and procedures: Compliance with PM₁₀ and PM_{2.5} control measures.

The Washington area is in attainment for PM₁₀. Per PM_{2.5} requirements, a SIP for the Washington nonattainment area was developed and submitted to EPA in April, 2008.

93.118 Motor vehicle emissions budget

As discussed in earlier in this report, this analysis includes use of the existing budgets developed as part of the 8-hour ozone SIP. Total VOC, NO_x, and CO emissions for all plan milestone analysis years are within their respective emissions budgets.

Sec. 93.119 Criteria and procedures: Interim emissions in areas without motor vehicle budgets

The forecast year PM_{2.5} pollutant emissions are below those of the 2002 base year.

NOTE: See EPA's conformity regulations for the full text associated with each section's requirements.

VI. FINDINGS

The analytical results described above provide a basis, in relation to US EPA conformity regulations, for a determination of conformity of the year 2012 Constrained Long Range Plan and FY2013-2018 Transportation Improvement Program for The Washington Metropolitan Region, with requirements of the Clean Air Act Amendments of 1990.

APPENDIX A

Air Quality Conformity Scope of Work

**AIR QUALITY CONFORMITY ASSESSMENT:
2012 CONSTRAINED LONG RANGE PLAN AND THE FY2013-2018 TRANSPORTATION
IMPROVEMENT PROGRAM**

SCOPE OF WORK

I. INTRODUCTION

Projects solicited for the 2012 Constrained Long Range Plan (CLRP) and FY2013-2018 Transportation Improvement Program (TIP) are scheduled to be finalized at the February 15, 2012 TPB meeting. This scope of work reflects the tasks and schedule designed for the air quality conformity assessment leading to adoption of the plan on July 18, 2012. This work effort addresses requirements associated with attainment of the ozone standards (volatile organic compounds (VOC) and nitrogen oxides (NO_x) as ozone precursor pollutants), and fine particles (PM_{2.5}) standards (direct particles and precursor NO_x), as well as maintenance of the wintertime carbon monoxide (CO) standard.

The plan must meet air quality conformity regulations: (1) as originally published by the Environmental Protection Agency (EPA) in the November 24, 1993 Federal Register, and (2) as subsequently amended, most recently on March 24, 2010, and (3) as detailed in periodic FHWA / FTA and EPA guidance. These regulations specify both technical criteria and consultation procedures to follow in performing the assessment.

This scope of work provides a context in which to perform the conformity analyses and presents an outline of the work tasks required to address all regulations currently applicable.

II. REQUIREMENTS AND APPROACH

A. Criteria (See Exhibit 1)

As described in the 1990 Clean Air Act Amendments, conformity is demonstrated if transportation plans and programs:

1. Are consistent with most recent estimates of mobile source emissions,
2. Provide expeditious implementation of TCMs, and
3. Contribute to annual emissions reductions.

Assessment criteria for ozone, CO, and PM_{2.5} are discussed below.

Ozone season pollutants will be assessed by comparing the “action” scenarios to the 8-hour ozone area 2008 Reasonable Further Progress (RFP) VOC and NO_x emissions budgets which were deemed adequate for use in conformity by EPA in September 2009.

The region is in maintenance for mobile source wintertime CO and, as in prior conformity assessments, is required to show that pollutant levels do not exceed the approved budget.

PM_{2.5} pollutants will be assessed both by comparing the “action” scenarios to a 2002 base and by comparing the pollutant levels to the budgets submitted by the MWAQC to EPA in April, 2008. PM_{2.5} emissions will be inventoried for yearly totals (instead of on a daily basis as performed for Ozone and CO).

B. Approach (See Table 1 – Summary of Technical Approach)

The analytical approach is the same as for the last conformity assessment. The Version 2.3 travel demand model with the 3722 TAZ system and the Mobile6.2 emissions model will be used in the analysis. The only significant changes are the use of updated Cooperative Forecasts, Round 8.1, and the use of new 2011 vehicle registration data.

In addition to the elements below, explicit inputs include: a summary list of major policy and technical input assumptions, shown as Attachment A; and all transportation network elements which will be finalized at the February 15, 2012 TPB meeting.

TABLE 1 – Summary of Technical Approach

	Ozone	Wintertime CO	PM_{2.5}
Pollutant:	VOC, NOx	CO	Direct particles, Precursor NOx
Emissions Assessment Criteria:	8-hour 2008 Reasonable Further Progress (RFP) ozone budgets	Approved wintertime CO emissions budget	Reductions from base 2002 inventory & comparison to budgets
Emissions Analysis Time-frame:	Daily	Daily	Annual
Geography:	8-hour ozone non-attainment area	DC, Arl., Alex., Mont., Pr. Geo.	8-hr. area less Calvert County
Network Inputs:	Regionally significant projects		
Land Activity:	NEW! Round 8.1		
Modeled Area:	3722 TAZ SYSTEM		
Travel Demand Model:	Version 2.3		
Mobile Model:	MOBILE6.2 emissions factors, consistent with the procedures utilized to establish the VOC and NOx mobile source emissions budgets	MOBILE6.2 Consistent with procedures used to establish the budget	MOBILE6.2 'Seasonal' approach, consistent with procedures used to establish the budget
Emissions Factor Refinements:	NEW! 2011 vehicle registration data for all jurisdictions		

III. CONSULTATION

1. Execute TPB consultation procedures (as outlined in the consultation procedures report adopted by the TPB on May 20, 1998).

2. Participate in meetings of MWAQC, its Technical Advisory Committee and its Conformity Subcommittee to discuss the scope of work activities, TERM development process, and other elements as needed; discuss at TPB meetings or forums, as needed, the following milestones:
 - CLRP & TIP Call for Projects
 - Scope of work
 - TERM proposals
 - Project submissions: documentation and comments
 - Analysis of TERMS, list of mitigation measures
 - Conformity assessment: documentation and comments
 - Process: comments and responses

IV. WORK TASKS

1. Receive project inputs from programming agencies and organize into conformity documentation listings (endorsement of financially constrained project submissions scheduled for February 15, 2012)
 - Project type, limits, NEPA approval, etc.
 - Phasing with respect to forecast years
 - Transit operating parameters, e.g. schedules, service, fares
 - Action scenarios
2. Review and Update Land Activity files to reflect Round 8.1 Cooperative Forecasts
 - Households by auto ownership, population and employment
 - Zonal data files
3. Prepare forecast year highway, HOV, and transit networks
 - Develop 2007, 2017, 2020, 2030, & 2040 highway networks
 - Prepare 2007, 2017, 2020, 2030, & 2040 transit network input files
 - Update transit fares and highway tolls, as necessary
4. Prepare 2007 travel and emissions estimates
 - Execute travel demand modeling
 - Calculate emissions (daily for ozone season VOC and NO_x for ozone standard requirements; daily for winter CO; yearly for PM_{2.5} direct particles and precursor NO_x)
5. Prepare 2017 travel and emissions estimates
 - Execute travel demand modeling
 - Develop Mobile6.2 emission factors with new 2011 vehicle registration data
 - Calculate emissions (daily for ozone season VOC and NO_x for ozone standard requirements; daily for winter CO; yearly for PM_{2.5} direct particles and precursor NO_x)
6. Prepare 2020 travel and emissions estimates
 - Tasks as in year 2017 analysis
7. Prepare 2030 travel and emissions estimates

- Tasks as in year 2020 analysis
 - Apply “transit constraint” using 2020 levels
8. Prepare 2040 travel and emissions estimates
- Tasks as in year 2030 analysis, including transit constraint
9. Identify extent to which plan provides for expeditious implementation of TCMs contained in ozone state implementation plans and emissions mitigation requirements of previous CLRP & TIP commitments (TERMs)
- In the CLRP & TIP Call for Projects document staff identified previous TCM and TERM commitments and requested a status report from the implementing agencies
 - Staff will review these reports as they are received and update the TERM tracking sheet that was included in the November 16, 2011 air quality conformity report
 - The status reports and the updated TERM tracking sheet will be included in the air quality conformity report.
10. Coordinate / analyze emissions reductions associated with CMAQ and similar projects
- Obtain project-specific emissions reductions from programming agencies
 - Summarize daily ozone season VOC and NO_x reductions for each milestone year
 - Summarize annual direct PM_{2.5} and precursor NO_x PM_{2.5} pollutant reductions; explore additional TERMS
 - With oversight from the Travel Management Subcommittee, as needed, propose and analyze additional measures for their emissions benefits, costs, cost effectiveness, and other evaluation criteria
11. Analyze results of above technical analysis
- Reductions from 1990 (ozone season VOC and NO_x and winter CO) and 2002 base (PM_{2.5})
 - 8-hour ozone season 2008 RFP VOC and NO_x budgets, direct PM_{2.5} and precursor NO_x budgets, and winter CO emissions budgets
 - With oversight from the Travel Management Subcommittee, the Technical Committee and the TPB, identify and recommend additional measures should the plan or program fail any test and incorporate measures into the plan
12. Assess conformity and document results in a report
- Document methods
 - Draft conformity report
 - Forward to technical committees, policy committees
 - Make available for public and interagency consultation
 - Receive comments
 - Address comments and present to TPB for action
 - Finalize report and forward to FHWA, FTA and EPA

V. SCHEDULE

The schedule for the execution of these work activities is shown in Exhibit 2. The time line shows completion of the analytical tasks, preparation of a draft report, public and interagency review, response to comments and action by the TPB on July 18, 2012.

Exhibit 1

Conformity Criteria

All Actions at all times:

Sec. 93.110	Latest planning assumptions.
Sec. 93.111	Latest emissions model.
Sec. 93.112	Consultation.

Transportation Plan:

Sec. 93.113(b)	TCMs.
Sec. 93.118 and/or	Emissions budget and /or Interim
Sec. 93.119	emissions.

TIP:

Sec. 93.113(c)	TCMs.
Sec. 93.118 and/or	Emissions budget and /or Interim
Sec. 93.119	emissions.

Project (From a Conforming Plan and TIP):

Sec. 93.114	Currently conforming plan and TIP.
Sec. 93.115	Project from a conforming plan and TIP.
Sec. 93.116	CO, PM ₁₀ , and PM _{2.5} hot spots.
Sec. 93.117	PM ₁₀ and PM _{2.5} control measures.

Project (Not From a Conforming Plan and TIP):

Sec. 93.113(d)	TCMs.
Sec. 93.114	Currently conforming plan and TIP.
Sec. 93.116	CO, PM ₁₀ , and PM _{2.5} hot spots.
Sec. 93.117	PM ₁₀ and PM _{2.5} control measures.
Sec. 93.118 and/or	Emissions budget and/or Interim
Sec. 93.119	emissions

Sec. 93.110 Criteria and procedures: Latest planning assumptions.

The conformity determination must be based upon the most recent planning assumptions in force at the time of the conformity determination.

Sec. 93.111 Criteria and procedures: Latest emissions model.

The conformity determination must be based on the latest emission estimation model available.

Sec. 93.112 Criteria and procedures: Consultation.

Conformity must be determined according to the consultation procedures in this subpart and in the applicable implementation plan, and according to the public involvement procedures established in compliance with 23 CFR part 450.

Sec. 93.113 Criteria and procedures: Timely implementation of TCMs.

The transportation plan, TIP, or any FHWA/FTA project which is not from a conforming plan and TIP must provide for the timely implementation of TCMs from the applicable implementation plan.

Sec. 93.114 Criteria and procedures: Currently conforming transportation plan and TIP.

There must be a currently conforming transportation plan and currently conforming TIP at the time of project approval.

Sec. 93.115 Criteria and procedures: Projects from a plan and TIP.

The project must come from a conforming plan and program.

Sec. 93.116 Criteria and procedures: Localized CO, PM₁₀, and PM_{2.5} violations (hot spots).

The FHWA/FTA project must not cause or contribute to any new localized CO, PM₁₀, and/or PM_{2.5} violations or increase the frequency or severity of any existing CO, PM₁₀, and /or PM_{2.5} violations in CO, PM₁₀, and PM_{2.5} nonattainment and maintenance areas.

Sec. 93.117 Criteria and procedures: Compliance with PM₁₀ and PM_{2.5} control measures.

The FHWA/FTA project must comply with PM₁₀ and PM_{2.5} control measures in the applicable implementation plan.

Sec. 93.118 Criteria and procedures: Motor vehicle emissions budget

The transportation plan, TIP, and projects must be consistent with the motor vehicle emissions budget(s).

Sec. 93.119 Criteria and procedures: Interim emissions in areas without motor vehicle budgets

The FHWA/FTA project must satisfy the interim emissions test(s).

NOTE: See EPA's conformity regulations for the full text associated with each section's requirements.



Schedule for the 2012 Financially Constrained Long-Range Transportation Plan (CLRP) and the FY2013-2018 Transportation Improvement Program (TIP)

*September 21, 2011	TPB is Briefed on Draft Call for Projects
*October 19, 2011	TPB Releases Final Call for Projects - Transportation Agencies Begin Submitting Project Information through On-Line Database
December 16, 2011	<u>DEADLINE:</u> Transportation Agencies Complete On-Line Submission of Draft Project Inputs.
January 6, 2012	Technical Committee Reviews Draft CLRP & TIP Project Submissions and Draft Scope of Work for the Air Quality Conformity Assessment
January 12, 2012	CLRP & TIP Project Submissions and Draft Scope of Work Released for Public Comment
*January 18, 2012	TPB is Briefed on Project Submissions and Draft Scope of Work
February 11, 2012	Public Comment Period Ends
*February 15, 2012	TPB Reviews Public Comments and is asked to Approve Project Submissions and Draft Scope of Work
May 1, 2012	<u>DEADLINE:</u> Transportation Agencies Finalize Congestion Management Documentation Forms (where needed) and CLRP & TIP Forms ¹ . (Submissions must not impact conformity inputs; note that the deadline for changes affecting conformity inputs was February 15, 2012).
June 14, 2012	Draft CLRP & TIP and Conformity Assessment Released for Public Comment at Citizens Advisory Committee (CAC)
*June 20, 2012	TPB Briefed on the Draft CLRP & TIP and Conformity Assessment
July 14, 2012	Public Comment Period Ends
*July 18, 2012	TPB Reviews Public Comments and Responses to Comments, and is Presented the Draft CLRP & TIP and Conformity Assessment for Adoption
*TPB Meeting	

¹By this date, the CLRP forms must include information on the Planning Factors, Environmental Mitigation, Congestion Management Information, and Intelligent Transportation Systems; separate Congestion Management Documentation Forms (where needed) must also be finalized.



WORK SCOPE ATTACHMENT A

POLICY AND TECHNICAL INPUT ASSUMPTIONS AIR QUALITY CONFORMITY ANALYSIS OF 2011 CLRPP

1. Land Activity

- Round 8.1 Cooperative Forecasts

2. Policy and Project Inputs

- Highway, HOV, and transit projects and operating parameters
- Financially constrained project submissions to be advanced by the TPB on 2/15/2012

3. Travel Demand Modeling Methods

- Version 2.3 Travel Model
- All HOV facilities at HOV-3 in 2020 & beyond
- Transit “capacity constraint” procedures (2020 constrains later years)

4. Emissions Factors

- Use MOBILE6.2 emissions factors incorporating 2011 vehicle registration data
- Seasonal PM_{2.5} factors for total directly emitted particles and precursor NO_x

5. Emissions Modeling Methods / Credits

- Yearly PM_{2.5} emissions (total PM_{2.5} and precursor NO_x) using seasonal traffic adjustments and above emissions factors
- Offline emissions analyses

6. Conformity Assessment Criteria

- Emissions budgets for ozone precursors, PM_{2.5} pollutants, and wintertime CO
- Analysis years: 2007, 2017, 2020, 2030, & 2040

APPENDIX B

List of Project Inputs

Key to the Air Quality Conformity Table:

COLUMN 1:

Agency - identification of submitting agency

COLUMN 2:

Project ID - project identification number (for reference purposes)

COLUMN 3:

Type of improvement - defined as follows:

Construct	= build a new facility
Widen	= increase the number of lanes on an existing facility
Upgrade	= improve the facility type of a roadway
Relocate	= construct an existing facility on a new right-of-way
Reconstruct	= modify an existing facility with no capacity increase i.e., shoulder paving, geometric improvements
Rehabilitate	= repair existing structures - no capacity increase
Study	= to review alternative transportation improvements- project planning or preliminary engineering only

COLUMN 4:

Facility - name of facility to be studied or improved

COLUMNS 5 and 6:

From and To - limits of the project

COLUMN 7:

Facility Type - defined as follows:

- 1 = Interstate
- 2 = Major Arterial
- 3 = Minor Arterial
- 4 = Collector
- 5 = Expressway or Freeway with at-grade intersections

If a facility is being upgraded, the old facility type is in the "from" column, and the new facility type is in the "to" column. If the facility is not being upgraded, the "from" and "to" columns are the same.

COLUMN 8:

Number of Lanes - same explanation of "from" and "to" columns as above

COLUMN 9:

Currently under construction or right-of-way acquired? -

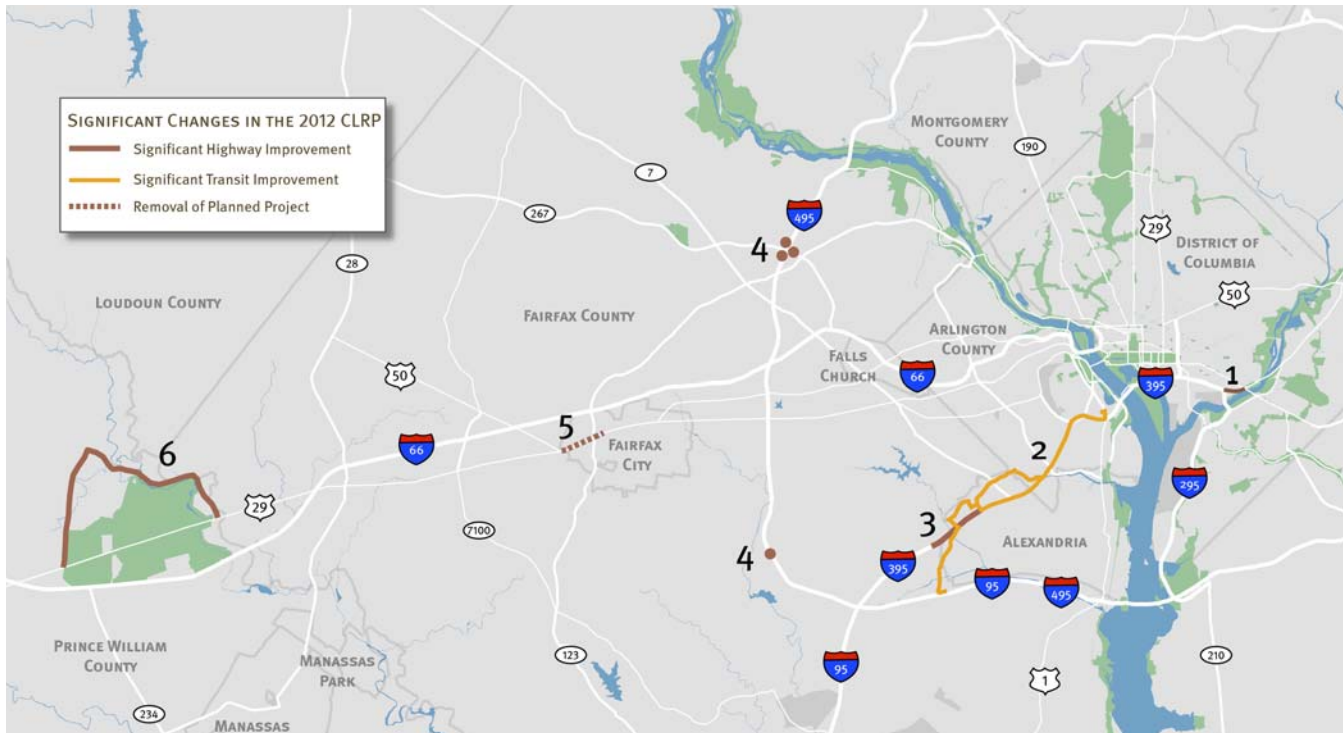
- "yes" = the facility is currently under construction and/or right-of-way has been acquired
- "no" = the facility is not currently under construction and right-of-way has not been acquired
- "completed" = the facility is open for use

COLUMN 10:

Project Completion Date or Status - date project will be open for use.

“not coded” indicates that project is not included in the conformity analysis

Significant Additions and Changes to The 2012 Update to the Financially Constrained Long-Range Transportation Plan and the FY 2013-2018 Transportation Improvement Program



Significant Additions and Changes to the CLRP and FY 2013-2018 TIP

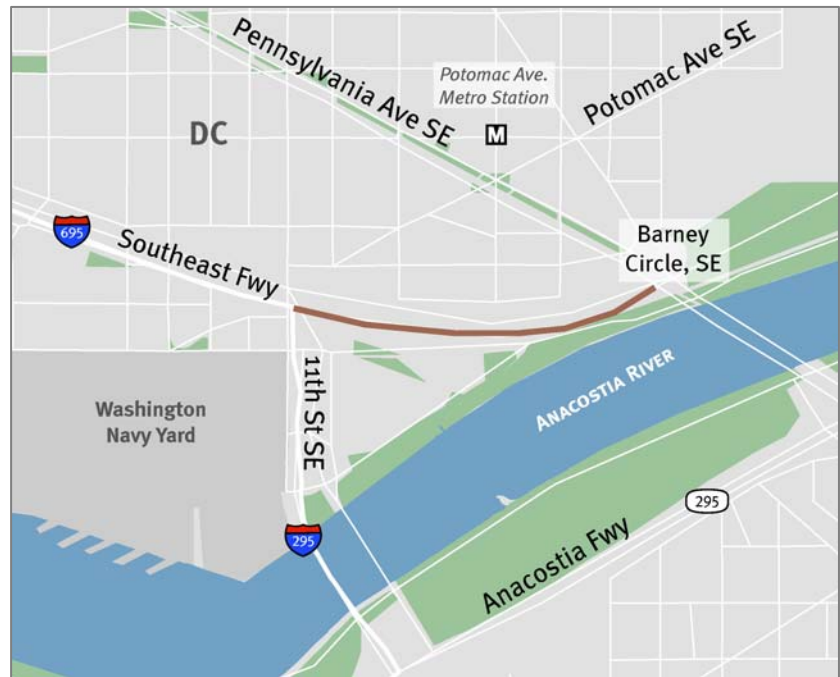
1. CREATE SOUTHEAST BOULEVARD FROM 11TH STREET BRIDGE TO BARNEY CIRCLE
2. BUS RAPID TRANSIT FROM VAN DORN METRO STATION TO PENTAGON METRO STATION
3. I-395 AUXILIARY LANE, NORTHBOUND FROM DUKE STREET TO SEMINARY ROAD
4. DATE CHANGE ON I-495 HOT LANES INTERCHANGES (~~2030~~ 2013)
5. REMOVE WIDENING OF US 29 FROM US 50 TO EATON PLACE
6. MANASSAS NATIONAL BATTLEFIELD PARK BYPASS

1. Create Southeast Boulevard from 11th Street Bridge to Barney Circle

Once the 11th Street SE Bridge fully connects I-695 (Southeast Freeway) and I-295 in both directions, the segment between 11th Street SE and Barney Circle/ Pennsylvania Avenue will become obsolete. This project proposes to convert that segment of the Southeast Freeway to an urban boulevard, connected to Barney Circle, with an at-grade intersection.

Complete: 2015
Length: 0.5 mile
Cost: \$80 million
Funding: Federal, Local and Private

See the project description in Attachment A for more information.



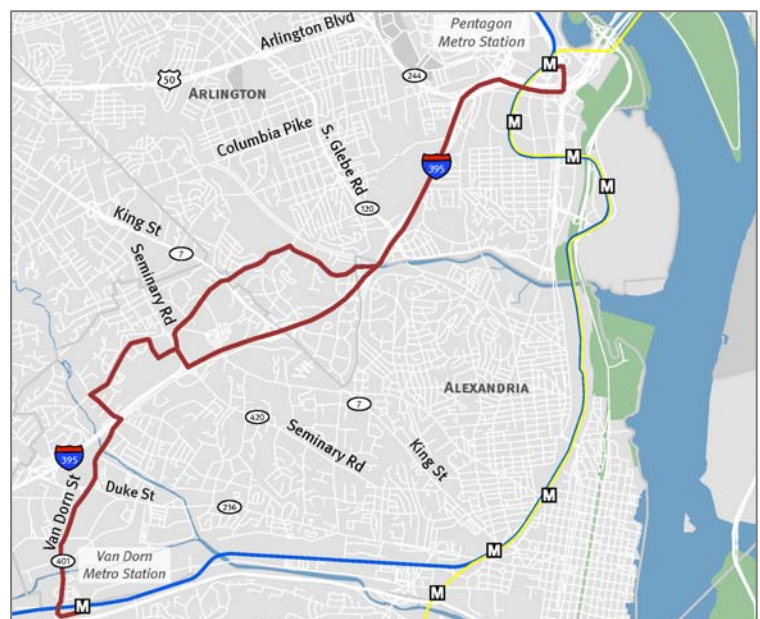
2. Bus Rapid Transit from the Van Dorn Metro Station to the Pentagon Metro Station

This project will construct and operate a Bus Rapid Transit (BRT) service that will connect the Van Dorn Metro Station to the Pentagon Metro Station via the Mark Center. The line will split into two spurs at the Mark Center. The BRT spur will continue north on Beauregard Street, serving the Northern Virginia Community College at Braddock Road, turn east on S. Arlington Mill Drive to serve the Shirlington Transit Center, then continue on I-395 to the Pentagon. A separate rapid bus spur will travel on the I-395 HOV lanes from the Mark Center directly to the Pentagon.

The BRT alignment will operate in dedicated lanes where possible, and may include additional elements such as pre-board payment, transit signal priority, improved bus shelters/stops, and branded vehicles. The rapid bus alignment will contain some of the same features as BRT but will operate in shared lanes. Buses will run every 7.5 minutes during peak periods.

Complete: 2016
Length: 6.5 miles
Cost: \$100 million
Funding: Federal, Local and Private

See the project description in Attachment A for more information.

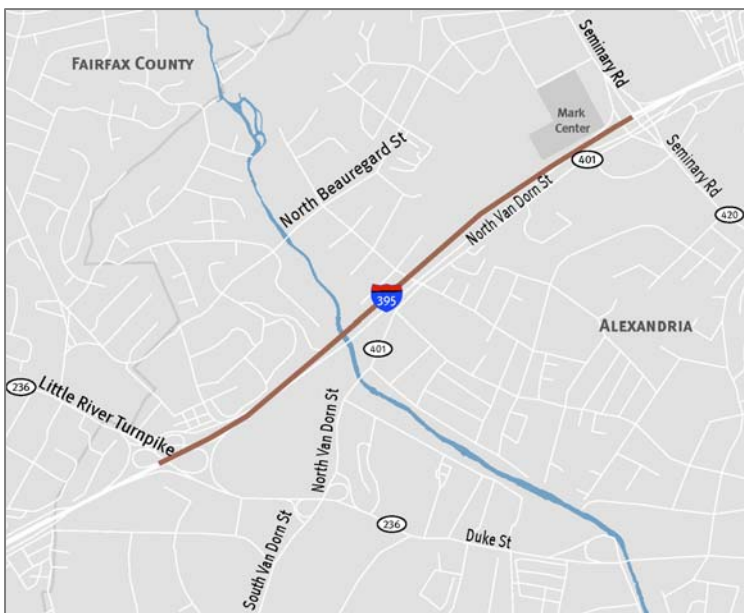


3. I-395 Auxiliary Lane, Northbound from Duke Street to Seminary Road

This project will construct an auxiliary lane on northbound I-395 connecting the Duke Street on ramp to the off ramp at Seminary Road.

Complete: 2015
 Length: 1 mile
 Cost: \$20 million
 Funding: Federal and state

See the project description in Attachment A for more information.



4. Date Change on I-495 HOT Lanes Interchanges

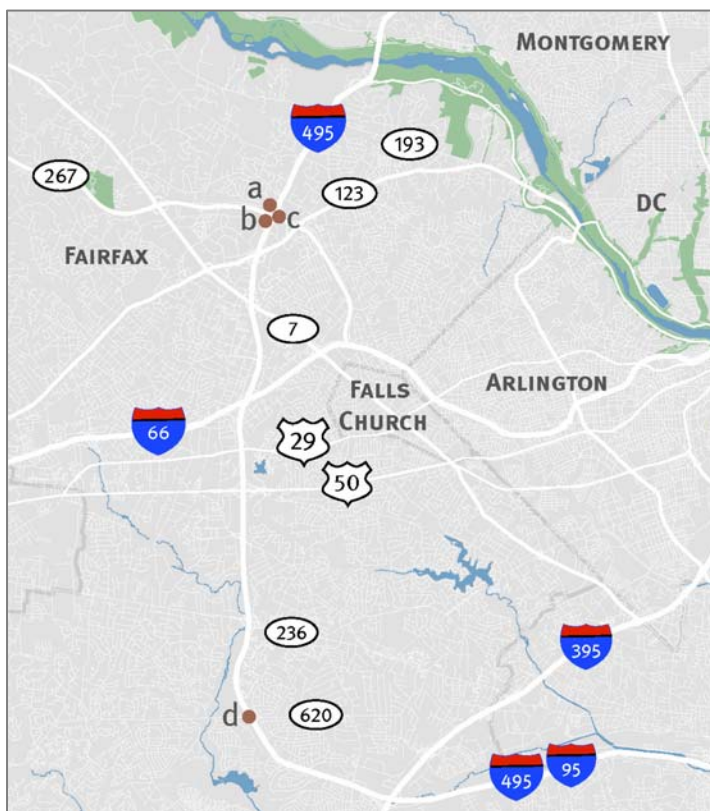
The 2011 CLRP includes the widening of the Capital Beltway to include a system of HOT lanes from the American Legion Bridge to the Backlick Road Underpass. As part of the larger I-495 HOT lanes project, VDOT is proposing to advance the completion dates of four interchanges from 2030 to 2013:

a & b: Two interchanges at VA-267 Dulles Toll Rd

c: One interchange at Dulles Airport Access Highway

d: One interchange at VA-620 (Braddock Rd)

Complete: 2013



5. Remove Widening of US 29 from US 50 to Eaton Place

The 2011 CLRP includes the widening of US 29, Lee Highway from four to six lanes in the City of Fairfax between US 50 and Eaton Place. VDOT proposes to remove this project from the CLRP.

Complete: ~~2013, 2040~~
 Cost: ~~\$30.2 million~~



6. Manassas National Battlefield Park Bypass

This project will construct a four lane bypass for US 29 to the north of the Manassas National Battlefield Park. Two segments of the project are already included in the plan:

- a portion of the Tri-County Parkway (improvements to Pageland Lane),
- and widening of VA 234, Sudley Road.

The remaining portion will construct a new four lane facility from Sudley Road to east of the intersection of US 29 and Paddington Lane. Once the Bypass is complete, about four miles of US 29 and three miles of Sudley Road located inside the Park will be closed.



Complete: 2035
 Length: 9 miles
 Cost: \$305 million
 Funding: Federal and state

See the project description in Attachment A for more information.

2012 CLRP FY2013-2018 TIP AIR QUALITY CONFORMITY INPUTS (Transit)

05/10/12

Agency	Project ID	Improv.	Facility	From	To	Under Const. or ROW acquired?	Complt. Date or Status
Washington Metropolitan Area Transit Authority							
WMATA		Modify	Revised Metrorail Operating Plan				2011
WMATA		Modify	Revised Metrorail Operating Plan				2015
WMATA		Implement	New Hampshire Avenue bus improvements				2011
WMATA		Implement	U Street / Garfield bus improvements				2011
WMATA		Implement	Greenbelt / Twinbrook bus improvements				2012
WMATA		Implement	East-West Highway (Prince George's County) improvements				2012
WMATA		Implement	Anacostia / Congress Heights bus improvements				2012
WMATA		Implement	Little River Turnpike / Duke Street bus improvements				2012
WMATA		Implement	University Boulevard / East-West Highway bus improvements				2013
WMATA		Implement	Rhode Island Avenue Metro to Laurel bus improvements				2013
WMATA		Implement	Rhode Island Avenue (DC) bus improvements				2013
WMATA		Implement	Eastover / Addison bus improvements				2014
WMATA		Implement	Colesville Road / Columbia Pike - MD US 29 bus improvements				2014
WMATA		Implement	North Capitol Street bus improvements				2015
District of Columbia							
DDOT		Construct	Anacostia Streetcar project Phase I (replaces CSX Shepherd Branch project)	Firth Sterling and S. Capitol St. SE	Howard Rd. and MLK Jr. Ave. SE		2012

Shaded areas represent changes since the 2011 CLRP

2012 CLRP FY2013-2018 TIP AIR QUALITY CONFORMITY INPUTS (Transit)

05/10/12

Agency	Project ID	Improv.	Facility	From	To	Under Const. or ROW acquired?	Complt. Date or Status
DDOT		Construct	Anacostia Streetcar Extension -Phase II	Howard Rd and MLK Jr. Ave SE	Good Hope Rd. and MLK Jr. Ave. SE		2016 2012
DDOT		Construct	H St. / Benning Rd Streetcar	Union Station	Oklahoma Ave., NE		2013-2012
DDOT		Implement	H St. Bus Lane- peak only	17th St. , NW	New York Ave., NW		
DDOT		Construct	Benning Rd. Streetcar	Oklahoma Ave., NE	45th St. / Benning Rd. Metro		2016 2015
DDOT		Study	Union Station Streetcar	Union Station	Mt. Vernon Sq./ 7th St. NW		not coded
DDOT		Study	K St. Streetcar	Mt. Vernon Sq./9th St. NW	Wisconsin Ave.		not coded
DDOT		Operational Improvements	Pennsylvania Rapid Bus (Operation Enhancements)	Archives Navy Memorial Metro Station	Naylor Road Metrorail Station		2011
DDOT		Reconstruct	K St. Transitway	Mt. Vernon Sq./7th St. NW	Wash.Circle / 23rd St. NW		2015
DDOT		Implement	16th St. Bus Priority Improvements (TIGER Grant)				by 2016
DDOT		Implement	Georgia Ave Bus Priority Improvements				by 2016
DDOT		Implement	H St./ Benning Rd. Bus Priority Improvements (TIGER Grant)	16th St. NW	Capitol Heights Metro Station		by 2016
DDOT		Implement	Wisconsin Ave. Bus Priority Improvements (TIGER Grant)	Friendship Heights Metro Station	Naylor Road Metrorail Station		by 2016
DDOT		Implement	Theodore Roosevelt Bridge to K St. Bus Priority Improvements (TIGER Grant)				by 2016
DDOT		Implement	14th St. Bus Priority Improvements (TIGER Grant)				by 2016
DDOT		Study	Georgia Ave. Streetcar	U Street/Florida Ave NW	New Hampshire Ave. NW		not coded

Shaded areas represent changes since the 2011 CLRP

2012 CLRP FY2013-2018 TIP AIR QUALITY CONFORMITY INPUTS (Transit)

05/10/12

Agency	Project ID	Improv.	Facility	From	To	Under Const. or ROW acquired?	Complt. Date or Status
DDOT		Study	Capitol Hill/8th Street Streetcar	H St. NE	M St. SE		not coded
DDOT		Study	M St. SE Streetcar	11th St. Bridge/MLK Ave. SE	Buzzard Point/SW Waterfront		not coded
DDOT		Study	14th St. NW Streetcar	K St. NW	U St. NW		not coded
Maryland							
MTA		Construct	Purple Line Transitway	Bethesda	New Carrollton	No	2020
MTA		Construct	Silver Spring Transit Center	Phase II		Yes	2011
MTA		Construct	Corridor Cities Transitway	Shady Grove	COMSAT		2020
MTA		Construct	Southern MD Commuter Bus Initiative	Park-and-Ride lots and increase bus service	Waldorf		2010
MTA		Implement	ICC Corridor Bus Service Improvements			Complete	2012
MTA		Construct	Takoma/ Langley Park Transit Center	Intersection New Hampshire Ave and University Blvd.	Takoma / Langley Park	No	2011
MDSHA		Study	MD 97 (Georgia Avenue) Busway	Glenmont	Olney		not coded
		Implement	Addison Rd. Transit Improvements (TIGER Grant)	near Seat Pleasant	Southern Ave. Metro Station		by 2016
		Implement	US 1 (MD) Bus Priority Improvements (TIGER Grant)				by 2016
Montgomery County							
Mont.Co.	MCT7	Construct	Olney Transit Center	adjacent to or north of MD 108		No	2015
Mont.Co.		Construct	University Blvd Bus Enhancement	Kensington	Silver Spring	No	2020
Mont.Co.		Study	Veirs Mill Road BRT	Rockville	Wheaton	No	not coded

Shaded areas represent changes since the 2011 CLRP

2012 CLRP FY2013-2018 TIP AIR QUALITY CONFORMITY INPUTS (Transit)

05/10/12

Agency	Project ID	Improv.	Facility	From	To	Under Const. or ROW acquired?	Complt. Date or Status
Mont.Co.	MCT22	Construct	Veirs Mill Road Bus Enhancement	Rockville	Wheaton	No	2020-2015
Virginia							
VDOT		Widen	US 1 (bus/right-turn lanes)	VA 235 North	SCL Alexandria (I-95 Capital Beltway)	No	2035
Arlington Co.		Construct	Crystal City / Potomac Yard Busway (2-lane)	Vicinity of Glebe Rd. Ext.- City/County line	Crystal City Metro Station	ROW acquired	2013
Arlington Co.		Construct	Route 1 Corridor Streetcar	Vicinity of Glebe Rd. Ext.- City/County line	Pentagon City Metro Station		2018 2019
VDOT		Construct	Potomac Yard Transit Bus lanes (2 lanes)	Four Mile Run	Braddock Rd.	No	2013
Alex.		Study	Route 1 Corridor Streetcar Conversion	Four Mile Run	Braddock Rd.		not coded
VDOT		Construct	Metro Station (Proposed)	@ Potomac Yards		No	2017
VDOT		Construct	Columbia Pike Streetcar	Skyline Center	Pentagon City	No	2017-2016
VDOT		Construct	Transit Center (Bradlee Shopping Center)	King St. and Braddock Rd.		No	2014
VDOT		Construct	Transit Center (Seven Corners)	Seven Corners Shopping Center		Yes	2012 2011
VDOT		Construct	Park-and-Ride Lot	Wiehle Ave. Parking Garage	@ Reston East Park-and-Ride Lot	Yes	2013 2011
VDOT		Construct	Park-and-Ride Lot	Springfield CBD	vic. I-95 & Old Keene Mill Road	No	2015-2014
VDOT		Relocate/Construct	Park-and-Ride Lot (Leesburg)	Relocate to vic. of Leesburg Bypass and / or the Dulles	700 Spaces	Yes	2010
VDOT		Construct	Lease Commuter Parking Spaces at Lowes Island	Leesburg			2013
VDOT		Construct	Park-and-Ride Lot	Purcellville	100 Space Park & Ride Lot		2015

Shaded areas represent changes since the 2011 CLRP

2012 CLRP FY2013-2018 TIP AIR QUALITY CONFORMITY INPUTS (Transit)

05/10/12

Agency	Project ID	Improv.	Facility	From	To	Under Const. or ROW acquired?	Complt. Date or Status
VDOT		Implement	Loudoun County Commuter Bus Service.	Town of Leesburg -Harrison St & Catoctin Circle	400 Space Park & Ride Lot	Yes	2010
VDOT		Construct	Park-and-Ride Lot	Dulles Town Center	300 Spaces	Proffered	2015
VDOT		Construct	Park-and-Ride Lot	US 50 at Stone Ridge	150 Spaces	Proffered	2015
VDOT		Construct	Park-and-Ride Lot	US 50 Dulles at East Gate	200 Spaces	Yes	2025
VDOT		Construct	Park-and-Ride Lot	VA 234 (vicinity of I-66)	at Cushing Road	No ROW acquired	2011
VDOT		Construct	Park & Ride Facility	Round Hill	75 Spaces	No	2015
VDOT		Construct	Park & Ride Facility	Brambleton	100 space expansion	No	2015
VDOT		Construct	Park & Ride Facility	Arcola Center	300 Spaces	Proffer	2015
VDOT		Construct	Park-and-Ride Lot	at EPG		No	2015
VDOT		Construct	Park-and-Ride Lot	Telegraph Rd.	400-500 spaces		2013
VDRPT		Construct	Dulles Corridor Metrorail	East Falls Church Metrorail Station	Wiehle Ave.	No	2013
VDRPT		Construct	Dulles Corridor Metrorail	Wiehle Ave. Station	Route 772	No	2016
VRE		Construct	VRE - Cherry Hill Commuter Rail Station	Cherry Hill	Prince William County	No	2012 2015
VRE		Implement	VRE Service Improvements (Reduce Headways)	Fredericksburg and Manassas lines		No	2020
VRE		Construct	VRE- 3rd Track/ Cherry Hill Commuter Rail Station	Arkendale, Stafford Co.	Powell's Creek, Prince William Co.	No	2012 2015
VDOT		Implement	Beltway HOT lanes transit service			No	2013
VDOT		Implement	Beltway HOT lanes transit service			No	2020

Shaded areas represent changes since the 2011 CLRP

2012 CLRP FY2013-2018 TIP AIR QUALITY CONFORMITY INPUTS (Transit)

05/10/12

Agency	Project ID	Improv.	Facility	From	To	Under Const. or ROW acquired?	Complt. Date or Status
VDOT		Implement	Beltway HOT lanes transit service			No	2030
VDOT		Implement	(Fairfax Connector Service Enhancements)			Complete	2011
		Implement	VA 7 Bus Priority Improvements (TIGER Grant)	Alexandria	Tyson's Corner		by 2016
		Implement	Van Dorn - Pentagon Rapid Bus (TIGER Grant)	Van Dorn St. Metro	Pentagon		2013
Alex.		Construct	Van Dorn - Pentagon BRT (City Funded)	Van Dorn St. Metro	Pentagon		2016
		Implement	I-95/I-395 Multimodal Improvements (TIGER Grant)				by 2016
Alex.	New	Construct	Landmark Transit Center	Duke St. & Van Dorn		No	2023
Alex.		Implement	DASH Bus Expansion	City-Wide			2012
Alex.		Construct	Duke Street BRT	King Street Metro	Fairfax County Line		2022

Shaded areas represent changes since the 2011 CLRP

2012 CLRP FY2013-2018 TIP AIR QUALITY CONFORMITY INPUTS (Highway and HOV)

Agency	Project ID	Improv.	Facility	From	To	Facility		Lanes		Under Const. or ROW acquired?	Compl. Date or Status
						from	to	from	to		
						District of Columbia					
DDOT	DP9A	Widen / Realign	South Capitol St. Corridor: Frederick Douglass Bridge	S. Capitol St. (east)	Potomac Ave. (west)	2	2	5	6		2015
DDOT	DP9C	Construct	South Capitol St. Corridor: S. Capitol St. intersection	at Potomac Ave.							2015
DDOT	DP9D	Construct	South Capitol St. Corridor: Suitland Parkway Intch.	at MLK Jr. Blvd to complete movements							2016
DDOT	DI10	Downgrade	SE/SW Freeway	11th St. SE	Barney Circle/ PA Ave.	1	3				2015
DDOT	DI7A	Reconstruct/ Widen	11th St. Bridges (2 spans)	I-295	Southeast Freeway			8	freeway 4 local		2013
DDOT	DI7A	Construct	11th St. Bridges (2 spans)	ramp movements to/from the northbound Anacostia Freeway for each span							2013
DDOT		Remove	I-395 SB exit ramp (w/ Return to L'Enfant project)	SB to the 400 block of 3rd St. NW				1	0		2011
DDOT		Construct	F St. (w/ Return to L'Enfant project)	2nd St. NW	3rd St. NW			0	2		2014
DDOT	DI9	Reconstruct	I-295/ Malcolm X Interchange	add above grade ramp connection from NB I-295 off ramp to new St. Elizabeth's Access Rd.							2014
DDOT	DP10	Construct	St. Elizabeth's Access Rd. (along West Campus western boundary)	Firth Sterling	Malcolm X			0	3		2014
DDOT	DS3	Construct	Southern Ave. SE	Branch Ave. SE	Naylor Rd. SE			0	2		2016
DDOT	DP13	Reconstruct	15th St. NW - add bike lane	Constitution Ave. NW	W. St. NW			6	5		2011
DDOT		Pilot Study	L St. NW - add bike lane	11th St. NW	25th St. NW			4	3		not coded
DDOT		Pilot Study	M St. NW - add bike lane	15th St., NW	29th St. NW			4	3		not coded
DDOT		Pilot Study	9th St. NW - add bike lane	Constitution Ave. NW	K St. NW			5	4		not coded
DDOT	DP11	Reduce Capacity	Wisconsin Ave.	Garfield St.	34th St.			4/6	4		2011

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DDOT	DP12	1-way to 2-way	17th St. NE/SE	Benning Rd. NE	Potomac Ave. SE			2 SB	1 SB/ 1 NB		2012
DDOT		Reduce Capacity	H St. NW peak period Bus-Only Lanes	17th St. NW	New York Ave. NW			5 pk	4 pk		2012
Maryland											
MDOT Freeway											
MDSHA	MI2q	Construct	I-270	Interchange at Watkins Mill Road Extended		1	1	8	8+2	No	2016
MDSHA	MI2SHOV MI2S	Construct	I-270/US 15 Corridor	Shady Grove Metro	Biggs Ford Rd	1	1	varies		No	2030
MDSHA		Reconstruct	I-270	Interchange at MD 121		1	1	1	2	No	2016
MDSHA	MI4	Widen	I-70	Mt. Phillip Rd.	MD 144FA	1	1	4	6	No	2020
MDSHA	MI4a	Reconstruct	I-70	Interchange at Meadow Rd.	to add missing movements	1	1			No	2020
MDSHA	MI1f	Construct	I-95	Contee Road Relocated w/ CD Roads		1	1	8	8+4	No	2016 2020
MDSHA	MI1k	Construct	I-95/I-495 (Capital Beltway)	Branch Avenue Metro Access (Phases I & II)		1	1	8	8	Yes	2020 (Phase II)
MDSHA	MI1p	Study	I-95/I-495 (Capital Beltway)	Interchange at Greenbelt Metro		1	1	8	8+2	No	not coded
MDSHA	MP12	Construct	Intercounty Connector	I-270	MD 97	0	1	0	6	Completed	2011
MDSHA	MP12	Construct	Intercounty Connector	MD 97	I-95	0	1	0	6	Completed	2011 2012
MDSHA	MP12a	Construct	Intercounty Connector	I-95	US 1	0	1	0	4-6	Yes	2014 2012
MDOT Primary											
MDSHA	MP10a	Reconstruct	US 1 (Baltimore Avenue)	College Avenue	Sunnyside Avenue	2	2	4	4	No	2020
MDSHA	MP10b	Widen	US 1, Baltimore Avenue	Cherry Hill Road	I-95/I-495	2	2	4	6	No	2010

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MDSHA	MP9b	Construct	MD 2/4 at Lusby Southern Conn. Rd.	MD 765	MD 2/4 at Lusby	0	2	0	3	No	2040
MDSHA	MP2c	Widen	MD 3 (Robert Crain Highway)	US 50	Anne Arundel County Line	2	2	4	6	No	2030
MDSHA		Construct	MD 4 (Pennsylvania Avenue)	Interchange at Westphalia Rd		2	5	4	6	No	2020
MDSA		Construct	MD 4 (Pennsylvania Avenue)	Interchange at Suitland Pkwy		2	5	4	6	No	2016
MDSHA	MP3a	Upgrade/ Widen	MD 4	MD 223	I-95/I-495	2	1	4	6	No	2035
MDSHA		Construct	MD 5 (Branch Avenue)	Interchange at Earnshaw/Burch Hill Roads		2	5	4	6	No	2025 2009
MDSHA	MP4f	Upgrade/ Widen	MD 5 (Branch Avenue)	US 301 at T.B.	North of the Capital Beltway	2	5	4	6	No	2025
MDSHA		Construct	MD 5 (Branch Avenue)	Interchange at MD 373/Brandywine Road Rel.		2	5	4	6	No	2016
MDSHA		Construct	MD 5 (Branch Avenue)	Interchange at Surratts Road		2	5	4	6	No	2025 2009
MDSHA	MP15	Construct	US 15	Interchange at Monocacy Blvd.		2	2	6	6	No	2016
MDSHA		Construct	US 29 (Columbia Pike)	Interchange at Musgrove/Fairland Rd.				6	6	No	2025
MDSHA	MP5e	Study	US 29, Columbia Pike	north of MD 650	Howard County Line	2	5	6	6	No	not coded
MDSHA		Construct	MD 75 Relocated	MD 80		0	4	0	4	No	2020
MDSHA	FP2	Widen	MD 85 (Buckeystown Pike)	English Muffin Way	north of Grove Road	2	2	2/4	4/6	No	2020
MDSHA	MP14	Reconstruct	MD 202 (Largo Town Ctr. Metro Access Improvs.)	at Brightseat Rd		2	2	6	6	No	2020
MDSHA		Upgrade	MD 210 interchange improvs.	@ Livingston Rd. / Kerby Hill Rd.		2	5	6	6		2020
MDSHA	MP6d	Upgrade	MD 210 (Indian Head Highway) with interchange improvements at: Wilson Bridge Dr., Livingston Rd./Palmer Rd., Old Fort Rd. North, Ft. Washington Rd., and Livingston Rd/Swan Creek Rd. Intersections	MD 228	Capital Beltway	2	5	6	6	No	2030

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						from	to	from	to		
						MDSHA	MP8e	Study	US 301		
MDTA	MP18	Construct	US 301 Governor Nice Bridge	Charles County, MD	King George County, VA	2	2	2	4	No	2030 2040
MDSHA	MP16	Construct	US 340 Interchange	@US 340 at Jefferson Tech Park		1	1	4	4	No	2016
MDOT Secondary											
MDSHA	MS33	Widen	MD 27	MD 355	A 305	2	2	4	6	No	2020
MDSHA	MS2f	Widen	MD 28 (Norbeck Road) / MD 198 (Spencerville Road)	MD 97	I-95	2	2	2/4	4/6	No	2025
MDSHA	MP12c	Construct	MD 97 (Brookeville Bypass)	South of Brookeville interchange @ MD 28 (Norbeck Road)	North of Brookeville	0	2	0	2	No	2020
MDSHA		Upgrade	MD 97 (Georgia Avenue)	interchange @ Randolph Road		2	2	6	6	No	2030
MDSHA		Upgrade	MD 97 (Georgia Avenue)			2	2	6	6	No	2015
MDSHA	MS32	Widen	MD 117	I-270	Great Seneca Park	2	2	2	4	No	2025
MDSHA	MS34	Study	MD 121	I-270	W. Old Baltimore Rd.	3	3	4	6	No	not coded
MDSHA	MS6b	Widen	MD 124 (Woodfield Road)	Midcounty Highway	S. of Airpark Dr.	2	2	2	6	No	2020
MDSHA	MS6d	Widen	MD 124 (Woodfield Road)	N. of Fieldcrest Rd.	Warfield Road	2	2	2	6	No	2020
MDSHA		Study	MD 180/MD 351	Greenfield Dr.	Corporate Dr.					No	not coded
MDSHA	MS35	Widen	MD 197 (Collington Rd.)	MD 450 Relocated	Kenhill Dr.	2	2	2	4/5	No	2025
MDSHA	MS10b	Study	MD 201 (Kenilworth Ave.)	Rittenhouse Road	Pontiac St.	2	2	4	6	No	not coded
MDSHA		Construct	MD 355	Montrose/Randolph Rds.	CSX RR	2	2	6	6	No	2020
MDSHA	MS18d	Widen	MD 450 (Annapolis Road)	Stonybrook Drive	West of MD 3	2	2	2	4	No	2016
MDSHA	BRAC	Reconstruct	BRAC Intersection Improvements near the National Naval Medical Center, Bethesda								2012

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						from	to	from	to		
Montgomery County											
Mont.Co.	MC11c	Construct	A-305 - MidCounty Highway Extended	MD 355	MD 27	0	3	0	4	No	2012 2010
Mont.Co.	nrs	Construct	Burtonsville Access Rd.	MD 198	School Access Rd.	0	4	0	2	No	2013
Mont.Co.	nrs	Construct	Chapman Avenue	Randolph Road	Old Georgetown Road	0	3	0	2	No	2015
Mont.Co.	MC5d	Construct	Father Hurley Blvd.	Wisteria	MD 118 (Germantown Road)	0	2	0	4	Complete	2011
Mont.Co.	MC5c	Widen	Father Hurley/ Ridge Rd.	I-270	existing MD 27	2	2	4	6		2010
Mont.Co.	MC7a	Widen Study	Goshen Rd. South	South of Girard Street	1000 feet north of Warfield Road	3	3	2	4	No	2015 not coded
Mont.Co.	MC43	Construct	I-4 Bridge over I-270	Century Boulevard	Milestone Center Drive	0	3	0	4	No	2015
Mont.Co.	MC11a	Construct	M-83 - Midcounty Highway Extended	MD 27 (Ridge Road)	Middlebrook Road	0	2	0	4-6	No	2020
Mont.Co.	MC11d	Construct	M-83 - Midcounty Highway Extended	Middlebrook Road	Montgomery Village Avenue	0	2	0	4-6	No	2020
Mont.Co.	MC12f	Widen	MD 118 Ext (Grmntwn. Rd.)	MD 355	M-83/Watkins Mill Rd.	2	2	3	4	No	2020
Mont.Co.	MC14g	Widen	Middlebrook Road Ext.	MD 355	M-83	2	2	3	4	No	2020
Mont.Co.	MC15b	Construct	Montrose Parkway East	Eastern Limit of MD 355/Montrose Interchange Parklawn Drive	Veirs Mill Road/Parkland Road Intersection MD 586 -- Veirs Mill Road	0	2	0	4	No	2015
Mont.Co.	nrs	Construct	Nebel St Extended	Randolph Rd	Target Store Site	0	3	0	4	Complete	2011
Mont.Co.	MC42	Construct	Randolph Road	Parklawn Drive	Rock Creek Park	2	2	4	5	No	2014
Mont.Co.	MC34	Widen	Snouffer School Rd. Fac-- Planning	MD 124 Woodfield Rd. Goshen Rd.	Centerway Road MD 124	3	3	2	4	No	2016
Mont.Co.	MC23a	Construct	Watkins Mill Rd. ext.	I 270 (future interchange)	MD 355	0	2	0	6	Yes	2011
Mont.Co.	MC13	Construct	Woodfield Rd.(MD 124 Ext.)	1200' North of MD 108	MD 27	0	2	0	2	Yes	2011
Mont.Co.		Construct	Executive Blvd. Ext. - East	Rockville Pike (MD 355)	Nebel St. Ext.			0	4		2020
Mont.Co.		Construct	Executive Blvd. Ext. - West	Old Georgetown Rd.	Marinelli Rd.			0	4		2020

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						from	to	from	to		
Mont.Co.		Construct	Main St./Market St.	Old Georgetown Rd.	Rockville Pike (MD 355)			0	2		2020
Mont.Co.		Construct	Old Georgetown Rd.	Old Georgetown Rd.	Nicholson Lane/TildenLane			0	6		2020
Mont.Co.		Construct	Hoya St.	Executive Blvd.	Montrose Pkwy			0	4		2020
Mont.Co.		Construct	Platt Ridge Dr. Ext.	Jones Bridge Rd.	Montrose Dr.			0	2		2014
Mont.Co.	nrs	Construct	Century Blvd.	Current terminus south of Oxbridge Tract	Intersection with future Dorsey Mill Road	?	?	0	4		2014
Prince Georges County											
PG Co.	PGS3a	Widen	Addison Road	MD 214	Walker Mill Road	3	3	2	4	Yes	2019 2016
PG Co.		Reconstruct	Addison Road	Sheriff Road	MD 704	4	4	2	2	Yes	2014
PG Co.	PGS5	Construct	Allentown Road Relocated	Indian Head Highway (MD 210)	Brinkley Road	0	3	0	4	No	2025
PG Co.	PGS73	Widen	Ardwick-Ardmore Road	MD 704	91st Ave.	4	4	2	4	Yes	2015
PG Co.	PGP4a	Construct	Baltimore Washington Pkwy/Greenbelt Rd (MD 193)	ramp to southbound Baltimore Washington Pkwy		0	5	0	4	No	2025
PG Co.	PGS75	Widen	Berry Road	Livingston Road	Accokeek Road (MD 373)	4	4	2	4	No	2010
PG Co.	PGS9b	Widen	Bowie Race Track Road	Laurel-Bowie Road (MD 197)	Old Chapel Road	4	4	2	4	No	2015
PG Co.	PGS9a	Widen	Bowie Race Track Road	Annapolis Road (MD 450) north of Piscataway Road (MD 223)	Old Chapel Road	4	4	2	4	No	2015
PG Co.	PGS10	Widen	Brandywine Road	Montgomery County line	Thrft Road	4	4	2	4	No	2020
PG Co.	PGS76	Widen	Briggs Chaney Road	Montgomery County line	Old Gunpowder Road	3	3	2	4	Yes	2010
PG Co.	PGS12	Widen	Brinkley Road	St. Barnabas Road (MD 414)	Allentown Road (MD 337)	3	3	4	6	No	2020
PG Co.	PGS13	Construct	Brooks Drive Extended	Marlboro Pike	Rollins Avenue	0	3	0	4	No	2020
PG Co.	PGS14	Widen	Cabin Branch Drive	Columbia Park Road	north of Sheriff Road	4	4	2	4	No	2015
PG Co.	PGS16a	Construct	Campus Way North	Lake Arbor Way	south of Lottsford Road	0	4	0	4	No	2023 2004
PG Co.	PGS16b	Construct	Campus Way North Extended	south of Lottsford Road	Evarts Drive	0	4	0	4	No	2020

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						from	to	from	to		
						PG Co.	PGS17	Widen	Cherry Hill Road		
PG Co.	PGS18	Widen	Church Road	Oak Grove Road	Annapolis Road (MD 450)	4	4	2	4	No	2011 2025
PG Co.	PGS20a	Widen	Columbia Park Road	Cabin Branch Road	Columbia Terrace	4	4	2	4	No	2020
PG Co.	PGS20b	Widen	Columbia Park Road	US 50	Cabin Branch Road	4	4	2	4	No	2020
PG Co.	PGS21a	Widen/ Construct	Contee Road	US 1	Old Gunpowder Road	4	4	2	4	Yes	2014
PG Co.	PGS22	Widen	Dangerfield Road	Cheltenham Avenue	Woodyard Road (MD 223)	4	4	2	4	No	2020
PG Co.	PGS24a	Widen	Dower House Road	Woodyard Road (MD 223)	Foxley Road	4	4	2	4	No	2025
PG Co.	PGS24b	Widen	Dower House Road	Foxley Road	Pennsylvania Avenue (MD 4)	4	4	2	6	No	2017
PG Co.	PGS25	Widen	Fisher road	Brinkley Road	Holton Lane	4	4	2	4	No	2015 2017
PG Co.	PGS26	Construct	Forbes Boulevard Extended	south of Amtrak	Greenbelt Road (MD 193)	0	4	0	4	No	2020
PG Co.	PGS27	Widen	Forestville Road	Allentown Road (MD 337)	Pennsylvania Avenue (MD 4)	4	4	2	4	No	2025
PG Co.	PGS29	Widen	Fort Washington Road	Riverview road east of Kenliworth Avenue (MD 201)	Indian Head Highway (MD 210)	4	4	2	4	No	2025
PG Co.	PGS30a	Widen	Good Luck Road	Good Luck Road	Cipriano Road	4	4	2	4	No	2025
PG Co.	PGS30b	Widen	Good Luck Road	Good Luck Road	Cipriano Road	4	4	2	4	No	2025
PG Co.	nrs	Widen	Governor Bridge Road	US301	Anne arundel County ML King Jr Highway (MD 704)	4	4	2	4	No	2020
PG Co.	PGS34a	Widen	Hill Road	Central Avenue (MD 214)	ML King Jr Highway (MD 704)	4	4	2	4	No	2018
PG Co.	PGS34b	Construct	Hill Road	Hill Road	Sheriff Road	0	4	0	2	No	2015
PG Co.	PGS88	Construct	Iverson St. Extended	Wheeler Road	19th Avenue	0	4	0	4	No	2018
PG Co.	PGS35	Widen	Karen Boulevard	Walker Mill Road	Central Avenue (MD 214)	4	4	2	4	No	2020
PG Co.	PGS38a	Widen	Livingston Road	Livingston Road	Indian Head Highway (MD 210) at Eastover	4	3/4	2	4	No	2015
PG Co.	PGS38b	Widen	Livingston Road	Piscataway Creek	Farmington Road	2	2	2	4	No	2020

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PG Co.	PGS40a	Widen	Lottsford Road	Archer Lane	Enterprise Road (MD 193)	3	3	2	4	No	2012
PG Co.	PGS39b	Widen	Lottsford Vista Road	ML King Jr Highway (MD 704)	Ardwick-Ardmore Road/Relocated	4	4	2	4	No	2020
PG Co.	PGS44b	Widen	Metzerott Road	Adelphi Road	University Boulevard (MD 193)	4	4	2	4	No	2020
PG Co.	PGS44a	Widen	Metzerott Road	New Hampshire Avenue (MD 650)	Adelphi Road	4	4	2	4	No	2020
	PGS45a			Atlantis/Northview Dr.	Mount Oak Road	4	4	4	6		
PG Co.	PGS89	Widen	Mt. Oak	Church Road	Mitchellville Road	3	3	2	4	complete ?	2011 2010
PG Co.	PGS46	Widen	Murkirk Road	west of Baltimore Avenue (US 1)	Odell Road	4	4	2	4	No	2020
PG Co.	PGS47	Widen	Oak Grove and Leeland Roads	Watkins Park Road (MD 193)	Robert Crain Highway (US 301)	4	4	2	4	No	2020
PG Co.	PGS48	Widen	Old Alexandria Ferry Road	Woodyard Road (MD 223)	Branch Avenue (MD 5)	4	4	2	4	No	2015
PG Co.	PGS80	Construct	Old Baltimore Pike Extended	Muirkirk Road	Contee Road	0	4	0	2	Yes	2020
PG Co.	PGS50	Widen	Old Branch Avenue	north of Piscataway Road (MD 223)	Allentown Road (MD 337)	4	4	2	4	Yes	2020
PG Co.	PGS90	Construct	Old Fort Rd. Extended	Piscataway Road (MD 223)	Old Fort Rd	0	4	0	4	No	2020
PG Co.	PGS51a	Widen	Old Gunpowder Road	Powder Mill Road	Greencastle Road	3	3	2	4	No	2015
PG Co.	PGS52	Widen	Oxon Hill Road	Fort Foote Rd - North	MD 210	3	3	2	4	No	2014 2014
PG Co.		Widen	Oxon Hill Road	National Harbor Entrance	Fort Foote Rd - North	4	4	2	3 4	Yes	2013
PG Co.	PGS81	Construct	Presidential Parkway	Suitland Parkway	Melwood Road	0	3	0	6	No	2025
PG Co.	PGS54	Widen	Rhode Island Avenue	University Boulevard (MD 193)	Baltimore Avenue (US 1)	4	4	2	4	No	2016 2017
PG Co.	PGS55b	Widen	Ritchie Marlboro Road	White House Road	Old Marlboro Rd.	3	3	2	4		2020
PG Co.	PGS56a	Widen	Ritchie Road/Forestville Road	Alberta Drive	MD 4 Pennsylvania Avenue	2	2	2	4	Yes	2020
PG Co.	PGS57	Widen	Rollins Avenue	Central Avenue (MD 214)	Walker Mill Road	4	4	2	4	No	2020
PG Co.	PGS58	Widen	Rosaryville Road	Robert Crain Highway (US 301)	Woodyard Road (MD 223)	3	3	2	4	No	2020

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PG Co.	PGS60b	Construct	Spine Road	Branch Avenue (MD 5)/US 301	Brandywine Road (MD 381)	3	3	0	4	No	2016
PG Co.	PGS61	Widen	Springfield Road	Lanham-Severn Road (MD 546)	Good Luck Road	4	4	2	4	No	2020
PG Co.	PGS82	Construct	St. Joseph's Drive	MD 202	Ardwick-Ardmore Road	0	4	0	4	No	2015
PG Co.	PGP2	Construct	Suitland Parkway	interchange at Rena/Forestville Roads		5	5	0	0	No	2025
PG Co.	PGS62a	Widen	Suitland Road	Allentown Road (MD 337)	Suitland Parkway	3	3	2	4	No	2018
PG Co.	PGS62b	Widen	Suitland Road	Suitland Parkway	Silver Hill Road (MD 458)	3	3	2	4	No	2018
PG Co.	PGS63	Widen	Sunnyside Avenue	Baltimore Avenue (US 1)	Kenliworth Avenue (MD 201)	4	4	2	4	No	2020
PG Co.	PGS64	Widen	Surratts Road	Beverly Avenue	Brandywine Road	4	4	2	4	No	2012
PG Co.	PGS65	Widen	Temple Hill Road	Piscataway Road (MD 223)	St. Barnabas Road (MD 414)	3	3	2	4	No	2020
PG Co.	PGP5a	Construct	US 50/Columbia Park Road Ramp	westbound ramp to Columbia Park Road		5	5	1	1	No	2025
PG Co.	PGP5b	Construct	US 50/Columbia Park Road Ramp	eastbound ramp Cheverly vicinity		5	5	1	1	Yes	2003
PG Co.	PGS67a	Widen	Van Dusen Road	Contee Road	Sandy Springs Road (MD 198)	3	3	2	4	No	2020
PG Co.	PGS67b	Construct	Van Dusen Road Interchange	@Contee Road		0	0	0	0	No	2025
PG Co.	PGS68	Widen	Virginia Manor Road	Muirkirk Road	Contee Road	4	4	2	4	No	2015 2013
PG Co.	PGS69a	Widen	Walker Mill Road	Silver Hill Road	I-95	3	3	2	4	No	2020
PG Co.	PGS91	Widen	Westphalia Rd.	MD 4	Ritchie-Marlboro Rd.	4	3	2	4		2020
PG Co.	PGS70	Widen	Wheeler Road	St. Barnabas Road (MD 414)	District of Columbia limits	2	2	2	4	No	2020
PG Co.	PGS71	Widen	White House Road	Ritchie-Marlboro Road	Largo-Landover Road (MD 202)	3	3	2	6	Yes	2020
PG Co.	PGS72	Widen	Whitfield Chapel Road	Annapolis Road (MD 450)	Ardwick-Ardmore Road	4	4	2	4	No	2020
PG Co.	PGS40b	Construct	Woodmore Road	Enterprise Road (MD 193)	Church Road		3		4	No	2015
PG Co.	PGS42	Widen	Woodyard Road (MD 223)	Rosaryville Road	Dower House Road	2	2	2	4	No	2020

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						from	to	from	to		
PG Co.	PGS42b	Construct	Woodyard Road Relocated (MD 223)	Piscataway Creek	Livingston Road	0	3	0	2	No	2010
PG Co.	PGS42c	Widen	Woodyard Road Relocated (MD 223)	Piscataway Creek / Floral Park Rd.	Livingston Road / MD 4	3	3	2	4	No	2017
City of Frederick											
City of Frederick	FS2	Construct	Monocacy Blvd	Hughes Ford Rd.	Gas House Pike	0	3	0	4	Yes	2011 2012
Charles County											
Chas.Co.	CHS1	Widen/ Realign	Cross County Connector (Billingsly Rd.)	Middletown Rd.	MD 210	3	3	2	4		2009
Anne Arundel County											
BMC	AA1d	Widen	I-97	US 50/301	MD 32/3	1	1	4	6		2025
BMC	AA15a	Widen	I-295	I-195	MD 100	1	1	4	6		2015
BMC	AA15c	Widen	I-295	I-695	I-195	1	1	4	6		2015
BMC	AA15b	Construct	I-295 (New Interchange)	Hanover Road							2015
BMC	AA3e	Widen	MD 2	US 50	MD 10	-	2	4/5	6		2030
BMC	AA3g	Widen	MD 2	MD 450	South River Bridge	2	2	4	6		2030
BMC	AA4e	Widen	MD 3	MD 32	St. Stephen's Church Rd. AA/Prince George Co. Line	2	2	4	6		2025 2030
BMC	AA5e	Widen	MD 32	BW Parkway	Howard County Line	-	4	4	8		2020
BMC	AA14C	Widen	US50 / MD 304	AA / PG line	Bay Bridge	4	4	6	8		2020
BMC	AA6e	Widen	MD 100	Howard Co. Line	I-97		5/1	4	6		2025
BMC	AA7	Widen	MD 170	MD 175	MD 100	-	2	2	4		2020
BMC	AA8a	Widen	MD 175	MD 170	BW Parkway	-	2	2	4		2009
BMC	AA8b	Widen	MD 175	MD 170	BW Parkway		2	4	6		2015

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Agency	Project ID	Improv.	Facility	From	To	Facility		Lanes		Under Const. or ROW acquired?	Complt. Date or Status
						from	to	from	to		
						BMC	AA29	Widen	MD 177		
BMC	AA30	Widen	MD 198	MD 32	BW Parkway	2	2	2	4		2025
BMC	AA30a	Widen	MD 198	PG line	BW Parkway	2	2	4	6		2025
BMC		Widen	MD 607	Woods Rd.	MD 173			2	4		2025
BMC	AA34a	Widen	MD 713	MD 175	Arundel Mills Boulevard		2	2	4		2025
BMC	AA34b	Widen	MD 713	Arundel Mills Boulevard	MD 176		2	4	6		2025
Carroll County											
BMC	CA3A	Construct	MD 30 (Manchester Bypass)	North of MD 86	Brodbeck Rd		2	0	2		2030
BMC	CA1B	Widen	MD 140	Sullivan Road	Market St.		1	4/6	8		2025
BMC	CA1C	reconstruct	MD 140 (w/ intchg @ MD 191)	Baltimore County Line	Kays Mill Rd.			4	4		2020
BMC	CA2a	Widen	MD 26	MD 32	Reservoir			2	4		2015
BMC	CA2a	Widen	MD 26	MD 32	MD 27	-	2	4	6		2025
BMC	in base	Widen	MD 32	MD 26	Howard County Line		2	2	4		2020
BMC	CA5	Widen	MD 97	MD 140	Pleasant Valley Rd		2	2	4		2020
BMC	nr5	Construct	Boxwood Dr. Ext	Dogwood Dr. Terminus	MD 43 Ext.			0	2		2015
Howard County											
BMC	HW1b	Widen	I-70	US 29	US 40	1	1	4	8	-6	2025
BMC	HW1a	Reconstruct	I-70 (partial to full interchange)	@ Marriotsville Road		4	4				2020
BMC	HW19	Widen	I-95	Howard / PG line	Balt. / Howard line	4	4	8	40		2020
BMC	HW20	Widen	US 1	MD 100	PG/ Howard Line			4	6		2025
BMC	HW10d	Widen	US 29	I-70	MD 100	-	5	6	8		2030

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						from	to	from	to		
						BMC	HW10b	Widen	US 29 NB		
BMC	HW3c	Widen	MD 32	Cedar Lane	Anne Arundel County Line		1	4/6	8		2025 2015
BMC	HW3b	Widen	MD 32	MD 108	I-70	-	4	2	4		2015
BMC	HW3d	Widen	MD 32	MD 99 70	Carroll County Line		2	2	4		2025 2030
BMC	HW3e	construct/ reconstruct	MD 32 (interchanges)	@ I-70/ MD 144 Linden Church Rd/Dayton Shop @ Rosemary Lane							2014 2015
BMC		Construct	MD 32 (interchange)	@ Burntwoods Rd.						Complete	2009
BMC	HW6e	Widen	MD 108	Trotter Road	MD 32		2	2	4		2025
BMC	HW6d	Widen	MD 108	Woodland Rd.	1200' w. of Centennial Ln.	2	2	2	4		2014 2011
BMC	HW6e	Widen	MD 108	MD 104	MD 175	2	2	2	4		2020
BMC	HW7d	Widen	MD 175	US 4	Anne Arundel County Line		2	2	5		2020
BMC	HW8b	Widen	MD 216	High School Access Rd. West of US 29	Maple Lawn Blvd. Sanner Road		3	2	4		2015 2020
BMC	nrs	Widen	Guilford Rd.	US 1	Dorsey Run Road			2	4		2017
BMC	HW16C	Widen	Gorman Road	Stephens Road	US 4		3	2	3		2025
BMC	HW18a	Widen	Marriottsville Road	MD 99	US 40	-	3	2	6		2015
BMC	nrs	Widen	Patuxent Range Road	US 4	Dorsey Run Road			2	4		2015
BMC	HW11b	Widen	Rodgers Avenue	US 40	Courthouse Drive		3	2	4		2010
BMC	HW13a	Construct	Sanner Road South	Johns Hopkins Road	MD 216		3	0	4		2015
BMC	HW13b	Widen	Sanner Road North	Johns Hopkins Road	Pindell School Road		3	2	4		2015

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						from	to	from	to		
						BMC	HW14c	Widen	Snowden River Parkway		
Federal Lands											
Fed. Lands	FED3a	Construct	Manassas Battlefield Bypass	US 29 West of Centreville	East of Gainesville, via 234		1	0/2	4	No	2035
Fed Lands	FED3b	Close	US 29 (Lee Hwy.) - in battlefield park	Pageland Ln.	Bridge over Bull Run		0	2/4	0	No	2035
Fed Lands	FED3c	Close	VA 234 (Sudley Rd.)- in battlefield park	Southern Park Boundary	Sudly Springs (north of park)		0	2	0	No	2035
Fed. Lands	FED2	Widen	Old Mill Rd.(future Mulligan Rd.)	US 1	VA 611 (Telegraph Rd.)	4	4	0/2	4	Yes	2014-2012
VIRGINIA											
VDOT Freeway											
VDOT	VI1w	Widen	I-66 HOV during peak and SOV	US 15 (includes inch. reconst.)	US 29 (Gainesville)	1	1	4	8	No	2018
VDOT	VI1z	Reconstruct	I-66 Interchange	@ US 29 (Gainesville)		1	1	-	-	No	2014
VDOT	VI1ab	Reconstruct	I-66 Interchange	@ I-495 (Capital Beltway)		1	1	-	-	Yes	2013
VDOT	VI1aj	Construct	I-66 Vienna Metro Station bus ramp	EB I-66 and Saintsbury Dr.	Saintsbury Dr. and WB I-66	1	1	0	2	No	2014
VDOT		Widen	I-66 EB Auxiliary Lanes	West of Gallows Road	Off Ramp I-495 SB	1	1	3+1	3+1+2	No	2030
VDOT		Widen	I-66 WB Auxiliary Lanes	On Ramp from SB I-495	West of Gallows Road	1	1	3+1	3+1+2	No	2030
VDOT	VI1ah	Widen	I-66 EB Auxiliary Lanes	Cedar Lane	West of Gallows Road	1	1	3+1	3+1+1	No	2030
VDOT	VI1ai	Widen	I-66 WB Auxiliary Lanes	West of Gallows Road	Cedar Lane	1	1	3+1	3+1+1	No	2030
VDOT	VI1ae	Reconstruct	I-66 WB Operational/ Spot Improvements- extend	Fairfax Dr.	Sycamore St.	1	1	2	3	Complete	2011 2013
VDOT	VI1af	Reconstruct	I-66 WB Operational/ Spot Improvements- extend acceleration/deceleration lanes	Washington Blvd.	Dulles Airport Access Rd. connector	1	1	3	4	No	2020

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						from	to	from	to		
						VDOT	VI1ag	Reconstruct	I-66 WB Operational/ Spot Improvements		
VDOT	VI2ka	Widen	I-95 (Wilson Bridge and approaches)	VA 241 (Telegraph Rd.)	US 1	1	1	6	12	Yes	2013
VDOT	VI2ac	Reconstruct	I-95 Interchange	@ VA 613 (Van Dorn Street)		1	1	-	-	No	2025
VDOT	VI2p	Widen	I-95 (provide 4th lane)	Newington	VA 123	1	1	6	8	Complete	2011
VDOT	VI2ab	Reconstruct	I-95 Interchange	@ VA 642 (Lorton Road)		1	1	-	-	No	2010
VDOT	VI2RB	Widen	I-395 HOV Lanes ramp	exit to Eads St.		1	1	1	2	No	2014
VDOT	VI2r	Widen / Construct	I-395/I-95 HOV/ BUS/ HOT Lanes	Approx. 2 mi. N. of I-495	VA 3000 (Prince William Pkwy)	1	1	2	3	No	2015
VDOT	VI2r	Construct	I-395/I-95 HOV/ BUS/ HOT Lanes	VA 3000 (Prince William Parkway)	S. of VA 234 (Dumfries Rd.)	1	1	2	2	No	2015
VDOT	VI2s	Construct	I-395 (Auxiliary lane)	Northbound Duke St. on ramp	Seminary Rd off ramp	1	1	3	4	No	2015
VDOT	VI2r	Construct	I-395/I-95 HOV/ BUS/ HOT Lanes	S. of VA 234 (Dumfries Rd.)	VA 610 (Garrisonville Rd.) in Stafford Co.	1	1	0	2	No	2015
VDOT	VI2r11	Construct	I 95: HOV / Bus / HOT Lanes Ramp: Between VA 648 (Edsall) and Turkeycock Run	NB I-395 HOV/HOT lanes	NB I-395 GP	-	1	0	1	No	2015
VDOT	VI2r24	Construct	I 95: HOV / Bus / HOT Reversible Ramp:	NB HOV/Bus/HOT Lanes	VA 7100 (Fairfax Co. Pkwy) (Alban Rd.)	-	1	0	1	No	2015
VDOT	VI2r24	Construct	I 95: HOV / Bus / HOT Reversible Ramp:	VA 7100 (Fairfax Co. Pkwy) (Alban Rd.)	SB HOV/Bus/HOT Lanes	-	1	0	1	No	2015
VDOT	BRAC0004 / VI2ra	Construct	I-95 Reversible Ramp (Colocated w/ existing slip ramp from HOV to GP lanes)	NB HOV/BUS/HOT Lanes - Located N of Rte. 7100/I 95 I/C Phase II DAR	EPG Southern Loop Road. - AM Only	1	1	0	1	No	
VDOT	BRAC0004 / VI2rb	Construct	I-95 Reversible Ramp (Colocated w/ existing slip ramp from HOV to GP lanes)	EPG Southern Loop Road. - PM Only Phase I DAR	SB HOV/BUS/HOT Lanes - N of Rte. 7100/I 95 I/C	1	1	0	1	No	2012-2013
VDOT	BRAC0004/ VI2rc	Construct	existing slip ramp from HOV to GP lanes)	EPG Southern Loop Road. - PM Only Phase I DAR	NB I 95 GP Lanes	1	1	0	1	No	2013-2012

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						from	to	from	to		
VDOT	BRAC	Construct	I-95 NB Off Ramp @ Newington	NB I-95	NB Fairfax County Parkway	1	1	0	1	No	2020
VDOT	VI2r31	Construct	I 95: HOV / Bus / HOT Ramp:	SB Gen Purpose Lanes to SB HOV/Bus/HOT lanes	Between US 1 & VA 123	-	1	0	1	No	2015
VDOT	VI2r37	Construct	I 95: HOV / Bus / HOT Ramp:	SB Gen Purpose Lanes to SB HOV/Bus/HOT lanes	Between Opitz Blvd. and Dale Blvd.	-	1	0	1	No	2015
VDOT	VI2r34	Construct	I 95: HOV / Bus / HOT Ramp:	NB HOV/Bus/HOT to Gen. use lanes	Between VA 123 (Gordon Rd.) & VA 3000 (Prince William Pkwy.)	-	1	0	1	No	2015
VDOT	VI2r43	Construct	I 95: HOV / Bus / HOT Ramp:	SB HOV/Bus/HOT lanes to SB Gen Purpose Lanes	Between Dumfries Rd. and Joplin Rd.	-	1	0	1	No	2015
VDOT	VI2r43a	Construct	I 95: HOV / Bus / HOT Ramp:	SB Gen Purpose Lanes to SB HOV/Bus/HOT lanes	Between Dumfries Rd. and Joplin Rd.	-	1	0	1	No	2018
VDOT	VI2r45a	Construct	I 95: HOV / Bus / HOT Ramp:	NB HOV/Bus/HOT lanes to NB Gen Purpose Lanes	Between Joplin Rd. and Russell Rd.	-	1	0	1	No	2018
VDOT	VI2r44	Construct	I 95: HOV / Bus / HOT Ramp:	SB HOV/BUS/HOT lanes to SB GP lanes	Between VA 619 (Joplin Rd.) and VA 610 (Garrisonville Rd.)	-	1	0	1	No	2015
VDOT	VI2r45	Construct	I 95: HOV / Bus / HOT Ramp:	NB GP lanes to NB HOV/BUS/HOT Lanes	Between VA 619 (Joplin Rd.) and VA 610 (Garrisonville Rd.)	-	1	0	1	No	2015
VDOT	VI2R6A	Construct	I-395 HOV Lanes Reversible Ramp	NB HOV off-ramp to Seminary Rd. & Seminary Rd. on-ramp to SB HOV		1	1	0	1	No	2015
VDOT	VI2ca	Construct	I-495 access ramps (Phase VIII of I-95/394/495 Interchange)	Backlick Rd. to 1. mi. E. of I95/I395/I495	All Movements (I-95/395 NB & SB main & HOT to/from I-495/I-95 EB & WB main & HOV lanes)	1	1	-	-	Yes	2013
VDOT	VI4Iaux	Widen	I-495 NB Auxiliary Lane	1. mi. East of I-95/395/495	North of Hemming Ave. underpass	1	1	4+2	5+1	Yes	2013

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						from	to	from	to		
						VDOT	VI41aux	Widen	I-495 SB Auxiliary Lane		
VDOT	VI41aux	Widen	I-495 NB Auxiliary Lane	North of Hemming Ave. Underpass	Off Ramp to Braddock Rd	1	1	4+2	5+2	Yes	2030
VDOT	VI41aux	Widen	I-495 SB Auxiliary Lane	On Ramp from Braddock Rd	North of Hemming Ave. Underpass	1	1	4+2	5+2	Yes	2030
VDOT	VI41aux	Widen	I-495 NB Auxiliary Lane	On Ramp from Braddock Rd	Off Ramp to Rte 236	1	1	4+2	5+2	Yes	2030
VDOT	VI41aux	Widen	I-495 SB Auxiliary Lane	On Ramp from Rte 236	Off Ramp to Braddock Rd	1	1	4+2	5+2	Yes	2013
VDOT	VI41aux	Widen	I-495 NB Auxiliary Lane	On Ramp from Rte 236	Off Ramp to Gallows Road	1	1	4+2	5+2	Yes	2030
VDOT	VI41aux	Widen	I-495 SB Auxiliary Lane	On Ramp from Gallows Road	Off Ramp to Rte 236	1	1	4+2	5+2	Yes	2030
VDOT	VI41aux	Widen	I-495 NB Auxiliary Lane	On Ramp from Gallows Road	Off Ramp to Route 50	1	1	4+2	6+2	Yes	2013
VDOT	VI41aux	Widen	I-495 SB Auxiliary Lane	On Ramp from Route 50	Off Ramp to Gallows Road	1	1	4+2	5+2	Yes	2013
VDOT	VI41aux	Widen	I-495 NB Auxiliary Lane	On Ramp from Route 50	Off Ramp to I-66	1	1	4+2	5+2		2013
VDOT	VI41aux	Widen	I-495 NB Auxiliary Lane	On Ramp from Route 50	Off Ramp to I-66	1	1	5+2	6+2	Yes	2030
VDOT	VI41aux	Widen	I-495 SB Auxiliary Lane	On Ramp from I-66	Off Ramp to Route 50	1	1	4+2	5+2	Yes	2013
VDOT	VI41aux	Widen	I-495 NB	On ramp from EB I 66	Off Ramp to Rte 7	1	1	4+2	5+2	Yes	2013
VDOT	VI41aux	Widen	I-495 SB Auxiliary Lane	On ramp from Rte 7	Off Ramp to WB I 66	1	1	4+2	5+2	Yes	2030
VDOT	VI41aux	Widen	I-495 NB Auxiliary Lane	On ramp from Rte 7	Off Ramp to Rte 123	1	1	4+2	5+2	Yes	2013
VDOT	VI41aux	Widen	I-495 SB Auxiliary Lane	On ramp from Rte 123	Off Ramp to Route 7	1	1	4+2	5+2	Yes	2013
VDOT	VI41aux	Widen	I-495 SB Auxiliary Lane	On Ramp from Rte 123	Off Ramp to Route 7	1	1	5+2	6+2	Yes	2030
VDOT	VI41aux	Widen	I-495 NB Auxiliary Lane	On Ramp from Rte 123	Off Ramp to Rte 267	1	1	4+2	5+3	Yes	2013
VDOT	VI41aux	Widen	I-495 SB Auxiliary Lane	On Ramp from Route 267	Off Ramp to Route 123	1	1	4+2	5+4	Yes	2013

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						from	to	from	to		
VDOT	VI4laux	Widen	I-495 NB Auxiliary Lane	On Ramp from Route 267	Off Ramp to Route 193	1	1	4+2	5+2	Yes	2030
VDOT	VI4laux	Widen	I-495 SB Auxiliary Lane	On Ramp from Route 193	Off Ramp to Route 267	1	1	4+2	5+2	Yes	2030
VDOT	VI4k	Construct	I-495 HOT	American Legion Bridge	S. of George Washington Pkwy.	1	1	8	8+2	Yes	2030
VDOT	VI4ka	Construct	I-495 HOT Lanes	S. of George Washington Pkwy	S. of Old Dominion Dr.	1	1	8	8+2	No	2015 2013
VDOT	VI4IHOT	Construct	I-495 HOT	S. of Old Dominion Dr.	Hemming Ave. Underpass	1	1	8	8+4	Yes	2013
VDOT	VI4Ib	Construct	I-495 NB Auxiliary Lane	1 mi. east of I-95/I-395/I-495	North of Hemming Ave. Underpass	1	1	8	5+1	Yes	2013
VDOT	VI4Ib	Construct	I-495 SB Auxiliary Lane	Hemming Ave. Underpass	1 mi. east of I-95/I-395/I-495	1	1	8	5+1	Yes	2013
VDOT	part of VI4IHOT	Construct	I-495 HOT Lanes Interchange	Provides SB to WB, EB to SB, & NB to WB HOV	@ VA 267 (Dulles Toll Road)	1	1	-	-	Yes	2013
VDOT	part of VI4IHOTa	Construct	I-495 HOT Lanes Interchange	Provide SB HOT to EB HOV & EB DTR to NB HOT	@ VA 267 (Dulles Toll Road)	1	1	-	-	Yes	2013 2030
VDOT	part of VI4IHOTa	Relocate / Reconstruct	I-495 HOT Lanes Interchange	Move ramps from left side to right side: NB GP lanes to	@ VA 267 (Dulles Toll Road)	1	1	1	1	Yes	2013 2030
VDOT	VI4IHOTb	Construct	I-495 Interchange Ramp	SB I-495	WB Dulles Airport Access Highway (DAAH)	0	1	0	1	Yes	2020 2013
VDOT		Construct	I-495 Interchange Ramp	EB Dulles Airport Access Highway (DAAH)	NB I-495	0	1	0	1	Yes	2013
VDOT		Construct	I-495 Interchange Ramp	EB Dulles Airport Access Highway (DAAH)	SB I-495	0	1	0	1	Yes	2013
VDOT	part of VI4IHOT	Construct	I-495 HOT Lanes Interchange	NB to WB, SB to WB, EB to NB, and EB to SB	@ Jones Branch Connector	1	1	-	-	Yes	2013
VDOT	part of VI4IHOT	Construct	I-495 HOT Lanes Interchange	NB to WB, SB to WB, EB to NB, and EB to SB	@ West Park Connector	1	1	-	-	Yes	2013
VDOT	part of VI4IHOT	Construct	I-495 HOT Lanes Interchange	NB to EB, NB to WB, EB to SB, and WB to SB	@ VA 7	1	1	-	-	yes	2013
VDOT	part of VI4IHOT	Construct	I-495 HOT Lanes Interchange	Provides SB to WB, WB to SB, EB to SB, NB to WB, WB	@ I-66	1	1	-	-	Yes	2013
VDOT	part of VI4IHOT	Construct	I-495 HOT Lanes Interchange	NB to EB	@ I-66	1	1	-	-	Yes	2013

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						from	to	from	to		
VDOT	part of VI4IHOT	Relocate	I-495 HOT Lanes Interchange	@ I-66	Left side off ramp from NB I 495 to WB I 66 relocated to	1	1	1	2	Yes	2013
VDOT	part of VI4IHOT	Construct	I-495 HOT Lanes Interchange	NB to EB, NB to WB, EB to SB, and WB to SB	@ US 29	1	1	-	-	Yes	2013
VDOT	part of VI4IHOT	Construct	I-495 HOT Lanes Interchange	EB to NB, WB to NB, SB to EB, and SB to WB	@ VA 650 (Gallows Road)	1	1	0	1	Yes	2013
VDOT	part of VI4IHOT	Construct	I-495 HOT Lanes Interchange	EB to NB, WB to NB, SB to EB, and SB to WB	@ VA 620 (Braddock Road)	1	1	-	-	Yes	2013
VDOT	part of VI4IHOTa	Construct	I-495 HOT Lanes Interchange	NB to EB, NB to WB, EB to SB, and WB to SB	@ VA 620 (Braddock Road)	1	1	-	-	Yes	2013 2030
VDOT	MW1	Widen	Dulles Airport Access Road	Dulles Airport	VA 123	1	1	4	6	No	2017
VDOT Primary											
VDOT	VP1ab	Widen	US 1	Joplin Rd.	Brady's Hill Road	2	2	4	6	Yes	2012 2014
VDOT	VP1ad	Widen	US 1	Brady's Hill Road	Cardinal Drive	2	2	4	6	No	2025
VDOT	VP1ae	Widen	US 1	Blackburn Dr/Neabsco Mills Rd	Featherstone Road	2	2	4	6	No	2014 2025
VDOT	VP1a	Widen	US 1	Telegraph Rd.	VA 235 South	2	2	4	6	No	2020
VDOT	VP1u	Widen	US 1	VA 235 South	VA 235 North	2	2	4	6	No	2025
VDOT	VP1p	Widen	US 1 (part of 1/123 interchange)	Occoquan Rd.	Annapolis Way	2	2	4	6	Yes	2017
VDOT	VP2ja	Widen	VA 7 Bypass	VA 7 West	US 15 South (South King St)	5	1	4	6	No	2040
VDOT	VP2j	Widen	VA 7 Bypass	US 15 South (South King St)	VA 7/US 15 East	5	1	4	6	No	2040
VDOT		Construct	VA 7 WB Truck Climbing Lane	VA 9	Business 7 West Lewinsville Rd. West Approach to Bridge over	5	1	4	5	No	2014 2020
VDOT	VP2m	Widen	VA 7	Reston Avenue		2	2	4	6	No	2025
VDOT	nrs	Construct	VA 7	Bridge over Dulles Toll Road				4	6	No	2030
VDOT	VP2ma		VA 7	Rolling Holly Drive	Reston Avenue			4	6	No	2014
VDOT	VP2L	Widen	VA 7	Dulles Toll Rd.	I-495	2	2	6	8	Yes	2014
VDOT	VP2b	Widen	VA 7	Seven Corners	Bailey's Crossroads	2	2	4	6	No	2025

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						from	to	from	to		
VDOT	nrs	Construct	VA 7/15/ Bypass	Overpass at Sycolin Road		1	1	4	4	No	2014
VDOT	nrs	Construct	VA 7	Overpass at Lexington Drive		1	1	6	6	No	2020
VDOT	nrs	Construct	VA 7 interchange	@ VA 659 (Belmont Ridge Rd.)		-	-	-	-	No	2020 2015
VDOT	VP4e	Widen	US 15 (James Madison Highway)	US 29	I-66	2	2	2	4	No	2040
VDOT	VP6h	Widen	VA 28	Fauquier County Line	VA 652 (Fitzwater Dr.) VA 215 (Vint Hill Rd.)	3	3	2	4	No	2030 2025
VDOT	VP6ka	Widen	VA 28	VA 652 (Fitzwater Dr.)	Relocated	3	3	2	4	No	2020 2016
VDOT	VP6kb	Widen	VA 28	VA 215 (Vint Hill Rd.)	Relocated	3	3	2	6	No	2013 2016
VDOT	VP6ma	Widen	VA 28 (Nokesville Rd.)	Godwin Drive	Manassas City limits - west	3	2	4	6		2017
VDOT	VP6e	Widen/ Upgrade	VA 28 PPTA (Phase II)	I-66	VA 7	2	1	6	8	No	2025
VDOT	VP6eb	Construct	VA 28 Interchange	@ VA 209 (Innovation Ave.)		-	-	-	-	Yes	2015
VDOT	VP6ec	Construct/ Upgrade	VA 28 Intersection	at Steeplechase Drive Warp Dr.		1	1	6	6	Yes	2011
VDOT	VP7ae	Construct	US 29 Interchange	@ VA 55/VA 619		-	-	-	-	No	2014
VDOT	VP7r	Widen	US 29	Virginia Oaks Drive	I-66	2	5	4	6	No	2014
VDOT	VP7s	Widen	US 29 (add NB lane)	I-66	Entrance to Conway Robinson MSF	3	2	4	5	No	2014
VDOT	VP7ad	Reconstruct	US 29 Bridge Little Rocky Run	0.2 Miles East of Pickwick Rd	Rte 659 Union Mill Road			4	5	No	2015
VDOT	VP7aa	Widen	US 29	ECL City of Fairfax (vic. Nutley St.)	Espana Court	2	2	4	6	Yes	2012-2013
VDOT	VP7ab	Complete	US 29	Espana Court	I-495	2	2	4	6	No	2013
VDOT	VSP57a	Construct	Route 29 (Parallel)	US 29 (Lee Highway) (near US 15)	Sommerset Crossing Drive	0	4	0	4	No	2040
VDOT	VP8g	Widen	US 50	VA 659 Relocated	VA 742 (Poland Rd.)	2	2	4/5	6	No	2025

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Agency	Project ID	Improv.	Facility	From	To	Facility		Lanes		Under Const. or ROW acquired?	Complt. Date or Status
						from	to	from	to		
						VDOT	VP8c	Widen	US 50		
VDOT	VP8r	Widen	US 50	VA 609 (Pleasant Valley)	Rte 28 VA 661 (Lee Rd)	2	2	4/5	6	Yes	2014
VDOT	VP8h	Widen	US 50	ECL City of Fairfax	Arlington County Line	2	2	4	6	No	2025
VDOT	AR2e	Reconstruct	US 50 (Arlington Blvd.)	ARC/FFX Line	Washington Blvd.	2	2	6	6	No	2015
VDOT	AR2f	Reconstruct	US 50 (Arlington Blvd.)	Pershing Dr. @ Courthouse Road / 10th Street	Ft. Myer Dr.	5	5	6	6	No	2015
VDOT	VP8o	Reconstruct	US 50 Interchange	VA 606 (Loudoun County Parkway)		1	1	6	8	Yes	2013
VDOT		Construct	US 50 Interchange			-	-	-	-	No	2025
VDOT	VP10g	Widen	VA 123	Route 1	Horner Road	2	2	4	6	No	2017
VDOT	VP10h	Widen	VA 123 (Ox Road)	Hooes Rd.	Fairfax Co. Parkway	2	2	4	6	No	2025
VDOT	VP10f	Widen	VA 123 (Ox Road)	Fairfax Co. Parkway	Burke Center Parkway	2	2	4	6	No	2025
VDOT	VP10r	Widen	VA 123	Burke Center Parkway	Braddock Road	2	2	4	6	No	2025
VDOT	VP13a	Widen	VA 236	Pickett Road	I-395	2	2	4	6	No	2025
VDOT	VP12o	Construct	Tri-County Parkway (CTB alignment C & D)	VA 234 @ I 66	US 50	0	5	0	4	No	2035
VDOT Urban											
VDOT	VU28b	Construct	Battlefield Parkway	US 15 south of Leesburg	Dulles Greenway	0	2	0	4	No	2020
VDOT	VU28f	Construct	Battlefield Parkway	Fort Evans Road	Edwards Ferry Road	0	2	0	4	Yes	2012
VDOT	VU30f	Widen	East Elden Street	Van Buren St.	Fairfax County Parkway	2	2	4	6	No	2016
VDOT	VU52	Widen	Eisenhower Ave.	Stovall St. Mill Road	Holland Lane	3	3	4	6	No	2013
VDOT	VU35b	Construct	Mill Road Extension	Telegraph Rd.	DMV complex	-	-	-	-	No	2010
VDOT	VU51a	Construct	Potomac Yard Spine Road	US Route 1	Crystal Dr.	0	4	0	4	No	2014

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						from	to	from	to		
						VDOT	VU10b	Widen	Spring Street		
VDOT	VU33	Widen	Sycolin Road	VA 7/US 15 Bypass	SCL of Leesburg	3	3	2	4	No	2020
VDOT	VU32	Widen	US 15 (South King Street)	Evergreen Mill Road	SCL of Leesburg	3	2	2	4	No	2015
VDOT		Construct	US 15 Bypass Interchange	Edwards Ferry Rd.		2	2	-	-	No	2035
VDOT	VU40	Widen	US 29 (Lee Highway)	US 50	Chain Bridge Road	2	2	4	6	No	2040
VDOT	VU6b	Widen	US 29 (Lee Highway)/US 50	VA 123 (Chain Bridge Road)	Eaton Place	2	2	4	6	No	2043
VDOT	VU29	Construct	VA 123 (Chain Bridge Road)	US 50	I-66	2	2	5	6	No	2013
VDOT		Reconstruct	Chain Bridge Road/Eaton-Place Intersection	New "Right in/Right out" intersection at NB Chain-		2	2			No	2011
VDOT	VU45	Widen	VA 234 (Dumfries Road)	South Corporate Limits	Hastings Drive	3	3	2	4	No	2011
VDOT	VU48b	Widen	Wellington Road	Godwin Drive	VA 28 (Nokesville Road)	3	3	2	4	Yes	2010
VDOT	VU14a	Widen	Liberia Ave.	Rt.e 28	Quarry Road	3	3	4	6		2017
VDOT	VU54	Construct	Southern Collector Road	Rte 7 -Main St. at Rte 287	A Street(2,200) Ft N Yaxley	0	2			Yes	2014
ARLINGTON COUNTY SECONDARY											
VDOT	AR17a	Widen	Washington Blvd.	Wilson	Kirkwood	3	3	3	4	No	2015
FAIRFAX COUNTY SECONDARY											
VDOT	FFX2a	Construct	VA 602 (Reston Pkwy.)	VA 5320 (Sunrise Valley Dr.)	VA 606 (Baron Cameron Avenue)	2	2	4	6	No	2020
VDOT	nr	Reconstruct/ Widen	Rte 603 Beach Mill Road - Bridge over Nichols Branch	Rte 603 Beach Mill Road	Rte 674 Springvale Road (west of intersection)	0	0	1	1	Yes	2013 2014
VDOT	VSF4f	Widen	VA 611 (Furnace Road)	VA 123 (Ox Road)	VA 642 (Lorton Road)	3	3	2	4	Yes	2014 2013
VDOT	VSF4c	Widen	VA 611 (Telegraph Road)	VA 613 (Beulah St.)	Leaf Road North	3	3	2	4	Yes	2014 2012
VDOT	VSF4ca	Widen	VA 611 (Telegraph Road)	Leaf Road North	VA 635 (Hayfield Road)	3	3	2	4	No	2025

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						from	to	from	to		
VDOT	VSF4i	Widen	VA 611 (Telegraph Road)	VA 635 (Hayfield Road)	VA 633 (S. Kings Hwy.)	3	3	2	4	No	2025
VDOT	VSF4h	Widen	VA 611 (Telegraph Road)	VA 633 (S. Kings Hwy.)	VA 644 (Franconia Road)	3	3	2	3	No	2025
VDOT	VSF15b	Construct	VA 613 (Van Dorn Street)	@ VA 644 (Franconia Road)	interchange	0	0	0	0	No	2025
VDOT	VSF8g	Widen	VA 620 (Braddock Rd)	VA 7100 (Fairfax Co. Pkwy.)	VA 123 (Ox Road)	3	3	4	6	No	2025
VDOT	VSF8j	Construct/ Widen	VA 620 (New Braddock Rd.)	VA 28	US 29 @ VA 662 (Stone Rd.)	0/4	3	0/2	4	No	2025
VDOT	BRAC	Widen	VA 638 (Rolling Rd.) NB off-ramp @ Fairfax County Pkwy.	NB Rolling Rd.	NB Fairfax County Pkwy	3	3	2	4	No	2015 2020
VDOT	VSF10a	Widen	VA 638 (Rolling Rd.)	VA 7100 (Fairfax Co. Pkwy.)	VA 644 (Old Keene Mill Rd.)	3	3	2	4	No	2020 2015
VDOT	VSF10c	Widen	VA 638 (Pohick Road)	US 1	I-95	3	3	2	4	No	2025
VDOT	VSF13d	Widen	VA 642 (Lorton Road)	VA 123 (Ox Road)	VA 600 (Silverbrook Road)	3	3	2	4	Yes	2014 2013
VDOT	FFX11a	Widen	VA 645 (Stringfellow Rd.)	US 50	VA 7100 (Fairfax County Parkway)	3	3	2	4	No	2020
VDOT	VSF16g	Widen	VA 645 (Stringfellow Road)	VA 7735 (Fair Lakes Blvd.)	US 50	3	3	2	4	Yes	2013
VDOT	VSF37	Widen	VA 650 (Gallows Road)	Gatehouse Road	Providence Forest Dr.	2	2	4	6	Yes	2025
VDOT	VSF33d	Widen	VA 651 (Guinea Road)	VA 620 (Braddock Road)	VA 2430 (Braeburn Road)	3	3	2	4	No	2025
VDOT	VSF33a	Widen	VA 651 (Guinea Road)	VA 6197 (Roberts Parkway)	VA 4807 (Pommeroy Drive)	3	3	2	4	No	2025
VDOT	FFX12a	Construct	VA 651 (New Guinea Rd.)	VA 123 (Ox Road)	Roberts Rd.	0	3	0	4	No	2025
VDOT	VSF17b	Construct	VA 655 (Shirley Gate Road)	VA 7100 (Fairfax County Parkway)	VA 620 (Braddock Road)	0	3	0	4	No	2025
VDOT	VSF18c	Widen	VA 657 (Centreville Road)	VA 8390 (Metrotech Dr.)	VA 668 (McLearen Road)	3	3	4	6	No	2040
VDOT	VSF25aa	Convert	VA 7100 (Fairfax Co Pkwy HOV)	VA 267 (Dulles Toll Road)	Sunrise Valley Dr.	5	5	6	4+2	No	2035
VDOT	VSF25ea	Widen	VA 7100 (Fairfax Co Pkwy HOV)	Sunrise Valley	Rugby Rd.	5	5	4	4+2	No	2035
VDOT	VSF25e	Widen	VA 7100 (Fairfax Co Pkwy HOV)	Rugby Rd.	US 50	5	5	4	4+2	No	2035

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						from	to	from	to		
VDOT	VSF25y	Upgrade/ Widen	VA 7100 (Fairfax Co Pkwy HOV)	US 50	VA 7735 (Fair Lakes Pkwy)	2	5	4	4+2	No	2035
VDOT	VSF25z	Upgrade /Widen	VA 7100 (Fairfax Co Pkwy HOV)	VA 7735 (Fair Lakes Pkwy)	I-66	2	5	6	6+2	No	2035
VDOT	VSF25g	Widen	VA 7100 (Fairfax Co Pkwy)	I-66	VA 123 (Ox Road)	5	5	4	6	No	2020
VDOT	VSF25na	Construct	VA 7100 (Fairfax County Parkway) Phase 3	Donegal La. / Hooes Rd.	VA 7900 (Franconia- Springfield Parkway)	0	1	0	6	Yes	2012
VDOT	BRAC	Construct	VA 7100 (Fairfax County Parkway) Interchange	@ Franconia Springfield Parkway	Various movements; includes relocated Rolling Ramp movements: EB	-	-	-	-	Yes	2012
VDOT	BRAC / VSF25nb	Construct	VA 7100 (Fairfax County Parkway) Interchange	@ Boudinat Drive (BD) @ VA 7700 (Fair Lakes Pkwy)	F.C.Pkwy. To SB BD; WB	-	-	-	-	Yes	2011
VDOT		Construct	VA 7100 Interchange	@ VA 7700 (Fair Lakes Pkwy) & Monument Dr.		2	5	4	6	Yes	2013
VDOT	VSF39	Widen	VA 7735 (Fair Lakes Pkwy) (3rd EB Lane)	VA 7100	Fair Lakes Circle	4	4	4	5	No	2013
VDOT	VSF26	Construct	VA 7900 HOV (Franconia- Springfield Parkway)	VA 7100 (Fairfax County Parkway)	VA 2677 (Frontier Drive)	5	5	-	2	No	2025
VDOT	VSF26a	Construct	VA 7900 HOV (Franconia- Springfield Parkway)	Interchange @ Neuman St.		1	1	-	-	No	2025
VDOT	VSF26b	Upgrade Widen/ construct	VA 7900 HOV (Franconia- Springfield Parkway)	VA 638 (Rolling Rd.)	VA 617 (Backlick Rd.)	5	1	6+2	6+2	No	2025
VDOT	FED2	Construct / Widen	Old Mill Rd. (Future Mulligan Rd)	US 1	VA 611 (Telegraph Road)	4	4	2	4	Yes	2014-2012
VDOT	VSF41	Construct / Widen	Scotts Crossing Drive	Rte. 123 (Dolley Madison Blvd.)	Rte. 5062 - Jones Branch Dr.			0/2	4/4	No	2018
LOUDOUN COUNTY SECONDARY											
VDOT	VSL51	Construct	Atlantic Boulevard	VA 625 (Church Road)	VA 7	-	3	-	4	Yes	2012
VDOT	VSL1b	Widen/ Upgrade	VA 606 (Ldn Co. Pkwy) (nee Old Ox Rd.)	VA 634	VA 621	4	3	2	4	No	2020
VDOT	VSL10c	Construct	VA 607 (Loudoun County Pkwy)	VA 606 / VA 842	VA 772 / VA 607	0	3	0	4	Yes	2015
VDOT	VSL10bb	Widen/ Upgrade	VA 607 (Loudoun County Pkwy)	W&OD Trail	Redskin Park Drive	4	3	2	6	No	2025
VDOT	VSL10bf	Widen/ Upgrade	VA 607 (Loudoun County Pkwy) (dirt road)	Redskin Park Drive	Gloucester Parkway	4	3	2	4	No	2020 2013
VDOT	VSL10bc	Widen	VA 607 (Loudoun County Pkwy)	Redskin Park Drive	Gloucester Parkway	3	3	4	6	No	2025
VDOT	VSL12d	Construct	VA 625 (Waxpool Rd.)	VA 2920 Faulkner Parkway	Unbridled Way	4	3	2	4	No	2012

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						from	to	from	to		
						VDOT	VSL45	Widen/ Upgrade	VA 643 (Sycolin Road) Phase II		
VDOT	VSL4a	Study	VA 659 (Belmont Ridge Rd.) - PE ONLY	National Rec. & Park Ent.	Dulles Greenway	4	3	2	4	No	not coded
VDOT	VSL4ab	Construct	VA 659 (Belmont Ridge Road)	Dulles Greenway	VA-7 Gloucester Parkway	4	3	2	4	No	2025-2014
VDOT	VSL4ac	Widen	VA 659 (Belmont Ridge Road)	Dulles Greenway	VA 7	4	3	4	6	No	2035
VDOT	VSL4ad	Construct	VA 659 (Belmont Ridge Road)	VA 7	Russel Branch Parkway	4	3	2	4	No	2020 2014
VDOT	VSL4e	Widen/ Upgrade	VA 659 (Gum Spring Rd.)	VA 620 (Braddock Road)	US 50	4	3	2	4	Yes	2015
VDOT	VSL4f	Widen/ Upgrade	VA 659 (Gum Spring Rd.)	Prince William County Line	VA 620 (Braddock Road)	4	3	2	4	No	2035
VDOT	VSL50	Widen/ Upgrade	VA 773 (Fort Evans Road)	Leesburg Town Limits	Kingsport Rd.	4	3	2	4	No	2015
VDOT	nrs	Construct	VA 868 (Davis Dr.)	VA 606 (Old Ox Road)	VA 846 (Sterling Blvd)	0	4	0	4	No	2025
VDOT	VSL46	Construct	VA 1036 (Pacific Boulevard)	Sterling Blvd.	Gloucester Parkway	0	3	0	4	Yes	2015
VDOT	VSL52	Construct	VA 2150 (Gloucester Pkwy)	VA 607 (Loudoun County Pkwy)	VA 1036 (Pacific Blvd.)	0	3	0	4	No	2025 2015
VDOT	VSL48A	Construct	Riverside Parkway	River Creek Parkway	Upper Meadow Drive			2	4	No	2014
VDOT	VSL40F	Construct	Clairborne Parkway	Croson Lane	Ryan Road			2	4	No	2015
VDOT	VSL53	Construct	Tall Cedars Parkway	Pinebrook Road	Gum Springs Road			0	4	No	2015
VDOT	VSL49	Construct	Russell Branch Parkway	VA 659 (Belmont Ridge Road)	Loudoun County Parkway	0	3	0	4	Yes	2025 2014
PRINCE WILLIAM COUNTY SECONDARY											
VDOT	BRAC	Construct	Bypass Rd.	Russell Rd.	MDIA site entrance	0	3	0	2	No	2011
VDOT	VSP59	Construct	Peaks Mill (Purcell Road east)	Route 643 (Purcell Road)	Route 3000 (Prince William Parkway)	0	4	0	2	No	2035
VDOT	VSP25b	Widen	VA 1781 (NewTelegraph Rd/Summit School Road)	VA 849 (Caton Hill Road)	VA 640 (Minnieville Rd.)	4	4	2	4	No	2040
VDOT	VSP25c	Widen	VA 1781 (Telegraph Rd.)	VA 3000 (Prince William Parkway)	VA 849 (Caton Hill Rd.)	4	4	2	4	No	2040
VDOT	VSP23d	Widen	VA 3000 (Prince William Pkwy.)	VA 776 (Liberia Ave.)	Hoadly Rd.	2	2	4	6	Yes	2025 2040

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VDOT	VSP23e	Widen	VA 3000 (Prince William Pkwy.)	Hoadley Rd.	Old Bridge Rd.	2	2	4	6	Complete	2011
VDOT	VSP23f	Widen	VA 3000 (Prince William Pkwy.)	Old Bridge Rd.	Minnieville Rd.	2	2	4	6	Yes	2020 2015
VDOT	VSP3a	Widen/ Upgrade	VA 621 (Balls Ford Road)	VA 234 (Sudley Road)	Bethlehem Road	4	3	2	4	No	2040
VDOT	VSP3b	Widen/ Upgrade	VA 621 (Balls Ford Road)	Bethlehem Road	VA 234 Bypass	4	3	2	4	No	2040
VDOT	VSP5e	Widen	VA 640 (Minnieville Road)	VA 643 (Spriggs Road)	VA 234	3	3	2	4	Yes	2016-2014
VDOT	VSP8a	Widen	VA 643 (Purcell Rd.)	VA 234 (Dumfries Rd.)	VA 642 (Hoadly Rd.)	3	3	2	4	No	2025
VDOT	VSP17b	Widen	VA 674 (Wellington Rd.)	VA 621 (Devlin Road)	VA 668 (Rixlew Lane)	3	3	2	4	No	2035
VDOT	VSP18	Widen	VA 676 (Catharpin Rd.)	VA 55 (John Marshall Highway)	Heathcote Blvd.	3	3	2	4	No	2040
VDOT	VSP20c	Widen/ Upgrade	VA 1392 (Rippon Boulevard Extension)	West of Wigeon Way	Rippon VRE Station	4	3	2	4	No	2040
VDOT	VSP47d	Construct	VA 840 (University Blvd.) (nee East-West Connector)	Route 660 (Hornbaker Road)	Sudley Manor Dr.	0	3	0	4	Yes	2016 2014
VDOT		Widen	Hornbaker Rd.	N. of its intersection with University Blvd.	Thomason Barn Rd.			2	4	No	2016
VDOT	VSP62	Construct	Rollins Ford Rd.	Songsparrow Dr.	VA 215 (Vint Hill Rd.)	0		0	4	Yes	2016 2013
VDOT	VSP47e	Construct	University Blvd/Progress Ct	Wellington Rd	Rollins Ford Road			0	4	No	2016
FAMPO											
	VI2rf	Construct	I 95 : HOV / Bus / HOT Lanes	Rte. 610 (Garrisonville Rd.) in Stafford County	VA 17 in Spotsylvania County (exit 126)	1	1	0	2	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	South of Telegraph Road (North of Aquia Creek)	SB GP Lanes to SB HOT Lanes	1	1	0	1	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	South of Telegraph Road (North of Aquia Creek)	NB HOT Lanes to NB GP Lanes	1	1	0	1	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	North of Garrisonville Road (south of Aquia Creek)	NB GP Lanes to NB HOT Lanes	1	1	0	1	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	Between Garrisonville Road and Courthouse Road	SB GP Lanes to SB HOT Lanes	1	1	0	1	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	Between Garrisonville Road and Courthouse Road	NB HOT Lanes to NB GP Lanes	1	1	0	1	No	2018

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		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	Between Garrisonsville Road and Courthouse Road	SB HOT Lanes to SB GP Lanes	1	1	0	1	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	Between Garrisonsville Road and Courthouse Road	NB GP Lanes to NB HOT Lanes	1	1	0	1	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	South of Rt 628 (North of Stafford Regional Airport)	SB HOT Lanes to SB GP Lanes	1	1	0	1	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	South of Rt 628 (North of Stafford Regional Airport)	NB GP Lanes to NB HOT Lanes	1	1	0	1	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	(St.Co.Airport Access Rd.) and Rt 652	SB GP Lanes to SB HOT Lanes	1	1	0	1	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	(St.Co.Airport Access Rd.) and Rt 652	NB HOT Lanes to NB GP Lanes	1	1	0	1	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	(St.Co.Airport Access Rd.) and Rt 652	SB HOT Lanes to SB GP Lanes	1	1	0	1	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	(St.Co.Airport Access Rd.) and Rt 652	NB GP Lanes to NB HOT Lanes	1	1	0	1	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	South of Rt 17 (North of Rappahannock River)	NB HOT Lanes to NB GP Lanes	1	1	0	1	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	Just South of Rappahannock River	SB HOT Lanes to SB GP Lanes	1	1	0	1	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	Just north of Rt 3	NB GP Lanes to NB HOT Lanes	1	1	0	1	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	Between Rt 620 and Rt 208	NB GP Lanes to NB HOT Lanes	1	1	0	1	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	Between Rt 620 and Rt 208	SB HOT Lanes to SB GP Lanes	1	1	0	1	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	Between Rt 1 and Rt 17	NB GP Lanes to NB HOT Lanes	1	1	0	1	No	2018
		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	Between Rt 1 and Rt 17	SB HOT Lanes to SB GP Lanes	1	1	0	1	No	2018
	FAI1D	Reconstruct	I-95 interchange	I-95/VA 630		1	1	0	0	No	2020
		Reconstruct	I-95 interchange	I-95/VA 630						No	2015
	FAP5F	Widen	US 1	Prince William County Line	US 17(Warrenton Rd)/VA 218	2	2	4	6	No	2020
	FAP5I	Widen	US 1(Bridge Replacement)	US 17 (Butler Rd.)	Fredericksburg N. City Limit	2	2	4	6	No	2020
	FAP5E	Widen	US 1	VA 620 (Harrison Road)	Spotsylvania Parkway	2	2	4	8	No	2020

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						from	to	from	to		
							FAP5H	Widen	US 1		
	FAP5K	Widen	US 1 Business	South City Limit Fredericks.	Jefferson Davis Highway	2	2	2	4		2015
		Reconstruct	US 1 Interchange	At US 17						No	2015
	FAP6A	Widen	US 17 Bypass (Mills Dr.)	I-95	VA 2 (Tidewater Trail)	2	2	2	4	No	2015
	FAP6E	Widen	US 17 Business/VA 2	SCL Frederickburg	US 17 Bypass (Mills Dr.)	2	2	2	4		2035
	FAP6C	Widen	US 17 (Warrenton Rd.)	McLane Drive	Stafford Lakes Parkway	2	2	4	6	No	2015
	FAP6D	Widen	US 17 (Warrenton Rd.)	VA 654 (Berea Church Rd)	VA 612 (Hartwood Road)	2	2	4	6		2030
	FAP7	Widen	VA 218 (Butler Rd)	US 1	VA 218 (White Oak Rd.)	4	4	2	4	No	2025
	FAS23A	Construct	VA 208 Bypass (Spotsylvania)*	West of Ta River	East of Po River	0	3	0	2	yes	2015
	FAS40	Widen	VA 208 (Courthouse Road)	US 1 (Jefferson Davis Hwy)	VA 628 (Station Road)	3	3	4	6		2035
FREDERICKSBURG											
	FAP5J	Widen	US 1 Business	Blue-Gray Parkway	South City Limit			2	4		2015
	FAU1	Widen	Fall Hill Ave.	Mary Wash. Blvd. ext.	Carl D. Silver Pkwy			2	4		2015
STAFFORD COUNTY SECONDARY											
	FAS43	Intersection improvement	VA 606 (Ferry Rd)	VA 3 (Kings Highway)	VA 608 (Brook Rd)	4	3				2030
	FAS37	Upgrade	VA 608 (Brooke Rd.)	VA 605 (New Hope Ch. Rd.)	Dead End	4	3			No	2035
	FAS3c	Widen	VA 610 (Garrisonville Rd.)	VA 610 (existing 4 lane section)	VA 643	4	4	2	4		2015
	FAS3F	Intersection improvement	VA 610 (Garrisonville Rd.)	VA 643 (Joshua Road)	Fauquier County Line	4	3				2035
	FAS39	Widen	VA 610 (Garrisonville Rd.)	.13 miles west of VA 643 (Joshua Rd)	.42 miles east of VA 643 (Joshua Rd)	4	4	2	4		2015
	FAS3e	Widen	VA 610 (Garrisonville Rd.)	VA 648 (Shelton Shop Rd.)	VA 641(Onville Rd)	4	3	5	6	No	2030
	FAS3d	Widen	VA 610 (Garrisonville Rd.)	VA 641(Onville Rd)	VA 684 (Mine Rd)	4	3	4	6	No	2015

2012 CLRP FY2013-2018 TIP AIR QUALITY CONFORMITY INPUTS (Highway and HOV)

Agency	Project ID	Improv.	Facility	From	To	Facility		Lanes		Under Const. or ROW acquired?	Complt. Date or Status
						from	to	from	to		
	FAS33	upgrade	VA 616 (Poplar Rd.)	VA 652 (Truslow Rd.)	Fauquier County Line	4	3			No	2035
	FAS34A	upgrade	VA 627 (Mountainview Rd.)	VA 648 (Stefaniga Rd.)	Centreport Pkwy.	4	3			No	2035
	FAS34B	upgrade	VA 627	VA 616	Choptank Rd.	4	3			No	2035
	FAS5b	Widen	VA 630 (Courthouse Rd)	VA 732 (Cedar Lane)	VA 648 (Shelton Shop Rd)	4	4	2	4	No	2025
	FAS41	upgrade	VA 637	I-95	Woodstock Ln.	4	3			No	2035
	FAS35	widen	VA 641 (Onville Rd.)	VA 610 (Garrisonville Rd.)	Quantico Base			2	4		2030
	FAS42	upgrade	VA 644	VA 627	VA 610	4	3			No	2035
	FAS13	Reconstruct	VA 648 (Shelton Shop Rd.)	VA 610 (Garrisonville Rd)	VA 627 (Mountainview Rd)	4	4	2	4	No	2025
SPOTSYLVANIA COUNTY SECONDARY											
	FAS22	Widen	VA 3 (Spotsylvania)	Chewing Lane	VA 627 (Gordon Rd.)	2	2	4	6	No	2015
	FAS27	Widen	VA 608 (Massaponax Church Rd.)	VA 628 (Smith Station Rd)	I-95	3	3	2	4	No	2025
	FAS31	Widen	VA 610 (Old Plank Rd.)	VA 627 (Gordon Rd.)	VA 612 (Catharpin Rd.)	4	4	2	4	No	2030
	FAS18c	Widen	VA 620 (Harrison Rd)	VA 3 (Plank Road)	VA 627 (Gordon Rd.)	4	4	2	4		2015
	FAS9b	Widen	VA 627 (Gordon Rd.)	VA 628 (Smith Station Rd)	VA 620 (Harrison Rd.)	4	4	2	4	No	2015
	FAS9C	Widen	VA 627 (Gordon Rd.)	VA 628 (Smith Station Rd)	VA 613 (Brock Road)	4	4	2	4		2035
	FAS28	Widen	VA 628 (Smith Station Rd)	VA 608 (Massaponax Church Rd.)	VA 627 (Gordon Rd.)	4	4	2	4	No	2025
	FAS19	Widen	VA 636 (Mine Rd./ Hood Dr.)	VA 208 (Courthouse Rd.)	VA 638 (Lansdowne Rd.)	4	4	2	4	No	2025
	FAS36	Widen	VA 638 (Lansdowne Rd)	SCL Frederickburg	VA 636 (Mine Rd)	3	3	2	4		2035
	FAS20b	Widen	VA 639 (Leavells Rd.)	VA 208 (Courthouse Rd.)	VA 628 (Smith Station Rd.)	4	4	2	4	Yes	2025
	FAS20c	Widen	VA 639 (Bragg Rd.)	VA 618 (River Rd.)	VA 3	4	4	2	4	No	2015
	FAS38	Widen	VA 674 (Chancellor Rd.)	VA 610 (Old Plank Rd)	VA 627 (Gordon Rd.)	4	4	2	4		2035

APPENDIX C

Interagency and Public Involvement Process

National Capital Region Transportation Planning Board

777 North Capitol Street, N.E., Suite 300, Washington, D.C. 20002-4290 (202) 962-3310 Fax: (202)962-3202

**NOTE: Illustration monthly
Consultation letter**

February 10, 2012

TO: Transportation Consultation Agencies
(United States Environmental Protection Agency, Federal Highway Administration, Federal Transit Administration, Metropolitan Washington Air Quality Committee, Air Quality Public Advisory Committee, and Transportation Planning Board Citizens Advisory Committee)

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

SUBJECT: Consultation with respect to TPB plans and programs

Enclosure:

- 1) Agenda for February 15, 2012 TPB meeting

This memo transmits the agenda for the February TPB meeting, which is relevant to TPB consultation with respect to air quality conformity. Materials associated with each agenda item are available on the TPB web site www.mwcog.org under 'Dates and Events'. As always, you are welcome to attend the TPB meetings (and/or any meetings of the TPB committees and their subcommittees). A schedule of monthly meetings is listed in the Calendar of Events in *TPB NEWS*.

Please be aware that there will be a Special Work Session on Air Quality and Transportation from 10:45 a.m. to 11:45 a.m. on February 15 in the COG Board Room. The purpose of the work session is to provide an overview of the status of air quality planning in the Washington region, and on the linkages to transportation planning through the air quality conformity process. In addition, detailed presentations will be provided on current planning activities for fine particle pollution as background for Item 11 on the TPB agenda.

The February TPB agenda items relevant for transportation conformity and consultation are identified below.

Item 7 is an action item in which the Board will be briefed on the comments received and recommended responses, and asked to approve the project submissions for inclusion in the air quality conformity assessment for the 2012 Constrained Long Range Transportation Plan (CLRP) and FY 2013-2018 Transportation Improvement Program (TIP). At the January 18 meeting, the Board was briefed on the major project changes submitted for inclusion in the air quality conformity assessment. The projects were released for a 30-day public comment

period that ended February 11.

Item 8 is an action item in which the Board will be briefed on the comments received and recommended responses, and asked to approve the scope of work for the air quality conformity assessment for the 2012 CLRP and FY 2013-2018 TIP. At the January 18 meeting, the Board was briefed on the draft scope of work. The scope was released for a 30-day public comment period that ended February 11.

Item 9 is an action item in which the Board will be briefed on and asked to approve an amendment to the FY 2011-2016 TIP as requested by the Virginia Department of Transportation (VDOT). The amendment is exempt from the air quality conformity requirement. It adds funding for the construction of Bus/HOV/HOT lanes on I-95 between Garrisonville Road in Stafford County and a point on I-395 one mile north of Edsall Road.

Item 11 is an information item in which the Board will be briefed on the scope and schedule for the redesignation request and maintenance plan, and on the mobile emission inventories that have been prepared as part of the maintenance plan. The Metropolitan Washington Air Quality Committee (MWAQC) is preparing a request to the Environmental Protection Agency (EPA) for redesignation of the Washington DC-MD-VA nonattainment area to attainment status for PM_{2.5}, along with a maintenance plan demonstrating compliance with PM_{2.5} standards through 2025.

Item 15 is an information item in which the Board will be briefed on the draft FY 2013 Unified Planning Work Program (UPWP) for FY 2013 (July 1, 2012 through June 30, 2013). The Board will be asked to approve the FY 2013 UPWP at its March 21 meeting.

National Capital Region Transportation Planning Board

777 North Capitol Street, N.E., Suite 300, Washington, D.C. 20002-4290 (202) 962-3310 Fax: (202) 962-3202

MEETING NOTICE

Date: February 15, 2012
Time: 12 noon
Place: COG Board Room

10:45 am **Special Work Session on Air Quality and Transportation**
to

11:45 am Staff from COG's Departments of Environmental Programs (DEP) and Transportation Planning (DTP) will provide overview presentations on the status of air quality planning for the Washington DC-MD-VA non-attainment area, and on the linkages to transportation planning through the air quality conformity process. In addition, detailed presentations will be provided on current planning activities for fine particle pollution as background for Item 11 of the TPB agenda.

AGENDA (BEGINS PROMPTLY AT NOON)

- 12 noon 1. **Public Comment on TPB Procedures and Activities**
.....Chairman Turner
- Interested members of the public will be given the opportunity to make brief comments on transportation issues under consideration by the TPB. Each speaker will be allowed up to three minutes to present his or her views. Board members will have an opportunity to ask questions of the speakers, and to engage in limited discussion. Speakers are asked to bring written copies of their remarks (65 copies) for distribution at the meeting.
- 12:20 pm 2. **Approval of Minutes of January 18 Meeting**
.....Chairman Turner
- 12:25 pm 3. **Report of Technical Committee**
.....Mr. Rawlings
Chair, Technical Committee
- 12:30 pm 4. **Report of the Citizen Advisory Committee**
..... Ms. Slater
Chair, Citizens Advisory Committee
- 12:40 pm 5. **Report of Steering Committee**
.....Mr. Kirby
Director, Department of
Transportation Planning (DTP)
- 12:45 pm 6. **Chair's Remarks**
..... Chairman Turner

Alternative formats of this agenda and all other meeting materials are available upon request. Email: accommodations@mwkog.org. Phone: 202-962-3300 or 202-962-3213 (TDD). Please allow seven working days for preparation of the material. Electronic versions are available at www.mwkog.org. ÖEH

ACTION ITEMS

- 12:50 pm 7. **Review of Comments Received and Approval of Project Submissions for the Air Quality Conformity Assessment for the 2012 Financially Constrained Long Range Transportation Plan (CLRP) and the FY 2013-2018 Transportation Improvement Program (TIP)**

.....Mr. Kirby, DTP
At the January 18 meeting, the Board was briefed on the major project changes submitted for inclusion in the air quality conformity assessment for the 2012 CLRP and FY 2013-2018 TIP which were released for a 30-day public comment period that ended February 11. The Board will be briefed on the comments received and recommended responses, and asked to approve the project submissions for inclusion in the air quality conformity assessment for the 2012 CLRP and FY 2013-2018 TIP.

Action: Adopt Resolution R8-2012 to approve the project submissions for inclusion in the air quality conformity assessment for the 2012 CLRP and FY 2013-2018 TIP.

- 12:55 pm 8. **Approval of Scope of Work for the Air Quality Conformity Assessment for the 2012 CLRP and the FY 2013-2018 TIP**

.....Ms. Posey, DTP
At the January 18 meeting, the Board was briefed on the draft scope of work for the air quality conformity assessment for the 2012 CLRP and FY 2013-2018 TIP which was released for a 30-day public comment period that ended February 11. The Board will be briefed on the comments received and recommended responses, and asked to approve the scope of work for the air quality conformity assessment for the 2012 CLRP and FY 2013-2018 TIP.

Action: Approve the enclosed scope of work for the air quality conformity assessment for the 2012 CLRP and FY 2013-2018.

- 1:00 pm 9. **Approval of Amendment to the FY 2011-2016 TIP that is Exempt From the Air Quality Conformity Requirement to Include Funding for the Construction of the I-95 HOV/HOT Lanes project, as Requested by the Virginia Department of Transportation (VDOT)**

..... Ms. Hamilton, VDOT

In the enclosed letter of February 7, 2011, the Virginia Department of Transportation (VDOT) has requested an amendment to the FY 2011-2016 TIP to include funding for the construction of Bus/HOV/HOT lanes on I-95 between Garrisonville Road in Stafford County and a point on I-395 one mile north of Edsall Road, as described in the attached materials. The Board will be briefed on this amendment and asked to approve it.

Action: Adopt Resolution R9 -2012 to amend the FY 2011-2016 TIP to include funding for the construction of the I-95 HOV/HOT Lanes project, as described in the attached materials.

- 1:05 pm 10. **Approval of Application for Funding Under the FY 2012 Transportation Investments Generating Economic Recovery (TIGER) Competitive Grant Program**

.....Mr. Randall, DTP
On January 31, USDOT released in the Federal Register the Final Notice of Funding Availability (NOFA) for \$500 million in discretionary surface

transportation grant funding for the FY 2012 TIGER program, with pre-applications due on February 20 and final applications due on March 19. The Board will be briefed on the recommended local projects for the application, which is based upon the TPB's FY 2011 submission to implement multimodal access improvements in rail station areas. The Board will be asked to approve the recommended projects and pre-application for submission by February 20 and the final application for submission by March 19.

Action: Adopt Resolution R10-2012 to approve the FY 2012 TIGER pre-application for submission by February 20, and the final application by March 19, as described in the attached materials.

INFORMATION ITEMS

- | | |
|---------|---|
| 1:15 pm | <p>11. Briefing on Mobile Emissions Inventories for Fine Particle Pollution (PM2.5) for the 2012 Redesignation Request and Maintenance Plan
 Ms. Rohlf, COG/DEP
 Ms. Constantine, DTP</p> <p>The Metropolitan Washington Air Quality Committee (MWAQC) is preparing a request to EPA for redesignation of the Washington DC-MD-VA nonattainment area to attainment status for PM2.5, along with a maintenance plan demonstrating compliance with PM2.5 standards through 2025. The Board will be briefed on the scope and schedule for the redesignation request and maintenance plan, and on the mobile emission inventories that have been prepared as part of the maintenance plan.</p> |
| 1:25 pm | <p>12. Update on COG Incident Management and Response (IMR) Action Plan Transportation Recommendations
 Mr. Meese, DTP</p> <p>At the November 16 meeting, the Board was briefed on the IMR Action Plan developed by the COG IMR Steering Committee in response to the disruptive January 26, 2011 storm. The Board will be briefed on activities addressing transportation recommendations in the plan, including the status of MATOC operating hours; a recent MATOC snow storm mobilization coordination effort; and a recently conducted regional survey on traffic signal emergency power back-up systems.</p> |
| 1:35 pm | <p>13. Update on Reauthorization of Federal Surface Transportation Legislation
 Mr. Kirby</p> <p>The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) enacted on August 10, 2005 has been extended eight times since it expired on September 30, 2009, most recently through March 31, 2012. On November 9, 2011 the Senate Environment and Public Works Committee unanimously approved MAP-21, a two-year reauthorization proposal. On February 3, the House Transportation and Infrastructure Committee approved a five-year reauthorization proposal entitled the "American Energy and Infrastructure Jobs Act." The Board will be briefed on the key features of the House and Senate proposals and the likely schedule for further Congressional action.</p> |

1:45 pm 14. **Review of the Draft FY 2013 Commuter Connections Work Program (CCWP)**
.....Mr. Ramfos, DTP
The Board will be briefed on the enclosed draft CCWP for FY 2013 (July 1, 2012 through June 30, 2013). The Board will be asked to approve the FY 2013 CCWP at its March 21 meeting.

1:50 pm 15. **Review of the Draft FY 2013 Unified Planning Work Program (UPWP)**
.....Mr. Kirby
The Board will be briefed on the enclosed draft UPWP for FY 2013 (July 1, 2012 through June 30, 2013). The Board will be asked to approve the FY 2013 UPWP at its March 21 meeting.

1:55 pm 16. **Other Business**

2:00 pm 17. **Adjourn**

2 hours

Lunch will be available for Board members and alternates at 11:30 am

**PUBLIC COMMENT PERIOD
FOR THE WASHINGTON REGION'S
PROPOSED SUBMISSIONS FOR THE 2012
UPDATE TO THE CONSTRAINED LONG-RANGE PLAN
(CLRP), FY 2013-2018
TRANSPORTATION IMPROVEMENT PROGRAM (TIP),
AND AIR QUALITY CONFORMITY ANALYSIS**

The National Capital Region Transportation Planning Board (TPB) will initiate a 30-day public comment period for the proposed submissions for the 2012 update to the Constrained Long-Range Plan (CLRP) and FY2013-2018 Transportation Improvement Program (TIP), including a scope of work for the air quality conformity analysis, on January 12 at the TPB Citizen Advisory Committee (CAC) meeting. The CAC meets from 6 pm to 8 pm in the Metropolitan Washington Council of Governments (COG) first floor conference center, 777 N. Capitol St. NE, Washington, DC 20002. This public comment period will extend through Saturday February 11, 2012. The TPB is scheduled to approve these submissions at its February 15, 2012 meeting. Members of the public are invited to review these draft documents on the COG website, www.mwcoq.org/transportation/. These materials may also be reviewed at the Metropolitan Washington Council of Governments (COG), 777 N. Capitol St. NE, Washington, DC 20002.

The CLRP shows the road, bridge, high-occupancy vehicle (HOV), transit, bicycle and pedestrian projects funded through the year 2040. The six-year TIP includes all projects, programs, and strategies that state and local transportation agencies plan to implement between 2013 and 2018. The air quality conformity analysis assesses the plan amendments and program with respect to the air quality requirements under the 1990 Clean Air Act Amendments.

Members of the public are invited to submit comments on the draft documents on-line at www.mwcoq.org/tbbpubliccomment/. Written comments can also be mailed to TPB Chairman Todd Turner, Metropolitan Washington Council of Governments (COG), 777 N. Capitol St. NE, Suite 300, Washington, DC 20002.

For additional information or for special assistance, please call (202)962-3311 or (202)962-3213 (TDD).

El Pregonero January 12, 2012

**PERIODO DE COMENTARIO PUBLICO
PARA LA PRESENTACIÓN DE PROPUESTAS DE LA REGIÓN
DE WASHINGTON PARA LA ACTUALIZACIÓN DE 2012
A LA RESTRINGIDO PLAN A LARGO PLAZO (CLRP),
EL AÑO FISCAL 2013-2018 PROGRAMA
DE MEJORAMIENTO DEL TRANSPORTE (TIP)
Y ANÁLISIS DE CALIDAD DEL AIRE DE LA CONFORMIDAD**

La National Capital Region Transporte Junta de Planificación (TPB) se iniciará un período de 30 días de comentarios públicos para las presentaciones propuestas para la actualización de 2012 a la restringida Plan a Largo Plazo (CLRP) y FY2013-2018 Programa de Mejoramiento del Transporte (TIP), incluyendo un alcance del trabajo para el análisis de conformidad de calidad del aire, el 12 de enero en el TPB Ciudadana Comité Consultivo (CAC) de reuniones. El CAC se reúne 18:00-20:00 en el Consejo Metropolitano de Washington de Gobiernos (COG) primer centro de conferencias en la planta, 777 N. Capitol St. NE, Washington, DC 20002. Este período de comentarios públicos se extenderá hasta el sábado February 11 de 2012. La TPB tiene previsto aprobar estas propuestas en su 15 de febrero 2012 la reunión. Los miembros del público está invitado a revisar estos proyectos de documentos en el sitio web del COG, www.mwcog.org/transportation/. Estos materiales pueden ser vistos en Metropolitan Washington Council of Governments (COG), 777 N. Capitol St. NE, Washington, DC 20002.

El CLRP muestra el camino, el puente, los vehículos de alta ocupación (HOV), el tránsito, proyectos para bicicletas y peatones a través de fondos para el año 2040. El TIP de seis años, incluye todos los proyectos, programas y estrategias que las agencias estatales y locales del Plan de Transporte a aplicar entre 2013 y 2018. El análisis de la calidad del aire conforme evalúa las modificaciones del plan y el programa con respecto a los requisitos de calidad del aire en la década de 1990 la Ley de Aire Limpio Enmiendas.

Los miembros del público están invitados a presentar sus observaciones sobre los proyectos de documentos en línea en www.mwcog.org/tpbpubliccomment/. Los comentarios por escrito también pueden enviarse por correo, TPB Chairman Todd Turner, Metropolitan Washington Council of Governments (COG), 777 N. Capitol St. NE, Suite 300, Washington, DC 20002.

Para información adicional o asistencia especial, por favor llame, (202) 962-3311 o (202) 962-3213 (TDD).

**PUBLIC COMMENT PERIOD
FOR THE WASHINGTON REGION'S
PROPOSED SUBMISSIONS FOR THE 2012
UPDATE TO THE CONSTRAINED
LONG-RANGE PLAN (CLRP),
FY 2013-2018 TRANSPORTATION
IMPROVEMENT PROGRAM (TIP), AND
AIR QUALITY CONFORMITY ANALYSIS**

The National Capital Region Transportation Planning Board (TPB) will initiate a 30-day public comment period for the proposed submissions for the 2012 update to the Constrained Long-Range Plan (CLRP) and FY2013-2018 Transportation Improvement Program (TIP), including a scope of work for the air quality conformity analysis, on January 12 at the TPB Citizen Advisory Committee (CAC) meeting. The CAC meets from 6 pm to 8 pm in the Metropolitan Washington Council of Governments (COG) first floor conference center, 777 N. Capitol St. NE, Washington, DC 20002. This public comment period will extend through Saturday February 11, 2012. The TPB is scheduled to approve these submissions at its February 15, 2012 meeting. Members of the public are invited to review these draft documents on the COG website, www.mwcog.org/transportation/. These materials may also be reviewed at the Metropolitan Washington Council of Governments (COG), 777 N. Capitol St. NE, Washington, DC 20002.

The CLRP shows the road, bridge, high-occupancy vehicle (HOV), transit, bicycle and pedestrian projects funded through the year 2040. The six-year TIP includes all projects, programs, and strategies that state and local transportation agencies plan to implement between 2013 and 2018. The air quality conformity analysis assesses the plan amendments and program with respect to the air quality requirements under the 1990 Clean Air Act Amendments.

Members of the public are invited to submit comments on the draft documents on-line at www.mwcog.org/tpbpublic-comment/. Written comments can also be mailed to TPB Chairman Todd Turner, Metropolitan Washington Council of Governments (COG), 777 N. Capitol St. NE, Suite 300, Washington, DC 20002.

For additional information or for special assistance, please call (202) 962-3311 or (202) 962-3213 (TDD).

**PUBLIC COMMENT PERIOD
FOR THE WASHINGTON REGION'S
PROPOSED 2012 UPDATE TO THE
CONSTRAINED LONG-RANGE PLAN (CLRP),
FY 2013-2018 TRANSPORTATION
IMPROVEMENT PROGRAM (TIP),
AND AIR QUALITY CONFORMITY ANALYSIS**

The National Capital Region Transportation Planning Board (TPB) will initiate a 30-day public comment period for the proposed 2012 update to the Constrained Long-Range Plan (CLRP) and amendments to the FY2013-2018 Transportation Improvement Program (TIP), including an air quality conformity analysis, on June 14, 2012 at the TPB Citizen Advisory Committee (CAC) meeting. The CAC meets from 6 pm to 8 pm in the Metropolitan Washington Council of Governments (COG) first floor conference center, 777 N. Capitol St. NE, Washington, DC 20002. These documents are scheduled to be approved at the July 18, 2012 TPB meeting. This public comment period will extend through 6 pm Saturday July 14, 2012. Members of the public are invited to review these draft documents on the COG website, www.mwcog.org/transportation/. These materials may also be reviewed at COG.

The CLRP shows the road, bridge, high-occupancy vehicle (HOV), transit, bicycle and pedestrian projects funded through the year 2040. The six-year TIP includes all projects, programs, and strategies that state and local transportation agencies plan to implement between 2013 and 2018. The TIP comment-process is being used to obtain comments on the region's program of projects that are funded by the Federal Transit Administration (including projects funded by the Urbanized Area Formula Program) and the Federal Highway Administration. The air quality conformity analysis assesses the plan amendments and program with respect to the air quality requirements under the 1990 Clean Air Act Amendments.

Members of the public are invited to submit comments on the draft documents on-line at www.mwcog.org/tbpubliccomment/. Written comments can also be mailed to TPB Chairman Todd Turner, Metropolitan Washington Council of Governments (COG), 777 N. Capitol St. NE, Suite 300, Washington, DC 20002.

For additional information or for special assistance, please call (202) 962-3311 or (202) 962-3213 (TDD).

**PERIODO DE COMENTARIO PUBLICO
PARA LA REGIÓN DE WASHINGTON SE PROPONE A LA ACTUALIZACIÓN 2012
CONSTRAINED Plan a Largo Plazo (CLRP), el año fiscal 2013-2018
PROGRAMA DE MEJORAMIENTO DEL TRANSPORTE (TIP),
y análisis de CALIDAD DEL AIRE DE LA CONFORMIDAD**

La Región Capital Nacional de Transporte la Junta de Planificación (TPB) se iniciará un período de 30 días de comentarios públicos para el proyecto de 2012 de actualización a la restringida Plan a Largo Plazo (CLRP) y las enmiendas al Programa de Transporte año fiscal 2013-2018 de Mejora (TIP), incluyendo un análisis de la calidad del aire de la conformidad, el 14 de junio de 2012 en el TPB Ciudadana Comité Consultivo (CAC) reunión. El CAC se reúne 6pm a 8pm en el Consejo Metropolitano de Washington de Gobiernos (COG) el primer centro de conferencias piso, 777 N. Capitol St. NE, Washington, DC 20002. Estos documentos están programados para ser aprobado en el 18 de Julio 2012 reunión de TPB. Este período de comentarios públicos se extenderá hasta el 06 de Julio pm Sábado 14, 2012. Los miembros del público está invitado a revisar estos proyectos de documentos en el sitio web del COG, www.mwcog.org/transportation/. Estos materiales también pueden ser examinados en el COG.

La CLRP muestra el camino, el puente, los vehículos de alta ocupación (HOV), los proyectos de tránsito, peatones y ciclistas financiado a través del año 2040. El TIP de seis años incluye todos los proyectos, programas y estrategias que las agencias estatales y locales del Plan de Transporte a aplicar entre 2013 y 2018. El proceso de comentario de la extremidad se está utilizando para obtener comentarios sobre el programa de la región de los proyectos que son financiados por la Administración Federal de Tránsito (incluidos los proyectos financiados por el Programa de Área de la Fórmula urbanizada) y la Administración Federal de Carreteras. El análisis de la calidad del aire conforme se evalúan las modificaciones del plan y el programa con respecto a los requisitos de calidad del aire bajo las Enmiendas de 1990 la Ley de Aire Limpio.

Los miembros del público están invitados a presentar sus observaciones sobre los proyectos de documentos en línea en www.mwcog.org/tpbpubliccomment/. Los comentarios escritos también pueden ser enviados a, TPB Chairman Todd Turner, Metropolitan Washington Council of Governments (COG), 777 N. Capitol St. NE, Suite 300, Washington, DC 20002.

**Para mas información ó asistencia especial, por favor llame
(202) 962-3311 ó (202)962-3213 (TDD).**

**PUBLIC COMMENT PERIOD
FOR THE WASHINGTON REGION'S
PROPOSED 2012 UPDATE TO THE
CONSTRAINED LONG-RANGE PLAN
(CLRP), FY 2013-2018 TRANSPORTATION
IMPROVEMENT PROGRAM (TIP), AND
AIR QUALITY CONFORMITY ANALYSIS**

The National Capital Region Transportation Planning Board (TPB) will initiate a 30-day public comment period for the proposed 2012 update to the Constrained Long-Range Plan (CLRP) and amendments to the FY2013-2018 Transportation Improvement Program (TIP), including an air quality conformity analysis, on June 14, 2012 at the TPB Citizen Advisory Committee (CAC) meeting. The CAC meets from 6 pm to 8 pm in the Metropolitan Washington Council of Governments (COG) first floor conference center, 777 N. Capitol St. NE, Washington, DC 20002. These documents are scheduled to be approved at the July 18, 2012 TPB meeting. This public comment period will extend through 6 pm Saturday July 14, 2012. Members of the public are invited to review these draft documents on the COG website, www.mwcog.org/transportation/. These materials may also be reviewed at COG.

The CLRP shows the road, bridge, high-occupancy vehicle (HOV), transit, bicycle and pedestrian projects funded through the year 2040. The six-year TIP includes all projects, programs, and strategies that state and local transportation agencies plan to implement between 2013 and 2018. The TIP comment process is being used to obtain comments on the region's program of projects that are funded by the Federal Transit Administration (including projects funded by the Urbanized Area Formula Program) and the Federal Highway Administration. The air quality conformity analysis assesses the plan amendments and program with respect to the air quality requirements under the 1990 Clean Air Act Amendments.

Members of the public are invited to submit comments on the draft documents on-line at www.mwcog.org/tpbpublic-comment/. Written comments can also be mailed to TPB Chairman Todd Turner, Metropolitan Washington Council of Governments (COG), 777 N. Capitol St. NE, Suite 300, Washington, DC 20002.

For additional information or for special assistance, please call (202) 962-3311 or (202) 962-3213 (TDD).

APPENDIX D

Documentation of Emission Factor Development

- A. 2012 Memo from Sunil Kumar: D1-D30**
- B. 2012 Memo from Yu Gao: D31-D48**
- C. 2012 Memo from Eulalie Lucas: D49-D59**

Memorandum

Date: May 22, 2012
To: Jane Posey, TPB
From: Sunil Kumar, MWAQC
Subject: Documentation for Some MOBILE6 Inputs for 2007, 2017, 2020, 2030, and 2040 Ozone Season Day, Winter Season Day, and Annual Inventories for 2012 CLRP & 2013-2018 TIP

The purpose of this memorandum is to document the MOBILE6 inputs related to meteorology, fuel programs, Inspection & Maintenance (I&M) Programs, Anti Tempering Programs (ATP), additional state-specific emissions control programs, and NOx Rebuild Effects, which were used for developing the onroad emission inventories for calendar years 2007, 2017, 2020, 2030, and 2040 for the ozone season day, winter season day, and annual analyses for the 2012 CLRP & 2013-2018 TIP analysis. These inputs are being presented below.

Meteorology

Temperature and humidity used in the ozone SIP (May 2007), PM_{2.5} SIP (March 2008), and CO maintenance plan (September 1995) were used for the ozone season day, winter season day, and annual 2012 CLRP analyses respectively and are being presented below.

Ozone Season Day

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

Barometric Pressure (inches of mercury (Hg) – 29.8

Winter Season Day

Maximum Temperature (°F) = 33.0

Minimum Temperature (°F) = 53.0

Absolute Humidity (grains/lb) = 75

Annual

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

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

Fuel Programs

Separate sets of input files were created to model emission factors corresponding to travel in the COG region for each analysis years 1) on network and local roadways, 2) during auto access to transit, and 3) by diesel transit and school buses. While network, local, and auto-access facilities were modeled on a county level, buses were modeled on a regional level. For this reason, two separate sets of fuel programs were developed and are being provided below. Ether & Ethanol oxygen content and market share data are based on the Energy Policy Act (2005) and therefore common for network, local, and auto-access facilities and buses.

2007

Network, Local, Auto-Access

Season	DC - RFG ^a			MD - RFG			MD - NonRFG	VA - RFG			VA - NonRFG
	Gas S ^b (ppm)	RVP	HWY Diesel S (ppm)	Gas S	RVP	HWY Diesel S (ppm)	RVP	Gas S (ppm)	RVP	HWY Diesel S (ppm)	RVP
Winter	33	10.2	43	33	11.6	15	12.1	33	12.9	43	12.9
Summer/Ozone Season	30	6.8	43	30	6.9	9	8.2	30	6.9	43	8.4
Fall	33	10.1	43	33	10.9	10	11.5	33	12.9	43	12.9

Notes:

1. Season average RVP values were developed from monthly RVP values provided by states.
2. Gas & Highway Diesel Sulfur values are Mob6 defaults.

Bus

Season	Gas S (ppm)	RVP	HWY Diesel S (ppm)
Winter	33 12.27		43
Summer/ Ozone Season	30 6.88		43
Fall	33 11.90		43

Network, Local, Auto-Access, & Bus

Season	Ether Oxy. Content (% by wt)	Ether Market Share (%)	Ethanol Oxy. Content (% by wt.)	Ethanol Market Share (%)
Winter	0.0 0.0		3.5	100.0
Summer/ Ozone Season	0.0 0.0		3.5	100.0
Fall	0.0 0.0		3.5	100.0

Note: Ether & Ethanol Oxygen Content and Market Share data are based on Energy Policy Act (2005).

2017/20/30/40

Network, Local, Auto-Access

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

^a RFG = Reformulated Gasoline

^b S = Sulfur

Notes:

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

Bus

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

Network, Local,

Auto-Access, & Bus

Season	Ether Oxy. Content (% by wt)	Ether Market Share (%)	Ethanol Oxy. Content (% by wt.)	Ethanol Market Share (%)
Winter	0.0 0.0		3.5	100.0
Summer/ Ozone Season	0.0 0.0		3.5	100.0
Fall	0.0 0.0		3.5	100.0

Note: Ether & Ethanol Oxygen Content and Market Share data are based on Energy Policy Act (2005).

I/M Programs

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

District of Columbia

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

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

> Exhaust I/M - LDV MY 84-95 IM240 test program #2 (DC IM240 Start:1999)	
I/M PROGRAM	: 2 1983 2050 2 T/O IM240
I/M MODEL YEARS	: 2 1984 1995
I/M VEHICLES	: 2 22222 11111111 1
I/M STRINGENCY	: 2 20.0
I/M COMPLIANCE	: 2 96.0
I/M WAIVER RATES	: 2 3.0 3.0
I/M CUTPOINTS	: 2 IM_ATP\11001207.txt
I/M EXEMPTION AGE	: 2 25.0

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

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

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

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

Maryland

2007

- >IM Program. Idle, IM240, and OBD File Rcd with 2007 Cut Point file via email on 03/16/09
- >Waiver rates based on January - June 2005 initial tests results through 18 months after testing.
- >Stringency based on July - December 2006 initial tests.

*Idle older LDGV, LDGT
I/M PROGRAM : 1 1984 2050 2 T/O Idle
I/M MODEL YEARS : 1 1977 1983
I/M VEHICLES : 1 22222 11111111 1
I/M STRINGENCY : 1 13.5
I/M COMPLIANCE : 1 96.0
I/M WAIVER RATES : 1 12.4 12.4
I/M GRACE PERIOD : 1 2

*Idle HDGT
I/M PROGRAM : 2 1984 2050 2 T/O Idle
I/M MODEL YEARS : 2 1977 2050
I/M VEHICLES : 2 11111 22222111 1
I/M STRINGENCY : 2 13.5
I/M COMPLIANCE : 2 96.0
I/M WAIVER RATES : 2 12.4 12.4
I/M GRACE PERIOD : 2 2

*IM240
I/M PROGRAM : 3 1984 2050 2 T/O IM240
I/M MODEL YEARS : 3 1984 1995
I/M VEHICLES : 3 22222 11111111 1
I/M STRINGENCY : 3 13.5
I/M COMPLIANCE : 3 96.0
I/M WAIVER RATES : 3 12.4 12.4
I/M CUTPOINTS : 3 IM_ATP\Mod75V2.C07
I/M GRACE PERIOD : 3 2

*OBD
I/M PROGRAM : 4 1984 2050 2 T/O OBD I/M
I/M MODEL YEARS : 4 1996 2050
I/M VEHICLES : 4 22222 11111111 1
I/M STRINGENCY : 4 20.0
I/M COMPLIANCE : 4 96.0
I/M WAIVER RATES : 4 5.2 5.2
I/M GRACE PERIOD : 4 2

*OBD Evap (Actual Start Year: July 2002)
I/M PROGRAM : 5 2002 2050 2 T/O EVAP OBD
I/M MODEL YEARS : 5 1996 2050
I/M VEHICLES : 5 22222 11111111 1
I/M COMPLIANCE : 5 96.0
I/M WAIVER RATES : 5 5.2 5.2
I/M GRACE PERIOD : 5 2

2017/20/30/40

- >IM Program as described in post-2009 RFP. Idle, OBD, and Mandatory Gas Cap for Non-OBD Vehicles.
- >Waiver rates based on rates observed for January - June 2006 initial tests through 18 months after testing.
- >Gas Cap waver rate is performance standard.
- >Stringency based on July - December 2007

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

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

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

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

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

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

Virginia

2007

- * Virginia's 2007 I/M programs for Alexandria, Arlington County, Fairfax County, and Prince William County.
- * I/M Effectiveness reported in Program #3 applies to all exhaust programs modeled as TRC.
- * Based on 2005 I/M program for same area. First 2 years exempt.

> Exhaust I/M - IDLE test program #1
I/M PROGRAM : 1 1983 2050 2 TRC 2500/IDLE
I/M MODEL YEARS : 1 1968 1980
I/M VEHICLES : 1 22222 21111111 1
I/M STRINGENCY : 1 35
I/M COMPLIANCE : 1 98.0
I/M WAIVER RATES : 1 1.6 1.6
I/M EXEMPTION AGE : 1 24

> Exhaust I/M - ASM final program #2
I/M PROGRAM : 2 1983 2050 2 TRC ASM 2525/5015 FINAL
I/M MODEL YEARS : 2 1981 1995
I/M VEHICLES : 2 22222 11111111 1
I/M STRINGENCY : 2 35
I/M COMPLIANCE : 2 98.0
I/M WAIVER RATES : 2 1.6 1.6
I/M EXEMPTION AGE : 2 24

> Exhaust I/M - OBD test program #3
I/M PROGRAM : 3 1983 2050 2 TRC OBD I/M
I/M MODEL YEARS : 3 1996 2050
I/M VEHICLES : 3 22222 11111111 1
I/M STRINGENCY : 3 35
I/M COMPLIANCE : 3 98.0
I/M WAIVER RATES : 3 1.6 1.6
I/M EFFECTIVENESS : 0.94 0.94 0.94
I/M GRACE PERIOD : 3 2

> Evap I/M - Evap OBD test program #4
I/M PROGRAM : 4 1998 2050 2 TRC EVAP OBD & GC
I/M MODEL YEARS : 4 1996 2050
I/M VEHICLES : 4 22222 11111111 1
I/M COMPLIANCE : 4 98.0
I/M WAIVER RATES : 4 1.6 1.6
I/M EXEMPTION AGE : 4 24
I/M GRACE PERIOD : 4 2

> Evap I/M - Gas Cap test program #5
I/M PROGRAM : 5 1998 2050 2 TRC GC
I/M MODEL YEARS : 5 1973 1995
I/M VEHICLES : 5 22222 11111111 1
I/M COMPLIANCE : 5 98.0
I/M WAIVER RATES : 5 1.6 1.6
I/M EXEMPTION AGE : 5 24

> Exhaust I/M - IDLE test program #6
I/M PROGRAM : 6 1983 2050 2 TRC 2500/IDLE
I/M MODEL YEARS : 6 1981 2050
I/M VEHICLES : 6 11111 21111111 1
I/M STRINGENCY : 6 35
I/M COMPLIANCE : 6 98.0
I/M WAIVER RATES : 6 1.6 1.6
I/M EXEMPTION AGE : 6 24
I/M GRACE PERIOD : 6 2

> Evap I/M - Gas Cap test program #7
I/M PROGRAM : 7 1998 2050 2 TRC GC
I/M MODEL YEARS : 7 1973 2050
I/M VEHICLES : 7 11111 21111111 1
I/M COMPLIANCE : 7 98.0
I/M WAIVER RATES : 7 1.6 1.6
I/M GRACE PERIOD : 7 2

Loudoun and Stafford

- * Virginia's 2007 I/M programs for Loudoun and Stafford Counties.
- * The start date of exhaust and evaporative OBD is 2005. The dates below are used to obtain the appropriate credits in MOBILE6.
- * I/M Effectiveness reported in Program #3 applies to all exhaust programs modeled as TRC.
- * Based on 2005 I/M program for same area. First 2 years exempt.

> Exhaust I/M - IDLE test program #1
I/M PROGRAM : 1 1998 2050 2 TRC 2500/IDLE
I/M MODEL YEARS : 1 1968 1980
I/M VEHICLES : 1 22222 21111111 1
I/M STRINGENCY : 1 35
I/M COMPLIANCE : 1 98.0
I/M WAIVER RATES : 1 1.6 1.6
I/M EXEMPTION AGE : 1 24

> Exhaust I/M - ASM final program #2
I/M PROGRAM : 2 1998 2050 2 TRC ASM 2525/5015 FINAL
I/M MODEL YEARS : 2 1981 1995
I/M VEHICLES : 2 22222 11111111 1
I/M STRINGENCY : 2 35
I/M COMPLIANCE : 2 98.0
I/M WAIVER RATES : 2 1.6 1.6
I/M EXEMPTION AGE : 2 24

> Exhaust I/M - OBD test program #3
I/M PROGRAM : 3 1998 2050 2 TRC OBD I/M
I/M MODEL YEARS : 3 1996 2050
I/M VEHICLES : 3 22222 11111111 1
I/M STRINGENCY : 3 35
I/M COMPLIANCE : 3 98.0
I/M WAIVER RATES : 3 1.6 1.6
I/M EFFECTIVENESS : 0.94 0.94 0.94
I/M GRACE PERIOD : 3 2

> Evap I/M - Evap OBD test program #4
I/M PROGRAM : 4 1998 2050 2 TRC EVAP OBD & GC
I/M MODEL YEARS : 4 1996 2050
I/M VEHICLES : 4 22222 11111111 1
I/M COMPLIANCE : 4 98.0
I/M WAIVER RATES : 4 1.6 1.6
I/M EXEMPTION AGE : 4 24
I/M GRACE PERIOD : 4 2

> Evap I/M - Gas Cap test program #5
I/M PROGRAM : 5 1998 2050 2 TRC GC
I/M MODEL YEARS : 5 1973 1995
I/M VEHICLES : 5 22222 11111111 1
I/M COMPLIANCE : 5 98.0
I/M WAIVER RATES : 5 1.6 1.6
I/M EXEMPTION AGE : 5 24

> Exhaust I/M - IDLE test program #6
I/M PROGRAM : 6 1998 2050 2 TRC 2500/IDLE
I/M MODEL YEARS : 6 1981 2050
I/M VEHICLES : 6 11111 21111111 1
I/M STRINGENCY : 6 35
I/M COMPLIANCE : 6 98.0
I/M WAIVER RATES : 6 1.6 1.6
I/M EXEMPTION AGE : 6 24
I/M GRACE PERIOD : 6 2

> Evap I/M - Gas Cap test program #7
I/M PROGRAM : 7 1998 2050 2 TRC GC
I/M MODEL YEARS : 7 1973 2050
I/M VEHICLES : 7 11111 21111111 1
I/M COMPLIANCE : 7 98.0
I/M WAIVER RATES : 7 1.6 1.6
I/M EXEMPTION AGE : 7 24
I/M GRACE PERIOD : 7 2

2017/20/30/40

Alexandria, Arlington County, Fairfax County, and Prince William

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

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

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

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

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

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

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

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

Loudoun and Stafford

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

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

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

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

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

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

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

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

Cut-Points

District of Columbia

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

Calendar Year: 2007

- * District of Columbia IM cutpoints - applies to calendar year 2007
- * Air Quality Division, District Department of the Environment

>

I/M CUTPOINTS									
* Model Years									
* 07	06	05	04	03	02	01	00	99	98
* 97	96	95	94	93	92	91	90	89	88
* 87	86	85	84	83					

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

* Block 2 (Heavy LDGT1, Light LDGT2 (EPA LD2&3))									
1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1.000	1.000	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					
20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
20.000	20.000	60.000	60.000	60.000	60.000	60.000	80.000	80.000	80.000
80.000	80.000	80.000	80.000	80.000					
2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500
2.500	2.500	3.000	3.000	3.000	3.000	3.000	3.500	3.500	3.500
3.500	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	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					
60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000
60.000	60.000	60.000	60.000	60.000	60.000	60.000	80.000	80.000	80.000
80.000	80.000	80.000	80.000	80.000					
4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
4.000	4.000	4.500	4.500	4.500	4.500	4.500	5.000	5.000	5.000
5.000	7.000	7.000	7.000	7.000					

* Block 4 (HDGV)									
2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400
3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.200	3.200	3.200
3.200	3.200	5.000	5.000	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	60.000	60.000	60.000	60.000	60.000	80.000	80.000	80.000
80.000	80.000	80.000	80.000	100.000					
4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
6.000	6.000	6.000	6.000	6.000	6.000	6.000	8.000	8.000	8.000
8.000	8.000	8.000	8.000	8.000					

Calendar Year: 2017

* District of Columbia IM cutpoints - applies to calendar year 2017

* Air Quality Division, District Department of the Environment

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I/M CUTPOINTS									
* Model Years									
* 17	16	15	14	13	12	11	10	09	08
* 07	06	05	04	03	02	01	00	99	98
* 97	96	95	94	93					

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

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

* Block 3 (Heavy LDGT2(EPA LD4))									
2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400
2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400
2.400	2.400	2.400	2.400	2.400					
60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000
60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000
60.000	60.000	60.000	60.000	60.000					
4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
4.000	4.000	4.500	4.500	4.500					

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

Calendar Year: 2020

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

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

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

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

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

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

Calendar Year: 2030

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

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

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

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

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

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

Calendar Year: 2040

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

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

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

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

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

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

Maryland

Calendar Year: 2007

* (SEE P. 16&17 OF EPA REPORT M6.IM.001)
 > CY 07
 > CUTPOINTS 75% TO FINAL for 1994 and 1995. IMPLEMENTED May 2005.

I/M CUTPOINTS										
* Model Years										
* 07	06	05	04	03	02	01	00	99	98	
* 97	96	95	94	93	92	91	90	89	88	
* 87	86	85	84	83						

* Block 1 (LDGV, Light LDGT1(EPA LD1))									
0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
0.900	0.900	0.900	0.900	1.000	1.000	1.000	1.400	1.400	1.400
1.800	1.800	1.800	1.800	1.800					
20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
20.000	20.000	20.000	20.000	20.000	20.000	20.000	30.000	30.000	30.000
30.000	30.000	30.000	30.000	30.000					
2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100
2.100	2.100	2.100	2.100	2.200	2.200	2.200	2.500	2.500	2.500
2.800	2.800	2.800	2.800	2.800					

* Block 2 (Heavy LDGT1, Light LDGT2 (EPA LD2&3))									
1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800
1.800	1.800	1.800	1.800	2.000	2.000	2.000	2.400	2.400	2.400
2.800	2.800	2.800	2.800	2.800					
60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000
60.000	60.000	60.000	60.000	60.000	60.000	60.000	80.000	80.000	80.000
80.000	80.000	80.000	80.000	80.000					
2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600
2.600	2.600	2.600	2.600	2.700	2.700	2.700	3.000	3.000	3.000
5.800	5.800	5.800	5.800	5.800					

* 07	06	05	04	03	02	01	00	99	98
* 97	96	95	94	93	92	91	90	89	88
* 87	86	85	84	83					

* Block 3 (Heavy LDGT2(EPA LD4))									
1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800
1.800	1.800	1.800	1.800	2.000	2.000	2.000	2.400	2.400	2.400
2.900	2.900	2.900	2.900	2.900					
60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000
60.000	60.000	60.000	60.000	60.000	60.000	60.000	80.000	80.000	80.000
80.000	80.000	80.000	80.000	80.000					
3.700	3.700	3.700	3.700	3.700	3.700	3.700	3.700	3.700	3.700
3.700	3.700	3.700	3.700	4.000	4.000	4.000	4.200	4.200	4.200
6.600	6.600	6.600	6.600	6.600					

* 07	06	05	04	03	02	01	00	99	98
* 97	96	95	94	93	92	91	90	89	88
* 87	86	85	84	83					

* Block 4 (HDGV)(Idle Tested)									
2.200	2.200	2.200	2.200	2.200	2.200	2.200	2.200	2.200	2.200
2.200	2.200	2.200	2.500	2.500	2.500	2.500	2.500	2.500	2.500
2.600	2.600	2.600	3.000	4.700					
60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000
60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000
80.000	80.000	80.000	80.000	80.000					
4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
4.000	4.000	4.000	5.500	5.500	5.500	5.500	5.500	5.500	5.500
7.000	7.000	7.000	7.700	7.700					

Anti-Tampering Programs (ATP)

Anti-tampering Program Parameters for DC

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

Anti-tampering Program Parameters for Maryland

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

Anti-tampering Program Parameters for Virginia*

Program Parameters	Recent Update
Program Start Year	1989**
First Model Year	1968
Last Model Year	2050
Program Type	Test and Repair Computerized***
Inspection Frequency	Biennial
Compliance Rate (%)	98
Vehicle Types	
LDGV	Yes
LDGT1	Yes
LDGT2	Yes
LDGT3	Yes
LDGT4	Yes
HDGV2B	Yes
HDGV3	No
HDGV4	No
HDGV5	No
HDGV6	No
HDGV7	No
HDGV8A	No
HDGV8B	No
GAS BUS	No
Inspections Performed	
Air pump system disablement	Yes
Catalyst removal	Yes
Fuel inlet restrictor disablement	No
Tailpipe lead deposit test	No
EGR disablement	Yes
Evaporative system disablement	Yes
PCV system disablement	Yes
Missing gas cap	Yes
<p>* Virginia's ATP applies to all jurisdictions except Clark and Spotsylvania counties.</p> <p>** ATP start year is 1998 for Loudoun and Stafford Counties.</p> <p>*** Modeled as Test Only (T/O). Per Mobile6 User's Guide (Section 2.8.9.3), EPA no longer support test and repair benefit discount.</p>	

Additional State-Specific Control Programs

Maryland adopted CAL-LEV II program and it is applicable for any evaluation year beginning 2011. Therefore, this program was modeled for the conformity analysis years 2017, 2020, 2030, and 2040. Following auxiliary files provided by the Maryland Department of the Environment (MDE) staff were used to model the above program for Maryland jurisdictions. Details of the format for these auxiliary files can be found in the Mobile6 model user guide.

LevIIExh.S11 (T2 EXH PHASE-IN)

T2 EXH PHASE-IN
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.100,0.100,0.250,0.250,0.598,0.653,0.653,0.653,0.683
0.000,0.000,0.000,0.300,0.300,0.550,0.550,0.200,0.144,0.144,0.144,0.113
0.000,0.000,0.000,0.200,0.200,0.100,0.100,0.101,0.101,0.101,0.101,0.102
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.061,0.061,0.061,0.061,0.061
0.386,0.787,1.000,0.400,0.400,0.100,0.100,0.040,0.041,0.041,0.041,0.041
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.614,0.213,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.100,0.100,0.250,0.250,0.598,0.653,0.653,0.653,0.683
0.000,0.000,0.000,0.300,0.300,0.550,0.550,0.200,0.144,0.144,0.144,0.113
0.000,0.000,0.000,0.200,0.200,0.100,0.100,0.101,0.101,0.101,0.101,0.102
0.386,0.787,1.000,0.400,0.400,0.100,0.100,0.061,0.061,0.061,0.061,0.061
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.040,0.041,0.041,0.041,0.041
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.614,0.213,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.000
0.000,0.000,0.000,0.100,0.100,0.250,0.250,0.598,0.653,0.653,0.653,0.683
0.000,0.000,0.000,0.300,0.300,0.550,0.550,0.200,0.144,0.144,0.144,0.113
0.000,0.000,0.000,0.200,0.200,0.100,0.100,0.101,0.101,0.101,0.101,0.102
0.386,0.787,1.000,0.400,0.400,0.100,0.100,0.061,0.061,0.061,0.061,0.061
0.000,0.000,0.000,0.000,0.000,0.000,0.000,0.040,0.041,0.041,0.041,0.041

LevIIEvP.S11 (T2 EVAP PHASE-IN)

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

LevIIStd.d (T2 CERT)

T2 CERT
0.000, 0.000, 0.000, 0.000, 0.000,
0.007, 0.007, 0.007, 0.007, 0.007,
0.040, 0.040, 0.040, 0.040, 0.040,
0.051, 0.051, 0.051, 0.051, 0.051,
0.040, 0.040, 0.040, 0.040, 0.040,
0.075, 0.075, 0.075, 0.075, 0.075,
0.100, 0.100, 0.100, 0.125, 0.125,
0.075, 0.075, 0.100, 0.140, 0.140,
0.125, 0.125, 0.125, 0.160, 0.195,
0.040, 0.040, 0.050, 0.100, 0.117,
0.075, 0.075, 0.100, 0.160, 0.195,
0.000, 0.000, 0.000, 0.000, 0.000,

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

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

LevII94.S11 (94+ LDG IMP)

94+ LDG IMPLEMENTATION

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

* LDGV										
* T0	T1	T1	T2	TLEV	TLEV	LEV	LEV	ULEV	ULEV	ZEV
*(int)		(int)	(int)	(int)	(int)					
0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.3	0.0	0.0	0.4	0.0	0.3	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.6	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.99	0.0	0.0	0.0	0.0	0.0	0.0	0.01
0.0	0.0	0.0	0.986	0.0	0.0	0.0	0.0	0.0	0.0	0.014
0.0	0.0	0.0	0.986	0.0	0.0	0.0	0.0	0.0	0.0	0.014
0.0	0.0	0.0	0.986	0.0	0.0	0.0	0.0	0.0	0.0	0.014
0.0	0.0	0.0	0.981	0.0	0.0	0.0	0.0	0.0	0.0	0.019

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

NOx Rebuild Effects

Following NOx rebuild effects percentages were used for all 2012 CLRP analysis years:

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

National Capital Region Transportation Planning Board

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May 24, 2012

To: VIN Decoder Project Files

From: Yu Gao
Transportation Engineer

Subject: Development of vehicle age distributions and diesel vehicle percentages using VIN decoder software – 2011 Registration Data

Introduction

This memorandum summarizes the methodology used, and the results obtained, in developing Mobile 6 input files of vehicle characteristics data summarized from 2011 District of Columbia, Maryland and Virginia vehicle registration data. EPA's Mobile 6 model requires age distribution (1-25+ years) and diesel fueled vehicle percentages for 16 separate vehicle types (passenger cars, motorcycles, light trucks, and heavy trucks in ascending weight categories). The model then generates 28 vehicle types by applying the diesel percentages to the relevant vehicle types. This work continues the cycle of obtaining consistent vehicle registrations on a 3 year basis. These results will be used in the development of the mobile source emissions inventories for the air quality conformity assessment of 2012 Constrained Long Range Plan (CLRP) and FY 2013-2018 Transportation Improvement Program (TIP).

Background

In 2005 and 2008, Department of Transportation Planning staff used VIN decoder software to develop registration and diesel sales percentages. Similarly during the summer of 2011 the newest version of the software was purchased and registration data were obtained from the three state air agencies as of July 1, 2011. Using an approach similar to the 2008 exercise staff successfully decoded the VIN numbers and developed jurisdictional level vehicle age distribution and diesel sales fraction files.

Committee Review

Several meetings were held with air and transportation department representatives to discuss the results and use of the data in transportation emissions inventory development for SIP and conformity assessment. Staff followed the same procedure as in 2008 during the 2011 data development:

1) Vehicles Aged 25 Years and Older:

Since the VIN decoder software could not fully decode vehicles manufactured prior to 1981, staff used the registration data base (which contained control totals of total number of vehicle registrations by model year) to identify the total number of vehicles that were 32 years and older. These vehicles were then distributed among the 16 vehicle types using the vehicle type distribution of vehicles aged 25 through 31 that were decoded using the software.

2) Aggregation of Diesel Fractions by Jurisdiction

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

Detailed Documentation

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

Final Input Files

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

Attachments

Alexandria, VA- 2011 Registration Data

* LDV										
1	0.0907	0.0866	0.0725	0.0605	0.0683	0.0640	0.0610	0.0601	0.0616	0.0561
	0.0493	0.0493	0.0411	0.0350	0.0301	0.0216	0.0223	0.0161	0.0123	0.0083
	0.0062	0.0054	0.0037	0.0026	0.0152					
* LDT1										
2	0.0435	0.0562	0.0271	0.0326	0.0713	0.0574	0.0551	0.0278	0.1100	0.0907
	0.0846	0.0459	0.0725	0.0616	0.0580	0.0399	0.0073	0.0060	0.0012	0.0036
	0.0060	0.0036	0.0024	0.0024	0.0330					
* LDT2										
3	0.0930	0.0875	0.0618	0.0712	0.0758	0.0732	0.0782	0.0812	0.0643	0.0578
	0.0521	0.0454	0.0350	0.0293	0.0237	0.0160	0.0146	0.0089	0.0067	0.0042
	0.0031	0.0026	0.0019	0.0022	0.0103					
* LDT3										
4	0.0810	0.1228	0.0630	0.0871	0.0630	0.0891	0.0714	0.0723	0.0657	0.0561
	0.0450	0.0428	0.0346	0.0190	0.0183	0.0133	0.0141	0.0095	0.0050	0.0030
	0.0028	0.0031	0.0024	0.0021	0.0134					
* LDT4										
5	0.0898	0.1189	0.0675	0.0800	0.1295	0.0605	0.0668	0.0770	0.0743	0.0337
	0.0422	0.0422	0.0401	0.0257	0.0230	0.0091	0.0070	0.0032	0.0032	0.0011
	0.0000	0.0011	0.0005	0.0011	0.0026					
* HDV2B										
6	0.0707	0.0483	0.0695	0.0601	0.0477	0.0795	0.0760	0.0683	0.0783	0.0624
	0.0548	0.0601	0.0360	0.0253	0.0324	0.0212	0.0283	0.0097	0.0115	0.0060
	0.0024	0.0065	0.0065	0.0061	0.0328					
* HDV3										
7	0.0443	0.0472	0.0590	0.0679	0.0266	0.0856	0.0649	0.0561	0.0679	0.0443
	0.0295	0.0384	0.0435	0.0177	0.0376	0.0089	0.0266	0.0321	0.0165	0.0051
	0.0030	0.0148	0.0089	0.0483	0.1055					
* HDV4										
8	0.0108	0.0394	0.0036	0.0538	0.1040	0.0968	0.0394	0.0466	0.0574	0.0430
	0.0538	0.0789	0.0968	0.0358	0.0896	0.0143	0.0358	0.0143	0.0143	0.0072
	0.0072	0.0036	0.0179	0.0072	0.0285					
* HDV5										
9	0.1121	0.0690	0.0948	0.0517	0.0517	0.0604	0.0862	0.1207	0.0948	0.0086
	0.0259	0.0172	0.0345	0.0172	0.0604	0.0259	0.0086	0.0000	0.0000	0.0000
	0.0086	0.0172	0.0000	0.0000	0.0343					
* HDV6										
10	0.0711	0.0291	0.0323	0.0323	0.1196	0.1293	0.1455	0.0259	0.0323	0.0259
	0.0388	0.0485	0.0361	0.0129	0.0329	0.0226	0.0323	0.0119	0.0124	0.0103
	0.0032	0.0162	0.0000	0.0136	0.0647					
* HDV7										
11	0.0440	0.0330	0.0550	0.0220	0.0440	0.0330	0.0110	0.0220	0.0440	0.0110
	0.0550	0.0989	0.0440	0.0660	0.0550	0.0330	0.0880	0.0000	0.0440	0.0330
	0.0330	0.0110	0.0220	0.0110	0.0875					
* HDV8A										
12	0.0299	0.0000	0.0149	0.0149	0.2090	0.0448	0.0149	0.0746	0.0597	0.0299
	0.0597	0.0000	0.0448	0.0299	0.0299	0.0746	0.0149	0.0448	0.0299	0.0299
	0.0448	0.0149	0.0299	0.0299	0.0297					
* HDV8B										
13	0.0066	0.0197	0.0197	0.0790	0.0329	0.0461	0.1382	0.0461	0.0395	0.0395
	0.0197	0.0724	0.0658	0.1053	0.0066	0.0329	0.0461	0.0395	0.0197	0.0132
	0.0000	0.0263	0.0066	0.0132	0.0655					
* HDBS										
14	0.0482	0.0207	0.0379	0.0648	0.0570	0.0468	0.0160	0.0906	0.0435	0.0668
	0.0664	0.0615	0.0704	0.0322	0.0211	0.0149	0.0207	0.0218	0.0099	0.0083
	0.0218	0.0272	0.0272	0.0096	0.0946					
* HDBT										
15	0.0334	0.0548	0.0670	0.0492	0.0393	0.0908	0.0866	0.0492	0.0434	0.0585
	0.0631	0.0738	0.0289	0.0462	0.0549	0.0114	0.0098	0.0113	0.0068	0.0103
	0.0059	0.0066	0.0184	0.0158	0.0648					
* MC										
16	0.0281	0.0416	0.0942	0.0931	0.1013	0.0995	0.0702	0.0691	0.0960	0.0550
	0.0410	0.0363	0.0269	0.0281	0.0105	0.0164	0.0088	0.0076	0.0059	0.0059
	0.0023	0.0053	0.0053	0.0041	0.0477					

Arlington County, VA-2011 Registration Data

* LDV												
1	0.0441	0.0764	0.0608	0.0693	0.0781	0.0716	0.0667	0.0659	0.0662	0.0638		
	0.0548	0.0526	0.0425	0.0359	0.0294	0.0227	0.0209	0.0157	0.0119	0.0092		
	0.0080	0.0060	0.0039	0.0028	0.0208							
* LDT1												
2	0.0751	0.0389	0.0191	0.0281	0.0948	0.0529	0.0566	0.0169	0.0807	0.1032		
	0.0807	0.0525	0.0535	0.0554	0.0507	0.0516	0.0094	0.0038	0.0038	0.0066		
	0.0028	0.0038	0.0075	0.0075	0.0444							
* LDT2												
3	0.0611	0.0876	0.0516	0.0748	0.0806	0.0784	0.0825	0.0853	0.0690	0.0628		
	0.0531	0.0479	0.0352	0.0310	0.0234	0.0157	0.0146	0.0104	0.0064	0.0046		
	0.0042	0.0031	0.0025	0.0019	0.0124							
* LDT3												
4	0.0839	0.0834	0.0528	0.0949	0.0687	0.0931	0.0770	0.0746	0.0652	0.0607		
	0.0454	0.0413	0.0348	0.0190	0.0196	0.0166	0.0127	0.0120	0.0050	0.0054		
	0.0037	0.0031	0.0054	0.0029	0.0190							
* LDT4												
5	0.0604	0.0782	0.0527	0.0962	0.1449	0.0701	0.0690	0.0881	0.0712	0.0381		
	0.0348	0.0370	0.0449	0.0415	0.0258	0.0118	0.0062	0.0073	0.0022	0.0022		
	0.0018	0.0006	0.0028	0.0006	0.0116							
* HDV2B												
6	0.0498	0.0346	0.0276	0.0487	0.0579	0.1223	0.0612	0.0579	0.0747	0.0671		
	0.0660	0.0606	0.0488	0.0229	0.0326	0.0201	0.0238	0.0195	0.0155	0.0033		
	0.0070	0.0043	0.0082	0.0072	0.0582							
* HDV3												
7	0.0472	0.0667	0.0528	0.0611	0.0306	0.0583	0.0805	0.0639	0.0611	0.0306		
	0.0444	0.0500	0.0825	0.0234	0.0207	0.0159	0.0222	0.0159	0.0183	0.0048		
	0.0028	0.0083	0.0103	0.0234	0.1042							
* HDV4												
8	0.0249	0.0100	0.0149	0.0598	0.0349	0.0847	0.0647	0.0349	0.0349	0.0647		
	0.0747	0.0697	0.0598	0.0548	0.0896	0.0398	0.0448	0.0299	0.0100	0.0249		
	0.0149	0.0050	0.0050	0.0149	0.0338							
* HDV5												
9	0.0133	0.1594	0.0797	0.1063	0.0399	0.1063	0.1063	0.0399	0.0266	0.0133		
	0.0797	0.0399	0.0399	0.0133	0.0266	0.0133	0.0133	0.0000	0.0133	0.0133		
	0.0000	0.0266	0.0000	0.0000	0.0300							
* HDV6												
10	0.0177	0.0530	0.0177	0.0353	0.0883	0.0618	0.0442	0.1060	0.0177	0.0353		
	0.0177	0.0707	0.0987	0.0295	0.0472	0.0368	0.0177	0.0192	0.0075	0.0015		
	0.0177	0.0088	0.0103	0.0030	0.1368							
* HDV7												
11	0.0452	0.0301	0.0000	0.0000	0.0603	0.0452	0.0000	0.0000	0.0000	0.0301		
	0.0754	0.0151	0.0151	0.0754	0.0301	0.0000	0.0301	0.0452	0.0151	0.0301		
	0.0000	0.0151	0.0754	0.0603	0.3067							
* HDV8A												
12	0.2179	0.0000	0.0156	0.0467	0.0934	0.0778	0.0156	0.0156	0.0156	0.0000		
	0.0156	0.0311	0.0467	0.0156	0.0311	0.0622	0.0311	0.0467	0.0467	0.0156		
	0.0311	0.0311	0.0156	0.0467	0.0352							
* HDV8B												
13	0.0435	0.0621	0.0000	0.0062	0.0435	0.1180	0.0435	0.0435	0.1304	0.0435		
	0.0870	0.1491	0.0870	0.0248	0.0000	0.0124	0.0062	0.0186	0.0248	0.0062		
	0.0124	0.0124	0.0248	0.0000	0.0000							
* HDBS												
14	0.0482	0.0207	0.0379	0.0648	0.0570	0.0468	0.0160	0.0906	0.0435	0.0668		
	0.0664	0.0615	0.0704	0.0322	0.0211	0.0149	0.0207	0.0218	0.0099	0.0083		
	0.0218	0.0272	0.0272	0.0096	0.0946							
* HDBT												
15	0.0334	0.0548	0.0670	0.0492	0.0393	0.0908	0.0866	0.0492	0.0434	0.0585		
	0.0631	0.0738	0.0289	0.0462	0.0549	0.0114	0.0098	0.0113	0.0068	0.0103		
	0.0059	0.0066	0.0184	0.0158	0.0648							
* MC												
16	0.0171	0.0398	0.0887	0.0875	0.1046	0.0855	0.0779	0.0593	0.0700	0.0545		
	0.0481	0.0350	0.0262	0.0187	0.0183	0.0167	0.0151	0.0183	0.0084	0.0048		
	0.0048	0.0064	0.0032	0.0032	0.0881							

Calvert County, MD- 2011 Registration Data

* LDV										
1	0.0364	0.0599	0.0560	0.0691	0.0749	0.0711	0.0692	0.0616	0.0617	0.0626
	0.0524	0.0535	0.0432	0.0371	0.0312	0.0231	0.0231	0.0177	0.0134	0.0108
	0.0097	0.0080	0.0059	0.0047	0.0437					
* LDT1										
2	0.0292	0.0378	0.0324	0.0472	0.0697	0.0901	0.0812	0.0276	0.0681	0.0665
	0.0438	0.0276	0.0340	0.0276	0.0211	0.0276	0.0081	0.0032	0.0081	0.0049
	0.0049	0.0049	0.0113	0.0292	0.1940					
* LDT2										
3	0.0370	0.0514	0.0404	0.0618	0.0687	0.0743	0.0839	0.0805	0.0702	0.0645
	0.0523	0.0545	0.0397	0.0335	0.0303	0.0227	0.0185	0.0160	0.0131	0.0092
	0.0085	0.0066	0.0071	0.0070	0.0484					
* LDT3										
4	0.0310	0.0554	0.0437	0.0691	0.0670	0.0757	0.0761	0.0919	0.0795	0.0693
	0.0553	0.0464	0.0386	0.0256	0.0249	0.0244	0.0250	0.0185	0.0122	0.0096
	0.0056	0.0079	0.0063	0.0065	0.0344					
* LDT4										
5	0.0274	0.0593	0.0406	0.0893	0.1454	0.0889	0.0908	0.1187	0.0762	0.0476
	0.0340	0.0336	0.0378	0.0277	0.0222	0.0084	0.0099	0.0105	0.0060	0.0026
	0.0035	0.0022	0.0051	0.0032	0.0090					
* HDV2B										
6	0.0186	0.0228	0.0212	0.0525	0.0471	0.0924	0.0800	0.0976	0.0965	0.0764
	0.0588	0.0544	0.0443	0.0189	0.0393	0.0223	0.0238	0.0138	0.0119	0.0093
	0.0054	0.0087	0.0111	0.0081	0.0649					
* HDV3										
7	0.0348	0.0225	0.0164	0.0777	0.0715	0.1226	0.0889	0.0675	0.0675	0.0603
	0.0501	0.0419	0.0388	0.0192	0.0256	0.0051	0.0151	0.0138	0.0076	0.0094
	0.0031	0.0081	0.0199	0.0161	0.0968					
* HDV4										
8	0.0148	0.0099	0.0247	0.0518	0.0617	0.0666	0.0494	0.0419	0.0864	0.0617
	0.0419	0.0568	0.0691	0.0222	0.0370	0.0197	0.0395	0.0370	0.0173	0.0173
	0.0173	0.0197	0.0321	0.0197	0.0846					
* HDV5										
9	0.0557	0.0487	0.0139	0.0418	0.0418	0.1184	0.1114	0.0766	0.0835	0.0835
	0.0278	0.0348	0.0348	0.0070	0.0905	0.0070	0.0348	0.0418	0.0000	0.0139
	0.0000	0.0139	0.0000	0.0000	0.0184					
* HDV6										
10	0.0256	0.0037	0.0256	0.0365	0.0803	0.0730	0.0803	0.1022	0.0767	0.0365
	0.0584	0.0803	0.0511	0.0149	0.0110	0.0183	0.0295	0.0226	0.0202	0.0242
	0.0073	0.0159	0.0202	0.0113	0.0743					
* HDV7										
11	0.0185	0.0123	0.0185	0.0123	0.0123	0.0185	0.0492	0.0369	0.0123	0.0246
	0.0246	0.0308	0.0185	0.0187	0.0123	0.0000	0.0494	0.0127	0.0073	0.0505
	0.0616	0.0561	0.0442	0.0371	0.3608					
* HDV8A										
12	0.0000	0.0062	0.0124	0.0249	0.0809	0.0311	0.0498	0.0249	0.0373	0.0062
	0.0560	0.0684	0.0249	0.0498	0.0498	0.0684	0.0498	0.0436	0.0187	0.0187
	0.0622	0.0311	0.0124	0.0249	0.1476					
* HDV8B										
13	0.0199	0.0133	0.0166	0.0365	0.0829	0.0895	0.0663	0.0895	0.0398	0.0530
	0.0762	0.0630	0.0398	0.0331	0.0232	0.0298	0.0365	0.0298	0.0133	0.0033
	0.0265	0.0133	0.0099	0.0166	0.0786					
* HDBS										
14	0.0482	0.0207	0.0379	0.0648	0.0570	0.0468	0.0160	0.0906	0.0435	0.0668
	0.0664	0.0615	0.0704	0.0322	0.0211	0.0149	0.0207	0.0218	0.0099	0.0083
	0.0218	0.0272	0.0272	0.0096	0.0946					
* HDBT										
15	0.0334	0.0548	0.0670	0.0492	0.0393	0.0908	0.0866	0.0492	0.0434	0.0585
	0.0631	0.0738	0.0289	0.0462	0.0549	0.0114	0.0098	0.0113	0.0068	0.0103
	0.0059	0.0066	0.0184	0.0158	0.0648					
* MC										
16	0.0231	0.0318	0.0551	0.0672	0.0970	0.0942	0.0886	0.0689	0.0779	0.0560
	0.0425	0.0419	0.0315	0.0248	0.0160	0.0200	0.0121	0.0093	0.0101	0.0073
	0.0053	0.0068	0.0062	0.0070	0.0994					

Charles County, MD- 2011 Registration Data

* LDV										
1	0.0327	0.0517	0.0510	0.0673	0.0792	0.0759	0.0709	0.0642	0.0673	0.0644
	0.0538	0.0559	0.0434	0.0370	0.0324	0.0248	0.0251	0.0176	0.0140	0.0119
	0.0089	0.0063	0.0054	0.0039	0.0351					
* LDT1										
2	0.0516	0.0932	0.0271	0.0464	0.0670	0.0583	0.0621	0.0219	0.0528	0.0608
	0.0348	0.0400	0.0271	0.0168	0.0284	0.0245	0.0077	0.0026	0.0064	0.0026
	0.0052	0.0092	0.0155	0.0336	0.2046					
* LDT2										
3	0.0384	0.0481	0.0376	0.0548	0.0717	0.0753	0.0837	0.0815	0.0725	0.0713
	0.0544	0.0528	0.0361	0.0386	0.0311	0.0217	0.0188	0.0190	0.0113	0.0076
	0.0077	0.0071	0.0063	0.0077	0.0449					
* LDT3										
4	0.0283	0.0516	0.0345	0.0659	0.0663	0.0853	0.0793	0.0972	0.0851	0.0722
	0.0520	0.0455	0.0465	0.0283	0.0243	0.0215	0.0244	0.0195	0.0102	0.0080
	0.0054	0.0071	0.0054	0.0046	0.0317					
* LDT4										
5	0.0232	0.0568	0.0337	0.0760	0.1525	0.0801	0.0994	0.1237	0.0795	0.0434
	0.0470	0.0389	0.0462	0.0298	0.0205	0.0091	0.0058	0.0028	0.0029	0.0016
	0.0016	0.0032	0.0026	0.0049	0.0151					
* HDV2B										
6	0.0218	0.0195	0.0210	0.0484	0.0471	0.0843	0.0742	0.0934	0.0932	0.0694
	0.0601	0.0573	0.0476	0.0160	0.0392	0.0290	0.0293	0.0141	0.0119	0.0094
	0.0081	0.0095	0.0119	0.0079	0.0761					
* HDV3										
7	0.0403	0.0258	0.0175	0.0471	0.0532	0.0980	0.1003	0.0600	0.0767	0.0691
	0.0669	0.0426	0.0522	0.0188	0.0165	0.0148	0.0235	0.0169	0.0161	0.0034
	0.0053	0.0089	0.0155	0.0098	0.1007					
* HDV4										
8	0.0020	0.0218	0.0218	0.0654	0.0495	0.0792	0.0436	0.0574	0.0555	0.0753
	0.0495	0.0673	0.0455	0.0257	0.0475	0.0119	0.0297	0.0515	0.0297	0.0277
	0.0079	0.0297	0.0297	0.0257	0.0494					
* HDV5										
9	0.0278	0.0139	0.0278	0.0696	0.0650	0.1439	0.0789	0.0743	0.0696	0.0557
	0.0510	0.0418	0.0510	0.0139	0.0278	0.0232	0.0464	0.0139	0.0093	0.0093
	0.0093	0.0093	0.0000	0.0093	0.0579					
* HDV6										
10	0.0131	0.0044	0.0131	0.0218	0.0762	0.0784	0.0697	0.0850	0.0566	0.0501
	0.0610	0.0762	0.0634	0.0307	0.0285	0.0265	0.0328	0.0158	0.0101	0.0135
	0.0073	0.0184	0.0142	0.0117	0.1215					
* HDV7										
11	0.0122	0.0305	0.0091	0.0457	0.0213	0.0274	0.0579	0.0335	0.0335	0.0396
	0.0610	0.0518	0.0336	0.0245	0.0153	0.0307	0.0560	0.0308	0.0128	0.0154
	0.0217	0.0310	0.0310	0.0187	0.2545					
* HDV8A										
12	0.0080	0.0080	0.0321	0.0602	0.0602	0.0201	0.0160	0.0281	0.0401	0.0160
	0.0160	0.0642	0.0321	0.0201	0.0241	0.0481	0.0722	0.0401	0.0441	0.0160
	0.0281	0.0201	0.0040	0.0120	0.2702					
* HDV8B										
13	0.0166	0.0129	0.0203	0.0240	0.0922	0.0442	0.1051	0.0572	0.0830	0.0645
	0.0645	0.0756	0.0461	0.0387	0.0332	0.0240	0.0240	0.0184	0.0166	0.0055
	0.0147	0.0074	0.0240	0.0184	0.0690					
* HDBS										
14	0.0482	0.0207	0.0379	0.0648	0.0570	0.0468	0.0160	0.0906	0.0435	0.0668
	0.0664	0.0615	0.0704	0.0322	0.0211	0.0149	0.0207	0.0218	0.0099	0.0083
	0.0218	0.0272	0.0272	0.0096	0.0946					
* HDBT										
15	0.0334	0.0548	0.0670	0.0492	0.0393	0.0908	0.0866	0.0492	0.0434	0.0585
	0.0631	0.0738	0.0289	0.0462	0.0549	0.0114	0.0098	0.0113	0.0068	0.0103
	0.0059	0.0066	0.0184	0.0158	0.0648					
* MC										
16	0.0199	0.0308	0.0567	0.0745	0.0993	0.1078	0.0846	0.0681	0.0817	0.0625
	0.0528	0.0377	0.0259	0.0213	0.0186	0.0153	0.0130	0.0126	0.0091	0.0074
	0.0064	0.0033	0.0070	0.0029	0.0806					

District of Columbia- 2011 Registration Data

* LDV										
1	0.0330	0.0505	0.0474	0.0585	0.0687	0.0674	0.0653	0.0670	0.0705	0.0638
	0.0629	0.0625	0.0507	0.0431	0.0374	0.0282	0.0273	0.0197	0.0151	0.0130
	0.0095	0.0084	0.0057	0.0052	0.0194					
* LDT1										
2	0.0343	0.0876	0.0341	0.0395	0.0355	0.0569	0.0574	0.0229	0.0841	0.0876
	0.0784	0.0475	0.0572	0.0590	0.0618	0.0412	0.0080	0.0063	0.0029	0.0034
	0.0034	0.0017	0.0412	0.0137	0.0342					
* LDT2										
3	0.0431	0.0620	0.0419	0.0652	0.0742	0.0763	0.0840	0.0824	0.0691	0.0691
	0.0568	0.0522	0.0438	0.0375	0.0330	0.0234	0.0194	0.0144	0.0111	0.0071
	0.0059	0.0046	0.0045	0.0048	0.0143					
* LDT3										
4	0.0400	0.0449	0.0344	0.0769	0.0615	0.0887	0.0737	0.0863	0.0728	0.0610
	0.0523	0.0486	0.0512	0.0310	0.0273	0.0252	0.0258	0.0199	0.0133	0.0097
	0.0059	0.0093	0.0066	0.0083	0.0255					
* LDT4										
5	0.0232	0.0718	0.0440	0.0742	0.1208	0.0541	0.0673	0.0972	0.0751	0.0435
	0.0535	0.0525	0.0567	0.0585	0.0393	0.0156	0.0096	0.0088	0.0064	0.0026
	0.0026	0.0032	0.0049	0.0060	0.0087					
* HDV2B										
6	0.0584	0.0442	0.0550	0.0561	0.0515	0.0764	0.0482	0.0482	0.0557	0.0451
	0.0612	0.0524	0.0520	0.0478	0.0376	0.0235	0.0212	0.0174	0.0137	0.0102
	0.0088	0.0087	0.0141	0.0176	0.0749					
* HDV3										
7	0.0300	0.0971	0.0512	0.1033	0.0247	0.0406	0.0574	0.0380	0.0918	0.0274
	0.0601	0.0424	0.0258	0.0390	0.0236	0.0100	0.0149	0.0355	0.0157	0.0035
	0.0226	0.0203	0.0226	0.0189	0.0836					
* HDV4										
8	0.0056	0.0201	0.0184	0.0619	0.0195	0.2197	0.0184	0.0190	0.0229	0.0624
	0.0597	0.1009	0.0496	0.0825	0.0496	0.0167	0.0162	0.0273	0.0084	0.0184
	0.0095	0.0178	0.0190	0.0134	0.0433					
* HDV5										
9	0.0313	0.0783	0.0783	0.2446	0.0802	0.0822	0.0685	0.0744	0.0352	0.0372
	0.0196	0.0215	0.0411	0.0039	0.0039	0.0039	0.0059	0.0020	0.0059	0.0020
	0.0020	0.0020	0.0039	0.0117	0.0608					
* HDV6										
10	0.0154	0.0176	0.0264	0.0352	0.0637	0.0352	0.0374	0.0264	0.0110	0.0593
	0.0615	0.0396	0.0353	0.0309	0.0173	0.0251	0.0453	0.0358	0.0305	0.0168
	0.0485	0.0269	0.0304	0.0508	0.1779					
* HDV7										
11	0.0086	0.0129	0.0216	0.0216	0.0302	0.0216	0.0237	0.0173	0.0410	0.0755
	0.0582	0.0474	0.0259	0.0173	0.0086	0.0086	0.0625	0.0474	0.0539	0.0647
	0.0151	0.0582	0.0496	0.0410	0.1675					
* HDV8A										
12	0.0022	0.0439	0.1273	0.0176	0.0220	0.0066	0.0044	0.0154	0.0022	0.0922
	0.1778	0.0351	0.0176	0.0263	0.0154	0.0198	0.0285	0.0176	0.0110	0.0088
	0.0263	0.0637	0.0000	0.0615	0.1569					
* HDV8B										
13	0.0424	0.0297	0.0106	0.0403	0.0255	0.1039	0.0658	0.0255	0.0785	0.0445
	0.1103	0.0382	0.0318	0.0148	0.0424	0.0233	0.0297	0.0509	0.0361	0.0191
	0.0212	0.0127	0.0191	0.0276	0.0560					
* HDBS										
14	0.0482	0.0207	0.0379	0.0648	0.0570	0.0468	0.0160	0.0906	0.0435	0.0668
	0.0664	0.0615	0.0704	0.0322	0.0211	0.0149	0.0207	0.0218	0.0099	0.0083
	0.0218	0.0272	0.0272	0.0096	0.0946					
* HDBT										
15	0.0334	0.0548	0.0670	0.0492	0.0393	0.0908	0.0866	0.0492	0.0434	0.0585
	0.0631	0.0738	0.0289	0.0462	0.0549	0.0114	0.0098	0.0113	0.0068	0.0103
	0.0059	0.0066	0.0184	0.0158	0.0648					
* MC										
16	0.0126	0.0329	0.1218	0.0826	0.1110	0.0951	0.0778	0.0663	0.0728	0.0572
	0.0472	0.0266	0.0238	0.0115	0.0387	0.0103	0.0095	0.0266	0.0128	0.0063
	0.0040	0.0043	0.0055	0.0023	0.0405					

Frederick County- MD-2011 Registracton Data

* LDV										
1	0.0336	0.0515	0.0517	0.0653	0.0749	0.0779	0.0713	0.0661	0.0668	0.0669
	0.0571	0.0572	0.0452	0.0367	0.0311	0.0244	0.0228	0.0167	0.0125	0.0098
	0.0083	0.0068	0.0056	0.0041	0.0356					
* LDT1										
2	0.0598	0.0897	0.0238	0.0521	0.0559	0.0661	0.0706	0.0207	0.0667	0.0713
	0.0590	0.0414	0.0315	0.0238	0.0337	0.0360	0.0046	0.0062	0.0031	0.0077
	0.0046	0.0107	0.0161	0.0261	0.1189					
* LDT2										
3	0.0421	0.0470	0.0379	0.0605	0.0722	0.0789	0.0883	0.0877	0.0733	0.0713
	0.0551	0.0540	0.0389	0.0362	0.0282	0.0195	0.0174	0.0156	0.0098	0.0071
	0.0067	0.0059	0.0055	0.0052	0.0357					
* LDT3										
4	0.0304	0.0456	0.0342	0.0676	0.0603	0.0786	0.0775	0.0869	0.0817	0.0704
	0.0547	0.0484	0.0405	0.0267	0.0235	0.0228	0.0265	0.0214	0.0116	0.0097
	0.0052	0.0071	0.0069	0.0059	0.0560					
* LDT4										
5	0.0275	0.0496	0.0376	0.0738	0.1280	0.0786	0.0995	0.1295	0.0714	0.0468
	0.0410	0.0364	0.0531	0.0272	0.0235	0.0085	0.0063	0.0077	0.0043	0.0036
	0.0020	0.0044	0.0061	0.0077	0.0258					
* HDV2B										
6	0.0163	0.0151	0.0164	0.0426	0.0467	0.0796	0.0719	0.1005	0.0897	0.0723
	0.0738	0.0544	0.0514	0.0215	0.0474	0.0276	0.0257	0.0144	0.0111	0.0084
	0.0066	0.0091	0.0128	0.0081	0.0766					
* HDV3										
7	0.0385	0.0196	0.0176	0.0737	0.0610	0.1195	0.0990	0.0663	0.0626	0.0655
	0.0519	0.0450	0.0407	0.0119	0.0266	0.0162	0.0225	0.0107	0.0125	0.0075
	0.0054	0.0121	0.0115	0.0142	0.0879					
* HDV4										
8	0.0059	0.0137	0.0196	0.0587	0.0489	0.0880	0.0734	0.0675	0.0558	0.0606
	0.0636	0.0646	0.0665	0.0245	0.0460	0.0293	0.0264	0.0362	0.0156	0.0156
	0.0176	0.0137	0.0254	0.0176	0.0454					
* HDV5										
9	0.0298	0.0249	0.0423	0.0497	0.0870	0.1268	0.0995	0.0870	0.0671	0.0696
	0.0423	0.0622	0.0721	0.0050	0.0199	0.0224	0.0249	0.0199	0.0124	0.0000
	0.0025	0.0075	0.0050	0.0000	0.0203					
* HDV6										
10	0.0206	0.0073	0.0194	0.0182	0.0969	0.0666	0.0666	0.0848	0.0448	0.0569
	0.0667	0.0715	0.0656	0.0513	0.0307	0.0131	0.0425	0.0129	0.0147	0.0128
	0.0064	0.0119	0.0085	0.0083	0.1009					
* HDV7										
11	0.0079	0.0095	0.0284	0.0315	0.0441	0.0268	0.0615	0.0252	0.0347	0.0299
	0.0363	0.0552	0.0395	0.0286	0.0270	0.0115	0.0368	0.0255	0.0195	0.0223
	0.0332	0.0382	0.0179	0.0304	0.2787					
* HDV8A										
12	0.0143	0.0157	0.0228	0.0228	0.0300	0.0428	0.0499	0.0214	0.0371	0.0200
	0.0357	0.0713	0.0556	0.0271	0.0499	0.0257	0.0457	0.0457	0.0371	0.0128
	0.0143	0.0314	0.0200	0.0214	0.2296					
* HDV8B										
13	0.0106	0.0133	0.0279	0.0172	0.0915	0.0995	0.0902	0.0464	0.0371	0.0318
	0.0477	0.0610	0.0650	0.0292	0.0279	0.0358	0.0292	0.0265	0.0106	0.0146
	0.0093	0.0080	0.0133	0.0371	0.1194					
* HDBS										
14	0.0482	0.0207	0.0379	0.0648	0.0570	0.0468	0.0160	0.0906	0.0435	0.0668
	0.0664	0.0615	0.0704	0.0322	0.0211	0.0149	0.0207	0.0218	0.0099	0.0083
	0.0218	0.0272	0.0272	0.0096	0.0946					
* HDBT										
15	0.0334	0.0548	0.0670	0.0492	0.0393	0.0908	0.0866	0.0492	0.0434	0.0585
	0.0631	0.0738	0.0289	0.0462	0.0549	0.0114	0.0098	0.0113	0.0068	0.0103
	0.0059	0.0066	0.0184	0.0158	0.0648					
* MC										
16	0.0206	0.0306	0.0605	0.0657	0.0780	0.0912	0.0759	0.0660	0.0710	0.0588
	0.0435	0.0375	0.0281	0.0263	0.0178	0.0188	0.0133	0.0107	0.0109	0.0084
	0.0088	0.0058	0.0058	0.0056	0.1403					

Fairfax County, VA-2011 Registration Data

* LDV										
1	0.0556	0.0762	0.0580	0.0637	0.0738	0.0688	0.0651	0.0643	0.0661	0.0612
	0.0550	0.0557	0.0456	0.0375	0.0310	0.0234	0.0220	0.0162	0.0123	0.0094
	0.0073	0.0056	0.0039	0.0027	0.0197					
* LDT1										
2	0.0391	0.0510	0.0201	0.0376	0.0852	0.0610	0.0594	0.0221	0.0948	0.1177
	0.0846	0.0505	0.0562	0.0465	0.0502	0.0342	0.0056	0.0052	0.0042	0.0042
	0.0045	0.0032	0.0058	0.0092	0.0479					
* LDT2										
3	0.0633	0.0756	0.0483	0.0701	0.0778	0.0818	0.0885	0.0890	0.0705	0.0656
	0.0545	0.0497	0.0368	0.0307	0.0243	0.0164	0.0136	0.0105	0.0067	0.0039
	0.0039	0.0026	0.0024	0.0018	0.0116					
* LDT3										
4	0.0830	0.0884	0.0456	0.0882	0.0666	0.0900	0.0760	0.0833	0.0732	0.0596
	0.0509	0.0434	0.0359	0.0203	0.0176	0.0143	0.0149	0.0114	0.0058	0.0038
	0.0027	0.0036	0.0038	0.0026	0.0151					
* LDT4										
5	0.0757	0.0807	0.0469	0.0830	0.1174	0.0727	0.0880	0.1037	0.0765	0.0419
	0.0435	0.0377	0.0471	0.0271	0.0218	0.0075	0.0060	0.0059	0.0027	0.0010
	0.0009	0.0020	0.0022	0.0022	0.0060					
* HDV2B										
6	0.0643	0.0279	0.0211	0.0541	0.0497	0.0842	0.0711	0.0938	0.0941	0.0679
	0.0678	0.0617	0.0486	0.0227	0.0329	0.0215	0.0241	0.0156	0.0094	0.0066
	0.0044	0.0063	0.0061	0.0049	0.0393					
* HDV3										
7	0.0410	0.0274	0.0380	0.0721	0.0451	0.1050	0.0891	0.0744	0.0663	0.0518
	0.0548	0.0491	0.0503	0.0204	0.0283	0.0120	0.0220	0.0169	0.0097	0.0071
	0.0045	0.0104	0.0113	0.0173	0.0756					
* HDV4										
8	0.0082	0.0130	0.0096	0.0585	0.0697	0.0726	0.0752	0.0660	0.0730	0.0711
	0.0619	0.0819	0.0771	0.0245	0.0700	0.0256	0.0278	0.0285	0.0126	0.0115
	0.0093	0.0074	0.0078	0.0070	0.0303					
* HDV5										
9	0.0582	0.0496	0.0291	0.0830	0.0778	0.0992	0.0847	0.0864	0.0821	0.0530
	0.0573	0.0547	0.0607	0.0094	0.0325	0.0145	0.0257	0.0103	0.0043	0.0068
	0.0026	0.0034	0.0017	0.0051	0.0080					
* HDV6										
10	0.0343	0.0295	0.0219	0.0423	0.0966	0.0676	0.0875	0.0690	0.0366	0.0481
	0.0661	0.0676	0.0585	0.0421	0.0377	0.0228	0.0412	0.0137	0.0136	0.0114
	0.0090	0.0129	0.0081	0.0099	0.0522					
* HDV7										
11	0.0178	0.0178	0.0267	0.0144	0.0489	0.0422	0.0745	0.0545	0.0289	0.0311
	0.0445	0.0556	0.0556	0.0478	0.0144	0.0256	0.0356	0.0189	0.0144	0.0211
	0.0211	0.0389	0.0211	0.0233	0.2054					
* HDV8A										
12	0.0308	0.0381	0.0181	0.0199	0.0580	0.0381	0.0381	0.0254	0.0254	0.0362
	0.0707	0.0960	0.0381	0.0417	0.0254	0.0507	0.0399	0.0435	0.0272	0.0290
	0.0236	0.0181	0.0181	0.0272	0.1229					
* HDV8B										
13	0.0148	0.0247	0.0414	0.0322	0.0853	0.0810	0.1200	0.0853	0.0761	0.0371
	0.0934	0.0705	0.0365	0.0433	0.0346	0.0192	0.0173	0.0179	0.0130	0.0062
	0.0068	0.0080	0.0056	0.0080	0.0217					
* HDBS										
14	0.0482	0.0207	0.0379	0.0648	0.0570	0.0468	0.0160	0.0906	0.0435	0.0668
	0.0664	0.0615	0.0704	0.0322	0.0211	0.0149	0.0207	0.0218	0.0099	0.0083
	0.0218	0.0272	0.0272	0.0096	0.0946					
* HDBT										
15	0.0334	0.0548	0.0670	0.0492	0.0393	0.0908	0.0866	0.0492	0.0434	0.0585
	0.0631	0.0738	0.0289	0.0462	0.0549	0.0114	0.0098	0.0113	0.0068	0.0103
	0.0059	0.0066	0.0184	0.0158	0.0648					
* MC										
16	0.0208	0.0307	0.0736	0.0747	0.0948	0.0895	0.0837	0.0637	0.0773	0.0621
	0.0492	0.0418	0.0324	0.0214	0.0165	0.0179	0.0136	0.0115	0.0094	0.0073
	0.0051	0.0049	0.0048	0.0042	0.0891					

Loudoun County, VA-2011 Registration Data

* LDV										
1	0.0452	0.0665	0.0598	0.0728	0.0808	0.0782	0.0711	0.0679	0.0673	0.0612
	0.0556	0.0553	0.0447	0.0353	0.0290	0.0213	0.0199	0.0145	0.0102	0.0081
	0.0062	0.0046	0.0030	0.0023	0.0189					
* LDT1										
2	0.0474	0.0568	0.0266	0.0501	0.0843	0.0616	0.0741	0.0257	0.0909	0.0942
	0.0705	0.0501	0.0435	0.0362	0.0382	0.0468	0.0066	0.0053	0.0072	0.0059
	0.0066	0.0040	0.0079	0.0119	0.0478					
* LDT2										
3	0.0555	0.0674	0.0482	0.0738	0.0846	0.0883	0.0965	0.0933	0.0717	0.0664
	0.0527	0.0481	0.0338	0.0275	0.0226	0.0157	0.0116	0.0098	0.0061	0.0035
	0.0035	0.0024	0.0024	0.0019	0.0128					
* LDT3										
4	0.0519	0.0632	0.0427	0.0960	0.0798	0.1006	0.0870	0.0984	0.0790	0.0610
	0.0505	0.0431	0.0336	0.0188	0.0158	0.0121	0.0150	0.0101	0.0060	0.0039
	0.0020	0.0031	0.0031	0.0027	0.0206					
* LDT4										
5	0.0419	0.0759	0.0473	0.0998	0.1575	0.0700	0.1041	0.1159	0.0776	0.0449
	0.0362	0.0278	0.0334	0.0226	0.0146	0.0050	0.0045	0.0056	0.0029	0.0015
	0.0004	0.0017	0.0013	0.0018	0.0058					
* HDV2B										
6	0.0314	0.0285	0.0215	0.0563	0.0564	0.0863	0.0767	0.0918	0.0895	0.0701
	0.0707	0.0690	0.0450	0.0186	0.0354	0.0248	0.0249	0.0153	0.0108	0.0069
	0.0046	0.0062	0.0072	0.0029	0.0493					
* HDV3										
7	0.0502	0.0263	0.0371	0.0742	0.0521	0.1202	0.1155	0.0718	0.0629	0.0530
	0.0559	0.0606	0.0455	0.0146	0.0279	0.0121	0.0180	0.0152	0.0089	0.0063
	0.0040	0.0030	0.0088	0.0113	0.0446					
* HDV4										
8	0.0170	0.0429	0.0203	0.0786	0.0891	0.1110	0.0559	0.0859	0.0575	0.0519
	0.0519	0.0778	0.0705	0.0170	0.0543	0.0194	0.0219	0.0259	0.0065	0.0041
	0.0057	0.0089	0.0057	0.0081	0.0124					
* HDV5										
9	0.0701	0.0243	0.0458	0.1159	0.0873	0.1574	0.0902	0.1045	0.0615	0.0472
	0.0429	0.0530	0.0472	0.0043	0.0086	0.0014	0.0057	0.0057	0.0057	0.0043
	0.0000	0.0029	0.0029	0.0000	0.0110					
* HDV6										
10	0.0171	0.0117	0.0234	0.0433	0.1000	0.0676	0.1316	0.0874	0.0396	0.0478
	0.0622	0.0829	0.0469	0.0500	0.0273	0.0249	0.0291	0.0135	0.0114	0.0081
	0.0048	0.0111	0.0074	0.0077	0.0430					
* HDV7										
11	0.0181	0.0161	0.0100	0.0442	0.0321	0.0281	0.0622	0.0562	0.0361	0.0221
	0.0462	0.0863	0.0422	0.0522	0.0582	0.0221	0.0422	0.0462	0.0261	0.0241
	0.0161	0.0281	0.0100	0.0261	0.1487					
* HDV8A										
12	0.0250	0.0071	0.0285	0.0178	0.1034	0.0392	0.0535	0.0214	0.0285	0.0214
	0.0606	0.0428	0.0250	0.0250	0.0321	0.0428	0.0606	0.0499	0.0428	0.0143
	0.0143	0.0321	0.0214	0.0357	0.1549					
* HDV8B										
13	0.0273	0.0141	0.0244	0.0244	0.1128	0.0903	0.0903	0.0611	0.0705	0.0564
	0.0790	0.0526	0.0517	0.0414	0.0367	0.0188	0.0310	0.0273	0.0056	0.0038
	0.0038	0.0056	0.0160	0.0047	0.0504					
* HDBS										
14	0.0482	0.0207	0.0379	0.0648	0.0570	0.0468	0.0160	0.0906	0.0435	0.0668
	0.0664	0.0615	0.0704	0.0322	0.0211	0.0149	0.0207	0.0218	0.0099	0.0083
	0.0218	0.0272	0.0272	0.0096	0.0946					
* HDBT										
15	0.0334	0.0548	0.0670	0.0492	0.0393	0.0908	0.0866	0.0492	0.0434	0.0585
	0.0631	0.0738	0.0289	0.0462	0.0549	0.0114	0.0098	0.0113	0.0068	0.0103
	0.0059	0.0066	0.0184	0.0158	0.0648					
* MC										
16	0.0220	0.0345	0.0749	0.0740	0.0955	0.0922	0.0859	0.0620	0.0866	0.0595
	0.0507	0.0412	0.0313	0.0207	0.0175	0.0154	0.0114	0.0117	0.0082	0.0084
	0.0043	0.0058	0.0063	0.0024	0.0773					

Montgomery County, MD-2011 Registration Data

* LDV										
1	0.0465	0.0754	0.0567	0.0621	0.0707	0.0669	0.0645	0.0652	0.0675	0.0648
	0.0576	0.0582	0.0461	0.0389	0.0321	0.0249	0.0232	0.0164	0.0120	0.0090
	0.0067	0.0058	0.0039	0.0030	0.0221					
* LDT1										
2	0.0747	0.0667	0.0204	0.0420	0.0691	0.0574	0.0444	0.0195	0.0968	0.1171
	0.0944	0.0490	0.0526	0.0444	0.0492	0.0367	0.0060	0.0036	0.0036	0.0035
	0.0038	0.0028	0.0030	0.0064	0.0331					
* LDT2										
3	0.0629	0.0770	0.0481	0.0693	0.0771	0.0813	0.0861	0.0907	0.0716	0.0697
	0.0550	0.0517	0.0364	0.0299	0.0238	0.0164	0.0137	0.0093	0.0060	0.0036
	0.0032	0.0027	0.0020	0.0017	0.0109					
* LDT3										
4	0.0526	0.0736	0.0419	0.0853	0.0704	0.0935	0.0745	0.0934	0.0786	0.0687
	0.0557	0.0478	0.0403	0.0221	0.0185	0.0150	0.0144	0.0119	0.0060	0.0043
	0.0032	0.0037	0.0042	0.0027	0.0176					
* LDT4										
5	0.0364	0.0684	0.0464	0.0839	0.1293	0.0762	0.0858	0.1102	0.0809	0.0492
	0.0497	0.0400	0.0465	0.0280	0.0241	0.0093	0.0080	0.0058	0.0029	0.0019
	0.0006	0.0026	0.0023	0.0028	0.0088					
* HDV2B										
6	0.0303	0.0295	0.0255	0.0611	0.0593	0.0946	0.0736	0.0907	0.0901	0.0729
	0.0731	0.0643	0.0469	0.0223	0.0328	0.0216	0.0217	0.0124	0.0087	0.0065
	0.0049	0.0052	0.0065	0.0040	0.0417					
* HDV3										
7	0.0470	0.0276	0.0265	0.0587	0.0612	0.1011	0.0948	0.0769	0.0635	0.0587
	0.0518	0.0493	0.0516	0.0174	0.0196	0.0166	0.0223	0.0156	0.0127	0.0061
	0.0074	0.0121	0.0092	0.0094	0.0829					
* HDV4										
8	0.0072	0.0126	0.0215	0.0597	0.0681	0.0883	0.0593	0.0631	0.0686	0.0652
	0.0690	0.0753	0.0618	0.0236	0.0606	0.0181	0.0320	0.0303	0.0139	0.0105
	0.0084	0.0147	0.0114	0.0076	0.0494					
* HDV5										
9	0.0658	0.0236	0.0393	0.0933	0.0815	0.0963	0.0983	0.1159	0.1002	0.0629
	0.0432	0.0491	0.0383	0.0167	0.0128	0.0098	0.0138	0.0118	0.0049	0.0039
	0.0029	0.0029	0.0020	0.0010	0.0096					
* HDV6										
10	0.0311	0.0227	0.0198	0.0375	0.1270	0.0894	0.0953	0.0800	0.0420	0.0524
	0.0598	0.0639	0.0540	0.0318	0.0399	0.0194	0.0266	0.0100	0.0129	0.0070
	0.0070	0.0124	0.0067	0.0070	0.0445					
* HDV7										
11	0.0276	0.0083	0.0358	0.0372	0.0620	0.0634	0.0565	0.0565	0.0331	0.0193
	0.0635	0.0511	0.0484	0.0360	0.0348	0.0240	0.0349	0.0157	0.0226	0.0304
	0.0239	0.0474	0.0195	0.0267	0.1212					
* HDV8A										
12	0.0150	0.0068	0.0341	0.0136	0.0519	0.0491	0.0655	0.0437	0.0300	0.0341
	0.0396	0.0655	0.0300	0.0696	0.0369	0.0314	0.0437	0.0218	0.0205	0.0150
	0.0300	0.0287	0.0246	0.0150	0.1837					
* HDV8B										
13	0.0376	0.0096	0.0280	0.0376	0.0828	0.0684	0.0698	0.0636	0.0800	0.0650
	0.0568	0.0739	0.0417	0.0233	0.0486	0.0192	0.0205	0.0144	0.0075	0.0055
	0.0192	0.0055	0.0219	0.0144	0.0854					
* HDBS										
14	0.0482	0.0207	0.0379	0.0648	0.0570	0.0468	0.0160	0.0906	0.0435	0.0668
	0.0664	0.0615	0.0704	0.0322	0.0211	0.0149	0.0207	0.0218	0.0099	0.0083
	0.0218	0.0272	0.0272	0.0096	0.0946					
* HDBT										
15	0.0334	0.0548	0.0670	0.0492	0.0393	0.0908	0.0866	0.0492	0.0434	0.0585
	0.0631	0.0738	0.0289	0.0462	0.0549	0.0114	0.0098	0.0113	0.0068	0.0103
	0.0059	0.0066	0.0184	0.0158	0.0648					
* MC										
16	0.0173	0.0302	0.0673	0.0725	0.0906	0.0886	0.0791	0.0656	0.0756	0.0544
	0.0496	0.0370	0.0266	0.0244	0.0150	0.0149	0.0149	0.0115	0.0112	0.0075
	0.0063	0.0061	0.0050	0.0065	0.1225					

Prince George's County, MD-2011 Registration Data

* LDV										
1	0.0238	0.0404	0.0427	0.0557	0.0711	0.0713	0.0664	0.0635	0.0679	0.0654
	0.0597	0.0651	0.0511	0.0454	0.0395	0.0322	0.0305	0.0238	0.0171	0.0130
	0.0097	0.0079	0.0057	0.0044	0.0268					
* LDT1										
2	0.0294	0.0397	0.0243	0.0318	0.0611	0.0486	0.0513	0.0221	0.0879	0.0975
	0.1039	0.0489	0.0507	0.0431	0.0518	0.0464	0.0122	0.0065	0.0070	0.0064
	0.0050	0.0044	0.0125	0.0207	0.0869					
* LDT2										
3	0.0289	0.0401	0.0319	0.0526	0.0649	0.0717	0.0825	0.0860	0.0743	0.0770
	0.0641	0.0646	0.0493	0.0433	0.0381	0.0280	0.0231	0.0181	0.0117	0.0076
	0.0068	0.0051	0.0045	0.0040	0.0217					
* LDT3										
4	0.0192	0.0342	0.0255	0.0642	0.0626	0.0914	0.0806	0.0988	0.0878	0.0788
	0.0593	0.0577	0.0550	0.0304	0.0250	0.0233	0.0240	0.0192	0.0115	0.0073
	0.0051	0.0067	0.0057	0.0047	0.0223					
* LDT4										
5	0.0151	0.0401	0.0268	0.0670	0.1407	0.0757	0.0828	0.1113	0.0898	0.0491
	0.0570	0.0536	0.0602	0.0478	0.0335	0.0110	0.0076	0.0070	0.0044	0.0019
	0.0015	0.0018	0.0033	0.0040	0.0070					
* HDV2B										
6	0.0206	0.0308	0.0281	0.0539	0.0497	0.0896	0.0699	0.0770	0.0857	0.0645
	0.0730	0.0701	0.0484	0.0288	0.0399	0.0248	0.0285	0.0173	0.0110	0.0091
	0.0058	0.0078	0.0091	0.0056	0.0514					
* HDV3										
7	0.0282	0.0200	0.0219	0.0767	0.0427	0.1063	0.0827	0.0696	0.0666	0.0624
	0.0564	0.0592	0.0547	0.0210	0.0269	0.0148	0.0230	0.0202	0.0080	0.0078
	0.0051	0.0100	0.0100	0.0114	0.0945					
* HDV4										
8	0.0056	0.0179	0.0169	0.0608	0.0624	0.0857	0.0561	0.0512	0.0727	0.0575
	0.0654	0.0810	0.0767	0.0322	0.0475	0.0239	0.0316	0.0419	0.0159	0.0100
	0.0113	0.0136	0.0120	0.0136	0.0364					
* HDV5										
9	0.0425	0.0352	0.0409	0.0769	0.1072	0.1195	0.0826	0.1064	0.0835	0.0475
	0.0450	0.0466	0.0507	0.0139	0.0139	0.0131	0.0205	0.0106	0.0115	0.0041
	0.0025	0.0016	0.0057	0.0008	0.0173					
* HDV6										
10	0.0446	0.0182	0.0257	0.0576	0.1367	0.1120	0.0889	0.0521	0.0462	0.0498
	0.0485	0.0563	0.0522	0.0419	0.0319	0.0229	0.0218	0.0108	0.0088	0.0071
	0.0087	0.0095	0.0048	0.0049	0.0380					
* HDV7										
11	0.0294	0.0320	0.0438	0.0294	0.0825	0.0513	0.0454	0.0320	0.0337	0.0446
	0.0379	0.0572	0.0430	0.0465	0.0297	0.0136	0.0449	0.0222	0.0205	0.0162
	0.0246	0.0365	0.0263	0.0264	0.1304					
* HDV8A										
12	0.0556	0.0488	0.0564	0.0496	0.0564	0.0797	0.1345	0.0353	0.0361	0.0316
	0.0301	0.0361	0.0451	0.0368	0.0135	0.0263	0.0368	0.0240	0.0143	0.0135
	0.0188	0.0128	0.0135	0.0120	0.0825					
* HDV8B										
13	0.0194	0.0271	0.0245	0.0194	0.1227	0.0878	0.0943	0.0671	0.0693	0.0405
	0.0611	0.0702	0.0465	0.0426	0.0340	0.0245	0.0232	0.0181	0.0090	0.0082
	0.0060	0.0099	0.0194	0.0116	0.0436					
* HDBS										
14	0.0482	0.0207	0.0379	0.0648	0.0570	0.0468	0.0160	0.0906	0.0435	0.0668
	0.0664	0.0615	0.0704	0.0322	0.0211	0.0149	0.0207	0.0218	0.0099	0.0083
	0.0218	0.0272	0.0272	0.0096	0.0946					
* HDBT										
15	0.0334	0.0548	0.0670	0.0492	0.0393	0.0908	0.0866	0.0492	0.0434	0.0585
	0.0631	0.0738	0.0289	0.0462	0.0549	0.0114	0.0098	0.0113	0.0068	0.0103
	0.0059	0.0066	0.0184	0.0158	0.0648					
* MC										
16	0.0224	0.0271	0.0576	0.0869	0.1152	0.1082	0.0854	0.0670	0.0796	0.0594
	0.0521	0.0394	0.0293	0.0161	0.0155	0.0152	0.0122	0.0096	0.0076	0.0076
	0.0045	0.0037	0.0039	0.0041	0.0705					

Prince William County, VA-2011 Registration Data

* LDV										
1	0.0383	0.0579	0.0548	0.0651	0.0776	0.0738	0.0711	0.0641	0.0651	0.0603
	0.0542	0.0570	0.0462	0.0401	0.0334	0.0267	0.0255	0.0198	0.0144	0.0114
	0.0083	0.0066	0.0043	0.0032	0.0210					
* LDT1										
2	0.0630	0.0560	0.0271	0.0497	0.0899	0.0677	0.0744	0.0216	0.0751	0.0751
	0.0588	0.0452	0.0455	0.0315	0.0372	0.0361	0.0072	0.0076	0.0053	0.0083
	0.0068	0.0065	0.0125	0.0175	0.0743					
* LDT2										
3	0.0450	0.0539	0.0399	0.0625	0.0741	0.0789	0.0898	0.0867	0.0716	0.0702
	0.0556	0.0563	0.0416	0.0368	0.0309	0.0217	0.0191	0.0157	0.0099	0.0059
	0.0053	0.0041	0.0037	0.0029	0.0179					
* LDT3										
4	0.0358	0.0529	0.0345	0.0748	0.0690	0.0910	0.0840	0.0984	0.0875	0.0735
	0.0562	0.0509	0.0439	0.0247	0.0203	0.0184	0.0198	0.0147	0.0085	0.0066
	0.0030	0.0046	0.0034	0.0031	0.0204					
* LDT4										
5	0.0274	0.0574	0.0340	0.0787	0.1276	0.0855	0.1091	0.1241	0.0808	0.0478
	0.0480	0.0400	0.0498	0.0319	0.0229	0.0085	0.0062	0.0053	0.0024	0.0014
	0.0005	0.0018	0.0017	0.0024	0.0048					
* HDV2B										
6	0.0249	0.0182	0.0170	0.0420	0.0459	0.0872	0.0790	0.1006	0.0973	0.0709
	0.0785	0.0718	0.0537	0.0256	0.0395	0.0219	0.0255	0.0172	0.0103	0.0066
	0.0035	0.0062	0.0081	0.0059	0.0428					
* HDV3										
7	0.0292	0.0248	0.0270	0.0602	0.0458	0.1088	0.1126	0.0787	0.0649	0.0587
	0.0599	0.0621	0.0573	0.0144	0.0244	0.0089	0.0211	0.0149	0.0102	0.0048
	0.0035	0.0068	0.0082	0.0133	0.0795					
* HDV4										
8	0.0074	0.0161	0.0205	0.0528	0.0528	0.0807	0.0962	0.0658	0.0670	0.0615
	0.0571	0.0851	0.0764	0.0304	0.0447	0.0242	0.0267	0.0292	0.0168	0.0106
	0.0099	0.0149	0.0161	0.0155	0.0216					
* HDV5										
9	0.0651	0.0253	0.0277	0.0675	0.0784	0.1146	0.1061	0.1158	0.0796	0.0555
	0.0555	0.0531	0.0772	0.0024	0.0229	0.0096	0.0121	0.0072	0.0084	0.0024
	0.0012	0.0048	0.0036	0.0012	0.0028					
* HDV6										
10	0.0382	0.0092	0.0184	0.0447	0.0829	0.0941	0.0875	0.1007	0.0539	0.0539
	0.0507	0.0763	0.0608	0.0356	0.0215	0.0181	0.0283	0.0142	0.0123	0.0049
	0.0080	0.0078	0.0088	0.0038	0.0654					
* HDV7										
11	0.0316	0.0230	0.0244	0.0158	0.0732	0.0531	0.0689	0.0402	0.0344	0.0445
	0.0330	0.0517	0.0617	0.0244	0.0344	0.0215	0.0387	0.0215	0.0158	0.0244
	0.0244	0.0287	0.0201	0.0144	0.1762					
* HDV8A										
12	0.0063	0.0042	0.0104	0.0083	0.0542	0.0626	0.0605	0.0459	0.0229	0.0396
	0.0375	0.0459	0.0730	0.0480	0.0438	0.0313	0.0709	0.0626	0.0229	0.0167
	0.0104	0.0125	0.0271	0.0375	0.1450					
* HDV8B										
13	0.0255	0.0228	0.0107	0.0107	0.0877	0.1199	0.1145	0.0790	0.0737	0.0516
	0.0610	0.0717	0.0563	0.0335	0.0281	0.0321	0.0275	0.0188	0.0154	0.0054
	0.0033	0.0054	0.0107	0.0054	0.0295					
* HDBS										
14	0.0482	0.0207	0.0379	0.0648	0.0570	0.0468	0.0160	0.0906	0.0435	0.0668
	0.0664	0.0615	0.0704	0.0322	0.0211	0.0149	0.0207	0.0218	0.0099	0.0083
	0.0218	0.0272	0.0272	0.0096	0.0946					
* HDBT										
15	0.0334	0.0548	0.0670	0.0492	0.0393	0.0908	0.0866	0.0492	0.0434	0.0585
	0.0631	0.0738	0.0289	0.0462	0.0549	0.0114	0.0098	0.0113	0.0068	0.0103
	0.0059	0.0066	0.0184	0.0158	0.0648					
* MC										
16	0.0255	0.0384	0.0767	0.0792	0.1063	0.0950	0.0858	0.0679	0.0776	0.0572
	0.0488	0.0415	0.0303	0.0187	0.0175	0.0161	0.0098	0.0105	0.0068	0.0067
	0.0046	0.0036	0.0046	0.0032	0.0678					

District of Columbia-2011 Diesel Sale Fractions

*LDV
0.0135 0.0125 0.0088 0.0000 0.0000 0.0055 0.0054 0.0026 0.0024 0.0033
0.0019 0.0016 0.0031 0.0022 0.0017 0.0023 0.0028 0.0005 0.0027 0.0038
0.0085 0.0028 0.0021 0.0011 0.1060
*LDT1
0.0000 0.0102 0.0091 0.0001 0.0000 0.0054 0.0062 0.0002 0.0000 0.0000
0.0000 0.0000 0.0001 0.0002 0.0000 0.0003 0.0000 0.0026 0.0000 0.0020
0.0010 0.0000 0.0009 0.0004 0.0137
*LDT2
0.0000 0.0024 0.0013 0.0000 0.0000 0.0011 0.0011 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0001 0.0000 0.0002 0.0000 0.0003 0.0000 0.0005
0.0003 0.0000 0.0009 0.0005 0.0145
*LDT3
0.0377 0.0111 0.0174 0.0067 0.0042 0.0009 0.0000 0.0005 0.0000 0.0001
0.0002 0.0001 0.0009 0.0021 0.0031 0.0025 0.0080 0.0054 0.0040 0.0000
0.0083 0.0074 0.0087 0.0124 0.0446
*LDT4
0.0125 0.0030 0.0044 0.0018 0.0006 0.0003 0.0000 0.0001 0.0000 0.0001
0.0000 0.0000 0.0002 0.0004 0.0006 0.0012 0.0053 0.0032 0.0024 0.0000
0.0075 0.0046 0.0040 0.0039 0.0308
*HDV2B
0.1132 0.1374 0.0970 0.2208 0.1836 0.2349 0.2424 0.2281 0.1691 0.1895
0.1873 0.1769 0.2412 0.2348 0.2765 0.2387 0.1974 0.2300 0.2464 0.1998
0.2220 0.2461 0.1942 0.1906 0.2362
*HDV3
0.5352 0.3964 0.3172 0.5806 0.5821 0.5884 0.5527 0.4227 0.5637 0.4874
0.4654 0.4756 0.5751 0.3652 0.4035 0.4342 0.3871 0.3365 0.3908 0.3403
0.3490 0.3930 0.3467 0.4188 0.2561
*HDV4
0.4054 0.5595 0.6485 0.7665 0.7947 0.8412 0.7667 0.7593 0.6376 0.5525
0.4647 0.5645 0.5574 0.6134 0.4967 0.4336 0.5544 0.3353 0.5882 0.2857
0.3762 0.3385 0.3306 0.2150 0.0415
*HDV5
0.8157 0.8703 0.7956 0.9482 0.9746 0.9448 0.9037 0.9183 0.9063 0.9317
0.9459 0.8663 0.8900 0.7600 0.5696 0.6531 0.3919 0.7368 0.5000 0.6842
0.5455 0.5714 0.6923 0.3571 0.5184
*HDV6
0.9538 1.0000 0.9577 0.9409 0.9257 0.9260 0.9707 0.8998 0.9128 0.9023
0.9311 0.9294 0.8744 0.8842 0.8781 0.8940 0.8665 0.7677 0.8174 0.7191
0.6955 0.7125 0.6459 0.5790 0.4945
*HDV7
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 0.9912 0.9925
0.9879 0.9888 0.9723 0.9694 0.9341 0.9758 0.9891 0.9902 0.9675 0.9648
0.8859 0.8816 0.9314 0.8146 0.7937
*HDV8A
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 0.9921 0.9906 1.0000 1.0000
1.0000 0.9820 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 0.9733 0.9719
*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
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

Maryland- 2011 Diesel Sales Fractions

*LDV
0.0143 0.0119 0.0078 0.0000 0.0000 0.0067 0.0060 0.0029 0.0028 0.0040
0.0021 0.0021 0.0030 0.0030 0.0017 0.0025 0.0026 0.0006 0.0027 0.0036
0.0095 0.0030 0.0022 0.0009 0.0932
*LDT1
0.0002 0.0076 0.0070 0.0004 0.0000 0.0078 0.0078 0.0004 0.0000 0.0003
0.0000 0.0000 0.0004 0.0005 0.0000 0.0007 0.0000 0.0076 0.0000 0.0037
0.0020 0.0019 0.0020 0.0011 0.0129
*LDT2
0.0000 0.0018 0.0009 0.0001 0.0000 0.0013 0.0011 0.0000 0.0000 0.0001
0.0000 0.0000 0.0001 0.0001 0.0000 0.0003 0.0000 0.0006 0.0000 0.0007
0.0004 0.0005 0.0011 0.0011 0.0107
*LDT3
0.0290 0.0076 0.0109 0.0057 0.0031 0.0010 0.0000 0.0001 0.0001 0.0001
0.0005 0.0001 0.0010 0.0030 0.0028 0.0044 0.0109 0.0046 0.0047 0.0017
0.0050 0.0087 0.0074 0.0131 0.0372
*LDT4
0.0144 0.0028 0.0039 0.0020 0.0006 0.0004 0.0000 0.0000 0.0001 0.0000
0.0002 0.0000 0.0003 0.0008 0.0009 0.0035 0.0117 0.0046 0.0045 0.0020
0.0061 0.0076 0.0045 0.0052 0.0354
*HDV2B
0.2394 0.1690 0.1529 0.2865 0.2833 0.3250 0.3064 0.2939 0.2301 0.2556
0.2283 0.2179 0.2910 0.1814 0.3685 0.3200 0.2697 0.3074 0.3521 0.2293
0.2760 0.2689 0.1773 0.1738 0.2254
*HDV3
0.6370 0.5803 0.4667 0.7077 0.7061 0.6885 0.6642 0.5487 0.6120 0.5497
0.5511 0.5770 0.6745 0.3570 0.4377 0.4874 0.3954 0.3366 0.4135 0.3903
0.3692 0.3967 0.3507 0.4135 0.2609
*HDV4
0.5957 0.5133 0.7343 0.7882 0.8422 0.7776 0.7377 0.7184 0.6056 0.5982
0.4893 0.5989 0.5915 0.4700 0.5442 0.4906 0.5983 0.3949 0.5882 0.3261
0.3976 0.3717 0.4103 0.3163 0.0281
*HDV5
0.8483 0.9655 0.8261 0.9130 0.9554 0.9329 0.9453 0.8935 0.9031 0.8678
0.9313 0.8151 0.7877 0.6250 0.1930 0.3659 0.2969 0.5952 0.5385 0.6154
0.4444 0.5833 0.8182 0.7500 0.5389
*HDV6
0.8913 1.0000 0.8784 0.9063 0.9275 0.8947 0.9583 0.8301 0.8392 0.8555
0.8885 0.8822 0.8447 0.8987 0.9311 0.9229 0.9155 0.9042 0.8609 0.7067
0.6988 0.7796 0.6735 0.7414 0.5604
*HDV7
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 0.9903
0.9851 0.9871 0.9814 0.9768 0.9207 0.9436 0.9815 0.9374 0.9402 0.9446
0.9194 0.8902 0.9303 0.8641 0.8423
*HDV8A
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 0.9891 0.9905 1.0000 1.0000
0.9907 0.9942 1.0000 1.0000 1.0000 0.9899 0.9928 0.9897 1.0000 1.0000
1.0000 1.0000 1.0000 0.9796 0.9804
*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
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

Virginia- 2011 Diesel Sales Fractions

*LDV
0.0129 0.0127 0.0099 0.0000 0.0000 0.0063 0.0063 0.0032 0.0029 0.0035
0.0022 0.0020 0.0031 0.0021 0.0018 0.0022 0.0026 0.0004 0.0034 0.0035
0.0084 0.0028 0.0019 0.0012 0.1055
*LDT1
0.0000 0.0280 0.0205 0.0000 0.0000 0.0144 0.0143 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0014 0.0337
*LDT2
0.0000 0.0021 0.0010 0.0000 0.0000 0.0011 0.0011 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0008 0.0140
*LDT3
0.0326 0.0102 0.0146 0.0061 0.0045 0.0012 0.0000 0.0005 0.0000 0.0001
0.0001 0.0000 0.0013 0.0035 0.0045 0.0049 0.0117 0.0101 0.0063 0.0059
0.0098 0.0054 0.0056 0.0123 0.0447
*LDT4
0.0102 0.0028 0.0038 0.0017 0.0007 0.0004 0.0000 0.0001 0.0000 0.0000
0.0000 0.0000 0.0003 0.0007 0.0010 0.0026 0.0087 0.0058 0.0041 0.0057
0.0106 0.0031 0.0029 0.0043 0.0367
*HDV2B
0.1247 0.1952 0.1239 0.2634 0.2055 0.2790 0.3054 0.2898 0.2269 0.2250
0.2311 0.2201 0.2733 0.1474 0.3047 0.3232 0.2605 0.2812 0.3038 0.3115
0.3151 0.2286 0.2292 0.2012 0.2473
*HDV3
0.6390 0.4626 0.3902 0.6116 0.6490 0.6916 0.6222 0.4629 0.5519 0.5590
0.5418 0.5744 0.5862 0.3997 0.5133 0.4957 0.4170 0.3590 0.4067 0.3342
0.4869 0.4321 0.3785 0.3842 0.2239
*HDV4
0.4127 0.3465 0.5682 0.7548 0.7757 0.7475 0.7827 0.7683 0.6842 0.5974
0.4788 0.5469 0.5317 0.4013 0.4690 0.4861 0.6463 0.4036 0.5600 0.4833
0.3962 0.4035 0.3833 0.2712 0.0319
*HDV5
0.7676 0.9052 0.8302 0.9476 0.9823 0.9137 0.8955 0.8676 0.9083 0.9231
0.9211 0.8467 0.8571 0.7368 0.5694 0.5667 0.4565 0.6818 0.6471 0.5714
0.4000 0.6429 0.8571 0.2857 0.2912
*HDV6
0.8902 1.0000 0.8929 0.8676 0.8604 0.8526 0.9552 0.8530 0.8605 0.8427
0.9231 0.9035 0.8387 0.8853 0.8686 0.8403 0.8339 0.8015 0.8041 0.7545
0.8380 0.6987 0.7314 0.3283 0.3907
*HDV7
1.0000 1.0000 0.9804 1.0000 1.0000 0.9895 1.0000 1.0000 0.9722 0.9863
1.0000 0.9712 0.9580 0.9794 0.8904 0.9231 0.9889 0.9655 0.9762 1.0000
0.9574 0.9155 0.8667 0.7347 0.7756
*HDV8A
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 0.9775 0.9855 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 0.9874
*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
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

Memo

To: Air Quality Conformity Files
From: Eulalie G. Lucas
Date: 07/23/2012
Re: Travel Related Inputs to MOBILE6 Emissions Factor Development:
Ozone season, Wintertime CO and PM_{2.5} Annual.

Introduction

This memo documents updates to the preparation of mobile emission rates associated with the air quality analysis of the 2012 Constrained Long Range Plan (CLRP) and the FY2013-2018 Transportation Improvement Program (TIP). Inputs for this analysis are for typical ozone, winter day and for annual conditions.

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

Process and Inputs

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

The following tables describe and list either travel related MOBILE model default values or a reference to a local data source for example, Vehicle Percent Mix (VMT). Table 1 shows command line information specific to the current analysis as well as input requirement with a description of these inputs. Table 2 shows trip length distributions and Table 3 shows LEV implementation schedules for COG's non-attainment areas as described in the one-hour and eight-hour ozone day State Implementation Plans. Table 4 is summary of scenarios by analysis type along with a brief description. Table 5 contains values for the distribution of

engine starts for three modes stabilized, cold and hot for each hour of the day, separately for weekdays and weekends. Included in this appendix is a memo dated May 24, 2012 from Yu Gao documenting 2011 vehicle registration and diesel sales fractions. These two inputs vary by jurisdiction and contribute significantly to emission rates development.

Results

Tables 6, 7 and 8 show Vehicle Miles of Travel (VMT) fractions for the three traffic streams modeled: network, local roads and auto access to transit. MOBILE6.2 default heavy duty truck VMT percents are replaced to represent local conditions for network and local roads. The network traffic stream includes all vehicle types and all facility types. Local roads traffic stream accounts for VMT on facility types that are not represented on our network and has a significantly lower heavy duty truck percent. Auto-access to transit traffic stream represents VMT associated with trips made to access transit and does not include heavy duty trucks. Table 9 shows the percent VMT mix associated with school and transit bus operation. Year 2017 is illustrated here but all milestone years are available upon request.

Updates

Part one of this appendix is a memo from Sunil Kumar dated May 22, 2012. His memo lists updates specified by the District of Columbia, Maryland and Virginia air management agencies.

Table 1

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

Command	Input	Description
MOBILE6 INPUT FILE	No input required.	Specific to Jurisdiction
REPORT FILE	No input required.	Specifies name for descriptive output file(s).
EMISSIONS TABLE	User-supplied	Specifies a file name for the database output file.
SPREADSHEET	User-supplied	Instructs MOBILE6 to output the average calendar year emission factors in a form suitable for direct input into a spreadsheet program.
POLLUTANTS*	Specific to seasonal runs	Controls which HC, CO, and NOx pollutants will be calculated and output to the database report and descriptive output.
PARTICULATE EF ⁺	PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV	Used for seasonal runs particulate matter (PM _{2.5}) and NOx as a precursor for PM _{2.5} .
EXPRESS HC AS VOC ⁺	No input required.	Directs MOBILE6 to output exhaust HC as volatile organic compounds.
EXPAND EVAPORATIVE ⁺	No input required.	Six evaporative emission types in descriptive output.
EXPAND EXHAUST ⁺	No input required.	Start, running and total exhaust EFs displayed in descriptive output.
NO REFUELING ⁺	No input required.	"zero " for refueling (Stage 2) emissions.
WE DA TRI LEN DI 94+ LDG IMP	Varies. . User-supplied	Table 2 Varies by time range 1994 and later fleet penetration fractions for light-duty gasoline vehicles under the Tier 1, NLEV (or California LEV 1), and Tier 2 standards. Table 3
REBUILD EFFECTS	Values supplied by state air agency staff.	Rebuild program effectiveness rate used to reduce heavy-duty diesel vehicle NOx off-cycle emissions for years 2009 and beyond Vary by state: DC 11%,MD 90%, VA 25%
REG DIST	Vary by jurisdiction	2011 Vehicle Registration specific to jurisdiction for 16 composite vehicles types. Updated every three years. See Yu Gao's memo dated 5/24/2012
ANTI-TAMP PROG	Vary by state	See S. Kumar's memo dated 5/22/2012
I/M DESC FILE [#]	User-supplied	See S. Kumar's memo dated 5/22/2012
FUEL PROGRAM	Vary by state	See S. Kumar's memo dated 5/22/2012
OXYGENATED FUELS	Regional Values	See S. Kumar's memo dated 5/22/2012
TEMPERATURE	Ozone season	See S. Kumar's memo dated 5/22/2012
	Seasonal	See S. Kumar's memo dated 5/22/2012
	Winter	See S. Kumar's memo dated 5/22/2012
DIESEL FRACTIONS	Vary by jurisdiction	See Yu Gao's memo dated 5/24/2012
FUEL RVP	Vary by jurisdiction Ozone season	See S. Kumar's memo dated 5/22/2012
	Seasonal	See S. Kumar's memo dated 5/22/2012
HUMIDITY	Ozone season	See S. Kumar's memo dated 5/22/2012
	Winter CO	See S. Kumar's memo dated 5/22/2012
	Seasonal	See S. Kumar's memo dated 5/22/2012
SCENARIO RECORD	Automatically generated.	Allows user to label individual scenario results. Marks start of new scenario. Table 4
CALENDAR YEAR	Varies.	Calendar year of scenario evaluated.

EVALUATION MONTH	Varies.	Specifies January 1 (1) or July 1 (7) for calendar year of interest.
ALTITUDE	1	High or low altitude of area evaluated.
BAROMETRIC PRES*	User-supplied	See S. Kumar's memo dated 5/22/2012
AVERAGE SPEED	Varies. .	Table 4 Varies by scenario
SOAK DISTRIBUTION	Regional	Table 5 Varies by operating mode
VMT FRACTIONS	Varies by jurisdiction.	See Tables 6,7,8,9
VMT BY FACILITY	FV4.FV for freeway ramp; FV3.FV for local roads	Values represent MOBILE6 defaults for each scenario.
DIESEL SULFUR*	Varies. by jurisdiction.	See S. Kumar's memo dated 5/22/2012
PARTICLE SIZE*	Regional	2.5

+ - Does not apply to PM_{2.5} analysis (Annual runs).

* - Applies only when modeling PM_{2.5}.

- Used when an ATP or I/M control programs are in effect.

Table 2
Trip Length Distributions

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

Table 3
LEV Implementation Schedule for MWCOG Region

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

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

Scenario Number	Operating Mode	Facility Type	Average Speed	VMT Fractions	Month\Season Sequence
Ozone\Winter Analysis					
1-65	Stabilized	Arterial\Collectors	1-65 mph	Network or Auto Access	
66-130	Stabilized	Freeways excluding Ramps	1-65 mph	Network or Auto Access	
131	Stabilized	Freeway Ramps	34.6 mph	Network or Auto Access	
132	Cold	Local Roadways	12.9 mph	Network or Auto Access	
133	Hot	Local Roadways	12.9 mph	Network or Auto Access	
134	Stabilized	Local Roadways	12.9 mph	Network or Auto Access	
135-179*	Stabilized	Local Roadways as Arterial	1-45 mph	Local	
Seasonal Analysis					
1-195	Stabilized	Arterial\Collectors	1-65 mph	Network or Auto Access	1-3
196-390	Stabilized	Freeways excluding Ramps	1-65 mph	Network or Auto Access	1-4
391-393	Stabilized	Freeway Ramps	34.6 mph	Network or Auto Access	1-3
394-402	Cold	Local Roadways	12.9 mph	Network or Auto Access	1-3 (for each season, data sequence is as follow: cold, hot, then stabilized)
	Hot	Local Roadways	12.9 mph	Network or Auto Access	
	Stabilized	Local Roadways	12.9 mph	Local or Auto Access	
403-537*	Stabilized	Local Roadways as Arterial	1-45 mph	Local	
Transit and School Bus					
1-65	Stabilized	Arterial/Collectors	1-65 mph	100%	Ozone, winter, annual
66	Stabilized	Freeway Ramps	34.6 mph	100%	Ozone, winter, annual
67	Stabilized	Local Road	12.9 mph	100%	Ozone, winter, annual
Notes:					
1. Season: 1 - January thru April; 2 - May thru September; 3 - October thru December					
2. * - Applies to network and local road types only.					

Table 6
2017 Summer VMT Mix Fractions for Network Analysis

Vehicle Type	2017 Summer VMT Mix Fractions										
	DC	Maryland Counties					Virginia Counties				
		Calvert	Charles	Frederick	Montgomery	Prince George's	Alexandria	Arlington	Fairfax	Loudon	Prince William
LDGV	0.2946	0.3037	0.3032	0.3004	0.2894	0.3002	0.2911	0.2902	0.2910	0.2918	0.2962
LDGT1	0.0949	0.0886	0.0907	0.0956	0.0957	0.0918	0.0890	0.0911	0.0908	0.0926	0.0957
LDGT2	0.3467	0.3376	0.3369	0.3411	0.3485	0.3405	0.3472	0.3478	0.3465	0.3465	0.3408
LDGT3	0.1103	0.1139	0.1135	0.1095	0.1138	0.1133	0.1164	0.1162	0.1165	0.1137	0.1127
LDGT4	0.0551	0.0582	0.0575	0.0557	0.0547	0.0562	0.0573	0.0561	0.0567	0.0569	0.0563
HDGV2B	0.0253	0.0224	0.0220	0.0220	0.0216	0.0200	0.0247	0.0230	0.0233	0.0232	0.0227
HDGV3	0.0013	0.0010	0.0010	0.0011	0.0009	0.0009	0.0010	0.0010	0.0010	0.0010	0.0010
HDGV4	0.0008	0.0006	0.0006	0.0006	0.0006	0.0005	0.0008	0.0007	0.0007	0.0009	0.0008
HDGV5	0.0004	0.0002	0.0002	0.0002	0.0002	0.0002	0.0004	0.0004	0.0003	0.0004	0.0003
HDGV6	0.0003	0.0004	0.0004	0.0004	0.0005	0.0005	0.0006	0.0004	0.0005	0.0005	0.0005
HDGV7	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV8A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV8B	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LDDV	0.0027	0.0031	0.0030	0.0030	0.0029	0.0028	0.0029	0.0028	0.0028	0.0029	0.0028
LDDT12	0.0003	0.0002	0.0002	0.0002	0.0003	0.0003	0.0005	0.0004	0.0005	0.0005	0.0004
HDDV2B	0.0049	0.0079	0.0077	0.0077	0.0078	0.0072	0.0055	0.0053	0.0054	0.0054	0.0055
HDDV3	0.0016	0.0019	0.0018	0.0019	0.0018	0.0016	0.0016	0.0017	0.0017	0.0019	0.0017
HDDV4	0.0015	0.0016	0.0017	0.0018	0.0016	0.0016	0.0014	0.0013	0.0014	0.0014	0.0014
HDDV5	0.0025	0.0024	0.0023	0.0025	0.0024	0.0023	0.0022	0.0022	0.0022	0.0023	0.0023
HDDV6	0.0058	0.0074	0.0068	0.0072	0.0075	0.0075	0.0078	0.0066	0.0070	0.0072	0.0073
HDDV7	0.0058	0.0049	0.0064	0.0062	0.0070	0.0070	0.0070	0.0052	0.0063	0.0064	0.0070
HDDV8A	0.0073	0.0061	0.0061	0.0061	0.0061	0.0087	0.0075	0.0092	0.0065	0.0064	0.0058
HDDV8B	0.0299	0.0304	0.0305	0.0299	0.0295	0.0295	0.0270	0.0304	0.0310	0.0305	0.0311
MC	0.0044	0.0042	0.0043	0.0040	0.0039	0.0045	0.0041	0.0041	0.0040	0.0040	0.0043
HDGB	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDBT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDBS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LDDT34	0.0037	0.0032	0.0031	0.0030	0.0034	0.0029	0.0041	0.0040	0.0039	0.0038	0.0034

Table 7
2017 Summer VMT Mix Fractions for Local Analysis

Vehicle Type	2017 Summer VMT Mix Fractions										
	DC	Maryland Counties					Virginia Counties				
		Calvert	Charles	Frederick	Montgomery	Prince George's	Alexandria	Arlington	Fairfax	Loudon	Prince William
LDGV	0.2946	0.3037	0.3032	0.3004	0.2894	0.3002	0.2911	0.2902	0.2910	0.2918	0.2962
LDGT1	0.0949	0.0886	0.0907	0.0956	0.0957	0.0918	0.0890	0.0911	0.0908	0.0926	0.0957
LDGT2	0.3467	0.3376	0.3369	0.3411	0.3485	0.3405	0.3472	0.3478	0.3465	0.3465	0.3408
LDGT3	0.1103	0.1139	0.1135	0.1095	0.1138	0.1133	0.1164	0.1162	0.1165	0.1137	0.1127
LDGT4	0.0551	0.0582	0.0575	0.0557	0.0547	0.0562	0.0573	0.0561	0.0567	0.0569	0.0563
HDGV2B	0.0253	0.0224	0.0220	0.0220	0.0216	0.0200	0.0247	0.0230	0.0233	0.0232	0.0227
HDGV3	0.0013	0.0010	0.0010	0.0011	0.0009	0.0009	0.0010	0.0010	0.0010	0.0010	0.0010
HDGV4	0.0008	0.0006	0.0006	0.0006	0.0006	0.0005	0.0008	0.0007	0.0007	0.0009	0.0008
HDGV5	0.0004	0.0002	0.0002	0.0002	0.0002	0.0002	0.0004	0.0004	0.0003	0.0004	0.0003
HDGV6	0.0003	0.0004	0.0004	0.0004	0.0005	0.0005	0.0006	0.0004	0.0005	0.0005	0.0005
HDGV7	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV8A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV8B	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LDDV	0.0027	0.0031	0.0030	0.0030	0.0029	0.0028	0.0029	0.0028	0.0028	0.0029	0.0028
LDDT12	0.0003	0.0002	0.0002	0.0002	0.0003	0.0003	0.0005	0.0004	0.0005	0.0005	0.0004
HDDV2B	0.0049	0.0079	0.0077	0.0077	0.0078	0.0072	0.0055	0.0053	0.0054	0.0054	0.0055
HDDV3	0.0016	0.0019	0.0018	0.0019	0.0018	0.0016	0.0016	0.0017	0.0017	0.0019	0.0017
HDDV4	0.0015	0.0016	0.0017	0.0018	0.0016	0.0016	0.0014	0.0013	0.0014	0.0014	0.0014
HDDV5	0.0025	0.0024	0.0023	0.0025	0.0024	0.0023	0.0022	0.0022	0.0022	0.0023	0.0023
HDDV6	0.0058	0.0074	0.0068	0.0072	0.0075	0.0075	0.0078	0.0066	0.0070	0.0072	0.0073
HDDV7	0.0058	0.0049	0.0064	0.0062	0.0070	0.0070	0.0070	0.0052	0.0063	0.0064	0.0070
HDDV8A	0.0073	0.0061	0.0061	0.0061	0.0061	0.0087	0.0075	0.0092	0.0065	0.0064	0.0058
HDDV8B	0.0299	0.0304	0.0305	0.0299	0.0295	0.0295	0.0270	0.0304	0.0310	0.0305	0.0311
MC	0.0044	0.0042	0.0043	0.0040	0.0039	0.0045	0.0041	0.0041	0.0040	0.0040	0.0043
HDGB	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDBT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDBS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LDDT34	0.0037	0.0032	0.0031	0.0030	0.0034	0.0029	0.0041	0.0040	0.0039	0.0038	0.0034

Table 8
2017 Summer VMT Mix Fractions for Autoaccess to Transit Analysis

Vehicle Type	2017 Summer VMT Mix Fractions										
	DC	Maryland Counties					Virginia Counties				
		Calvert	Charles	Frederick	Montgomery	Prince George's	Alexandria	Arlington	Fairfax	Loudon	Prince William
LDGV	0.3228	0.3327	0.3323	0.3292	0.3172	0.3290	0.3190	0.3180	0.3189	0.3199	0.3246
LDGT1	0.1039	0.0971	0.0994	0.1048	0.1049	0.1006	0.0976	0.0998	0.0995	0.1014	0.1049
LDGT2	0.3799	0.3699	0.3692	0.3738	0.3819	0.3731	0.3804	0.3811	0.3797	0.3797	0.3735
LDGT3	0.1208	0.1247	0.1244	0.1199	0.1247	0.1242	0.1275	0.1273	0.1277	0.1246	0.1234
LDGT4	0.0603	0.0638	0.0631	0.0611	0.0598	0.0616	0.0628	0.0615	0.0620	0.0623	0.0617
HDGV2B	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV8A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDGV8B	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LDDV	0.0030	0.0034	0.0033	0.0033	0.0032	0.0031	0.0032	0.0031	0.0031	0.0031	0.0031
LDDT12	0.0003	0.0003	0.0002	0.0003	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005
HDDV2B	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDV3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDV4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDV5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDV6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDV7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDV8A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDV8B	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MC	0.0049	0.0046	0.0047	0.0044	0.0043	0.0049	0.0045	0.0044	0.0043	0.0044	0.0047
HDGB	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDBT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HDDBS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LDDT34	0.0041	0.0035	0.0034	0.0033	0.0037	0.0032	0.0045	0.0043	0.0043	0.0041	0.0037

Table 9
2017 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

APPENDIX E

Documentation of Mobile Source Emission Calculations (post-processor)

MEMORANDUM

TO: Files

FROM: Ronald Milone & Hamid Humeida

DATE: May 30, 2012

SUBJECT: Mobile Emissions Post Processor for the Version 2.3 Travel Demand Model

1.0 Introduction

This memorandum describes the mobile emissions post processor used in the Air Quality Conformity Determination of the 2012 CLRP and FY 2013-2018 TIP. The post processor is a series of computer programs that are used to forecast air pollution attributed to the highway system in the Washington D.C. region. The programs are essentially used to multiply travel demand produced by the TPB's regional travel model (highway link VMT and trip tables) by emission rates developed by the EPA's Mobile 6.2 model.

The post processor has, in recent years, been applied with model outputs of the TPB's Version 2.2 travel demand model and the Mobile 6.2 model¹. With the draft release of the new Version 2.3 travel model in the spring of 2011, TPB staff has recognized the need to implement several updates to the post processor. The updates included expanding zonal dimensions of some programs to accommodate the new 3,722 TAZ system and addressing redefined modeled time periods. The post processor updates also included parameter updates that are consistent with the Version 2.3 model's base year, 2007.

In accordance with air quality planning requirements, the post processor is currently used to compute mobile source emissions associated with volatile organic compounds (VOC)², nitrogen oxide (NOx), carbon monoxide (CO), and particulate matter (PM_{2.5} and precursor NOx). As emission rates are sensitive to temperature, emission calculations are developed for specific seasonal periods. For analysis purposes, VOC and NOx emissions are computed for an average summer weekday conditions. CO emissions are computed for an average winter weekday. PM_{2.5} emissions are computed as annualized figures, based on the development of three individual seasonal calculations.

TPB staff currently estimates mobile emissions explicitly for two source categories: on-network and off-network sources. On-network emissions are generated by travel on the regional highway system and are computed using the regional travel model output. TPB staff develops on-network emissions for individual segments of the drive cycle. The segments include start-up emissions (emissions that occur shortly after the vehicle has been started), stabilized running emissions (emissions from an operating vehicle engine after it is fully "warmed"), and hot soaking (evaporative emissions that occur after the vehicle has been turned off). Alternatively, off-network emissions are concerned with vehicle-based

¹ See 5/26/2009 memorandum from Ronald Milone and Hamid Humeida to Files, Subject: Mobile Emissions Post Processor Description and Results

² VOC emissions are sometimes labeled as "HC" (or hydrocarbons) in the post processor output

evaporation and travel that is not addressed by the regional travel model (i.e., travel on local streets, bus travel, and auto travel related to accessing transit). The post processor currently addresses all on-network and local off-network emission sources. Emissions concerned with the remaining off-network categories are computed using off-line spreadsheet techniques that are not addressed in this memorandum.

As the term “post processor” implies, a key function of the emissions estimation is the refinement of highway volumes and speeds that are produced by the travel model in terms of gross time periods into hourly estimates. This is necessary because the running emission rates are sensitive to vehicle speed. The refinement of modeled speeds involves taking steps to ensure that:

- 1) Hourly link volumes are reasonable with respect to the diurnal profile of traffic
- 2) Hourly link volumes are reasonable with respect to the physical capacity of the link
- 3) Modified speed flow relationships are used to develop realistic hourly link volumes and speeds

Table 1 provides a summary of the emissions calculations by emission class and pollutant. It is notable to point out that the on-network emissions calculations are made at a very disaggregate level. Running emissions are computed at the network link level as a function of vehicle miles traveled (VMT) while trip start and soaking emissions are computed at the transportation analysis zone (TAZ) level, on a per trip basis. In contrast, local running emissions are computed on a jurisdiction level as a function of VMT.

Table 1 Summary of Mobile Emissions Calculation by Emission Type and Pollutant

Emission Type	Pollutant	Emission Rate Description	Travel Unit Description	How Emissions are Computed
Running/ On -Network	VOC CO NOx	gm/mile, by jurisdiction, facility type and speed	Vehicle miles	Emission rate * travel unit, computed at network link level, by hour of day
	PM _{2.5}	gm/mile, by jurisdiction	vehicle miles	Emission rate * travel unit, computed at network link level
Start-Up	VOC CO NOx	gm/trip, by jurisdiction and engine condition (hot/cold)	Vehicle starts	Emission rate * travel unit, computed at TAZ level, by hour of day
Soak	VOC	gm/trip, by jurisdiction	Vehicle stops	Emission rate * travel unit, computed at TAZ level
Running / Local (Off -Network)	VOC CO NOx	gm/mile, by jurisdiction in urbanized areas; by jurisdiction and speed in rural areas	vehicle miles	Emission rate * travel unit, computed at jurisdiction level, stratified by urban and rural areas; rural areas are further stratified by speed ranges
	PM _{2.5}	gm/mile, by jurisdiction	vehicle miles	Emission rate * travel unit, Computed at jurisdiction level

2.0 Overview of the Post Processor Steps

The post processor consists of eight Cube Voyager³ programs that are designed to read Mobile 6.2 generated emission rate files and Version 2.3 travel demand model outputs. The programs are listed in Table 2. There are two sets of programs, one used to compute average weekday emissions for a single-season, and another that is used to compute average daily emissions for three seasons⁴.

Table 2 Table of Post Processor Program Steps

Seq. No.	One-Season Program Name	Three-Season Program Name	Program Description
1	AQTRIP.S	AQTRIP.S	Summarize jurisdiction level vehicle trip distribution
2	ZONESPRD.S	ZONESPRD.S	Distributed daily vehicle trip ends among hourly periods
3	PEAK_SPREAD.S	PEAK_SPREAD_Seasonal.S	Distribute time period link volumes, among hourly periods and develop hourly speeds
4	RUNNING.S	RUNNING_Seasonal.S	Compute running emissions
5	STRT_SKR.S	STRT_SKR_Seasonal.S	Computer trip start and soaking emissions
6	PRE_LOCAL.S	PRE_LOCAL.S	Estimated forecasted local VMT by jurisdiction
7	LOCAL.S	LOCAL_Seasonal.S	Compute local emissions by jurisdiction
8	Report.s	Report.s	Summarize jurisdiction level emissions for the MSA

The above programs are executed logically, in the sequence shown. Appendix A provides a more detailed graphical view of the post processor process flow. The *AQTRIP* program summarizes the final zone level vehicle trips produced by the regional travel demand model and combines them into AM, PM, and off-peak (night and midday periods). The program creates a distribution table indicating the percentage of daily vehicle travel that occurs between jurisdictions. A proportion table is needed because the Mobile emission rates are associated with the jurisdiction of vehicle registration, which is *not* necessarily the jurisdiction where the actual emissions occur. Therefore, the emission rates ultimately applied within the post processor are actually weighted average rates based on daily vehicular travel proportions between jurisdictions.

The *AQTRIP* program also writes vehicle trip-end files by time period which are used in the starting and soaking emissions calculation. The *ZONESPRD.S* program reads the daily trip-end files created above and apportions them among hourly time periods, which is necessary for starting and soaking emissions computation. The *Peak_Spread* program refines the time period-specific link volumes from the loaded highway network and develops hourly volumes and speeds that are subsequently used in the running

³ All previous post processor versions have been TP+ scripts

⁴ The “three season” set of programs are executed three times, once for each season

emission calculation that is made in the *Running* program. The *Strt_Skr* program is used to calculate starting and soaking emission at the TAZ level. The *Pre_local* and *Local* programs are used to compute local running emissions at the jurisdictional level of analysis. Finally, the *Report* program reads the various output files and creates a single report summarizing running, start, soak, and local emissions for the MSA.

The above programs are executed in a scenario-specific subdirectory, using a batch file that defines the location of the travel model files, the location and name of the Mobile 6.2 generated emission rate files, and seasonal parameters used to adjust the average weekday travel link volumes produced by the travel model to the appropriate seasonal period⁵. The “three-season” batch file additionally contains a parameter specifying the number of days in each seasonal period. This is necessary in order to arrive at annual emissions figures. The single season batch file is named *EMISS.BAT* while the three-season batch file is named *3_Season_Emiss.bat*. The subdirectories used for executing 2012 CLRP air quality work appears in the appendix section of this memorandum (Table 13).

3.0 Seasonal VMT Adjustments

Table 3 indicates the factors used to convert average weekday link volumes produced by the travel model into the seasonal analysis period used for emissions calculation. The table also indicates the key pollutants that are most relevant to each seasonal period. The factors were formulated using 2007 traffic count data collected at permanent count stations throughout the region. While the continuously operating permanent count stations are limited in number (~60 locations), they provide a reasonable basis for understanding seasonal traffic variation in the Washington, D.C. region. The summer weekday period reflects about 2.5% higher traffic level than the average annual weekday condition while the wintertime period reflects about 4% lower traffic, which is consistent with expectations. Conversion factors from average weekday traffic to average annual daily traffic reflect uniformly lower traffic levels relative to average annual weekday traffic levels for each seasonal period (from 2.5 – 8.0% lower) as average annual traffic is inclusive of both weekend as well as weekday conditions.

⁵ Note that the link volume is seasonally adjusted thus affecting the running emission calculation but the trip-related emissions are not seasonally adjusted

Table 3 Conversion Factors for Converting AAWT to Seasonal Travel

Analysis Period	Pollutants Analyzed	Duration of Seasonal Period	Conversion Factor Applied to AAWDT	Result of Conversion
Summer/Ozone Season	VOC	May to September	1.0262	Seasonal AAWDT
	NOx			
Wintertime Season	CO	December to February	0.9573	Seasonal AAWDT
Annual Total (sum of 3 seasons)	PM _{2.5} NOx precursor	January to April	0.9177	Seasonal AADT
		May to September	0.9751	Seasonal AADT
		October to December	0.9212	Seasonal AADT

4.0 Mobile 6.0 Emission Rates

As emissions are affected by atmospheric and weather conditions as well as local fleet characteristics and inspection programs, TPB staff prepares a substantial number of Mobile 6.2-based emission files as input to the post processor. Running and trip-end emission files are therefore produced by season and by jurisdiction group⁶. Running emission rates are further developed by facility type groups and speed (from 0 to 65 in 5 mph increments). In all, 96 files are prepared for each single-season scenario (each file contains VOC, CO, and NOx rates). 320 files are prepared for each 3-season scenario (pollutant-specific files are developed individually). TPB uses a rigid naming system for the development of the emission rate files in order to facilitate tracking and quality control. A listing of single season and 3-season emission rate files for a given scenario is provided in the appendix section of this memorandum (Table 10 and Table 11).

5.0 Starting and Soaking Emissions Calculation

Starting emissions are developed by applying per-trip emission rates to modeled vehicle trips at the zone level, on an hour-by-hour basis. Starting pollutant rates are associated with VOC, CO, and NOx emissions, and are expressed in terms of *cold* and *hot transient* types. Cold starts relate to those auto trips with fully cooled engines (i.e., engines that have been turned off for at least one hour prior to the trip starting time). Alternatively, hot transient starts are those auto trips with warm engines (i.e., engines that have been turned off less than one hour prior to the trip start time). An hourly allocation

⁶ Emission rates are developed for 27 jurisdiction and external station groups

of trip origins is necessary for the starting emission calculation since the proportion of cold and hot starts is dependent upon the time of day. The assumed hourly distribution of AM, PM, and Off-peak vehicle trips is shown in Table 4. The distribution shown was derived from the 2007/08 Household Travel Survey (HTS). The assumed hourly distribution for cold and hot transient starts is shown on Table 5.

Soaking emissions are associated with the evaporative VOC/HC emissions that result when the engine is turned off. The soak emissions consist of a single emission rate that is applied to trip destinations. There is no temporal component to the soaking emission computation.

The general TAZ level equation for computing starting emissions is as follows:

$$\text{StartEm}_{ih} = \text{Starts}_h * \sum_{j=1}^{27} ((\text{CSR}_j * \text{CPCT}_h + \text{HSR}_j * \text{HPCT}_h) * \text{Tprop}_{ij})$$

Where:

- StartEm_{ih} = Zonal starting-up emissions (in grams) at hour h in jurisdiction i
- Starts_h = Zonal vehicle starts at hour h
- CSR_j = Cold Start rate (gm/trip) for jurisdiction j
- CPCT_h = Cold start proportion at hour h
- HSR_j = Hot Start rate (gm/trip) for jurisdiction j
- HPCT_h = Hot start proportion at hour h
- Tprop_{ij} = Proportion of daily trips between jurisdiction i/j

The TAZ level equation for computing soaking emissions is as follows:

$$\text{SoakEm}_{ih} = \text{Stops}_h * \sum_{j=1}^{27} (\text{HSR}_j * \text{Tprop}_{ij})$$

Where:

- SoakEm_{ih} = Zonal hot soak emissions (in grams) at hour h in jurisdiction i
- Stops_h = Vehicle stops at hour h
- HSR_j = Hot Soak rate (gm/trip) for jurisdiction j
- Tprop_{ij} = Proportion of daily trips between jurisdiction i and jurisdiction j

The regional total of starting/soaking emissions is, therefore, based on the result of the above equations accumulated over all TAZs, over all hours of the day. Regional emissions in grams are converted to tons using a conversion factor of 907,184.74 gm/ton.

Table 4 Distribution of AM, PM, and Off-Peak Period Auto Driver Trips among Hourly Periods

Hour No.		% AM	% PM	Off-Peak
1	12mid - 12:59AM			0.20%
2	1:00AM - 1:59AM			0.30%
3	2:00AM - 2:59AM			0.20%
4	3:00AM - 3:59AM			0.10%
5	4:00AM - 4:59AM			0.70%
6	5:00AM - 5:59AM			3.00%
7	6:00AM - 6:59AM	20.50%		0.00%
8	7:00AM - 7:59AM	37.80%		0.00%
9	8:00AM - 8:59AM	41.70%		0.00%
10	9:00AM - 9:59AM			11.90%
11	10:00AM - 10:59AM			10.00%
12	11:00AM - 11:59AM			10.90%
13	12noon - 12:59PM			11.90%
14	1:00PM - 1:59PM			11.30%
15	2:00PM - 2:59PM			11.30%
16	3:00PM - 3:59PM		20.70%	0.00%
17	4:00PM - 4:59PM		24.90%	0.00%
18	5:00PM - 5:59PM		29.40%	0.00%
19	6:00PM - 6:59PM		25.00%	0.00%
20	7:00PM - 7:59PM			11.50%
21	8:00PM - 8:59PM			7.30%
22	9:00PM - 9:59PM			5.30%
23	10:00PM - 10:59PM			2.90%
24	11:00PM - 11:59PM			1.20%
Total		100.00%	100.00%	100.00%

Table 5 Distribution of Cold / Hot Transient Vehicle Starts by Hour

Hour No.		% Cold	% Hot	Total
1	12mid - 12:59AM	84.70%	15.30%	100.00%
2	1:00AM - 1:59AM	83.80%	16.20%	100.00%
3	2:00AM - 2:59AM	92.90%	7.10%	100.00%
4	3:00AM - 3:59AM	91.20%	8.80%	100.00%
5	4:00AM - 4:59AM	89.40%	10.60%	100.00%
6	5:00AM - 5:59AM	93.00%	7.00%	100.00%
7	6:00AM - 6:59AM	88.40%	11.60%	100.00%
8	7:00AM - 7:59AM	82.90%	17.10%	100.00%
9	8:00AM - 8:59AM	73.00%	27.00%	100.00%
10	9:00AM - 9:59AM	61.50%	38.50%	100.00%
11	10:00AM - 10:59AM	55.40%	44.60%	100.00%
12	11:00AM - 11:59AM	55.10%	44.90%	100.00%
13	12noon - 12:59PM	50.50%	49.50%	100.00%
14	1:00PM - 1:59PM	51.20%	48.80%	100.00%
15	2:00PM - 2:59PM	56.20%	43.80%	100.00%
16	3:00PM - 3:59PM	58.30%	41.70%	100.00%
17	4:00PM - 4:59PM	60.50%	39.50%	100.00%
18	5:00PM - 5:59PM	59.90%	40.10%	100.00%
19	6:00PM - 6:59PM	55.20%	44.80%	100.00%
20	7:00PM - 7:59PM	57.00%	43.00%	100.00%
21	8:00PM - 8:59PM	61.60%	38.40%	100.00%
22	9:00PM - 9:59PM	66.40%	33.60%	100.00%
23	10:00PM - 10:59PM	71.10%	28.90%	100.00%
24	11:00PM - 11:59PM	73.00%	27.00%	100.00%

6.0 Running Emissions

Running emissions are associated with VOC/HC, CO, NO_x, and PM_{2.5} pollutants emitted on the regional highway network. They are computed by applying per-mile emission rates to VMT at the network link level, and are computed on an hour-by-hour basis. The calculation is applied on an hourly basis because the running emission rates are provided as a function of highway speed⁷, which varies with congestion throughout the day. As with the trip-end emission calculation, the running emission rate for a given link is a weighted average of all jurisdictional rates based on the proportion of daily vehicle trips from each county to the specific county in which the network link is located. The modeled VMT is adjusted to account for seasonal traffic variation that is relevant to the given scenario.

The allocation of link volumes among hourly periods is done in a two-step manner. First, a default hourly distribution is applied to the traffic on each link based on the facility type and the general peaking orientation, i.e., whether the link volume is oriented toward AM period, the PM period, or neither the AM or PM periods (or a relatively even distribution). The link peaking orientation is established using the following peaking percentage formula:

$$\text{Peaking Percentage} = ((\text{AM Volume} * \text{PM scale factor}) - \text{PM Volume}) / \text{Daily Link Volume}$$

Where:

Peaking Percentage > 7.5%	(AM oriented)
Peaking Percentage < -7.5%	(PM oriented)
Peaking Percentage >= -7.5% and <= 7.5%	(Even oriented)

The “PM scale factor” term in the above equation is used to ensure that global sum of AM volumes will match the global PM volume totals. The scaling factor is applied to ensure that a consistent number of AM- and PM- oriented links will be developed for the network system. Default hourly volume distributions associated with specific facility and peaking classifications are shown in Table 6. The distributions shown were developed from a geographically dispersed sample of 1,700 hourly directional traffic counts obtained from VDOT and MDOT for 2007.

In the second step, the initial hourly link volumes are compared to hourly link capacities. Special “peak spreading” measures are taken for cases where initial hourly volumes exceed hourly capacities as detailed on Table 7. In the case of overly congested freeways, the link capacities are moderated to reflect the fact that the “through-put” volumes cannot be sustained when the V/C ratio exceeds 1.0 (see Table 8). The peak spreading procedure detailed on Table 7 is essentially a technique for moving excessive peak hour traffic systematically into shoulder hours. Traffic assignments on rare occasions could produce severely overloaded link volumes to the point where a given link volume could exceed the capacity over *all* hours of the day. Because of this possibility, volume adjustments are *not* made for the first, noon, and last hours (hours 1, 13, and 24), even if a given link volume is determined to exceed capacity in those particular hours. An analysis of overloaded links for 2007 indicated that this condition occurred on about three percent of all links. The resulting “final” hourly link volumes are used to develop V/C ratios and speeds using the speed-flow relationship shown on Table 9.

⁷ The PM_{2.5} emission rate does not vary by speed, but the PM_{2.5} computation is still made on an hourly basis.

Table 6 Hourly Distribution of Daily Traffic by Link Orientation and Facility Type

Hour	AM			PM			EVEN		
	Freeway	Arterial	Collector	Freeway	Arterial	Collector	Freeway	Arterial	Collector
1	0.81%	0.53%	0.43%	1.03%	0.72%	0.57%	0.95%	0.62%	0.56%
2	0.60%	0.32%	0.27%	0.63%	0.40%	0.33%	0.62%	0.37%	0.31%
3	0.56%	0.28%	0.23%	0.47%	0.30%	0.25%	0.51%	0.31%	0.25%
4	0.82%	0.40%	0.31%	0.45%	0.27%	0.25%	0.59%	0.39%	0.32%
5	2.45%	1.21%	1.30%	0.66%	0.50%	0.59%	1.25%	0.95%	0.82%
6	5.76%	3.70%	4.11%	1.84%	1.44%	1.95%	3.24%	2.69%	2.50%
7	7.90%	6.59%	7.76%	3.54%	3.20%	4.00%	5.29%	5.02%	5.02%
8	8.89%	8.90%	9.44%	4.98%	5.13%	5.49%	6.64%	6.90%	6.61%
9	7.72%	8.35%	7.92%	5.07%	5.37%	5.49%	6.56%	6.67%	6.59%
10	6.15%	6.16%	5.55%	4.44%	4.64%	4.65%	5.70%	5.57%	5.50%
11	4.90%	4.92%	4.59%	4.25%	4.36%	4.20%	4.94%	4.90%	4.71%
12	4.53%	4.85%	4.64%	4.42%	4.75%	4.46%	4.95%	5.10%	5.11%
13	4.55%	5.07%	4.91%	4.80%	5.23%	4.95%	5.15%	5.37%	5.41%
14	4.55%	4.99%	4.84%	5.19%	5.38%	5.17%	5.29%	5.35%	5.32%
15	4.94%	5.27%	5.15%	6.63%	6.15%	6.00%	6.01%	5.88%	5.83%
16	5.46%	5.87%	6.05%	8.09%	7.67%	7.77%	6.56%	6.70%	6.88%
17	5.75%	6.30%	6.75%	9.15%	8.95%	9.53%	6.91%	7.41%	7.98%
18	5.87%	6.77%	7.13%	9.34%	9.65%	10.14%	7.15%	7.78%	8.23%
19	4.95%	5.94%	5.83%	7.71%	8.18%	8.04%	6.16%	6.67%	6.84%
20	3.72%	4.59%	4.41%	5.55%	6.04%	5.69%	4.74%	5.14%	5.13%
21	3.01%	3.47%	3.35%	4.14%	4.46%	4.18%	3.69%	3.95%	3.98%
22	2.61%	2.72%	2.57%	3.37%	3.52%	3.17%	3.13%	3.08%	3.07%
23	2.10%	1.79%	1.59%	2.53%	2.30%	1.96%	2.38%	2.00%	1.92%
24	1.39%	1.01%	0.88%	1.74%	1.38%	1.16%	1.58%	1.17%	1.10%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
No of Obs.	37	366	127	41	468	124	78	393	100

Table 7 Peak Spreading Procedure Adjustment Process

<p>Step 1:</p>	<p>The AM peak hour (hour 8) initial volume is compared to the link capacity. If the initial hour 8 volume exceeds capacity, then the hour 8 volume is set to capacity (or a moderated capacity value in the case of freeways) and the excess volume portion is added to the volume in periods occurring before <i>and</i> after the AM peak hour (hours 7 and 9) on a 50/50 basis.</p>
<p>Step 2:</p>	<p>The PM peak hour (hour 18) initial volume is compared to the link capacity. If the initial volume exceeds capacity, then the hour 18 volume is set to capacity (or a moderated capacity value in the case of freeways) and the excess volume portion is added to the volume in periods occurring before <i>and</i> after the PM peak hour (hours 17 and 19) on a 50/50 basis.</p>
<p>Step 3:</p>	<p>The volume occurring during pre-AM peak hours (hours 1 to 7) are sequentially checked against the link capacity as in steps 1 and 2, and adjusted (if necessary) in a backward-moving fashion. If the volume occurring in hour 7 exceeds capacity then the hour 7 volume is set to capacity and the excess volume portion is added to the volume of hour 6 volume, and so on. There is no volume spreading at hour 1, even for rare cases where the resulting hour 1 volume exceeds capacity.</p>
<p>Step 4:</p>	<p>The volume occurring during post-AM peak hours (hours 9 to 13) are sequentially checked against the link capacity as in steps 1 and 2, and adjusted (if necessary) in a forward-moving fashion. If the volume occurring in hour 9 exceeds capacity then the hour 9 volume is set to capacity and the excess volume portion is added to the volume of hour 10 volume, and so on. There is no volume spreading at hour 13 (the midday hour), even for rare cases where the resulting hour 13 volume exceeds capacity.</p>
<p>Step 5:</p>	<p>The volume occurring during pre-PM peak hours (hours 13 to 17) are sequentially checked against the link capacity as in steps 1 and 2, and adjusted (if necessary) in a backward-moving fashion. If the volume occurring in hour 17 exceeds capacity then the hour 17 volume is set to capacity and the excess volume portion is added to the volume of hour 16 volume, and so on. There is no volume spreading at hour 13 (the midday hour), even for rare cases where the resulting hour 13 volume exceeds capacity.</p>
<p>Step 6:</p>	<p>The volume occurring during post-PM peak hours (hours 19 to 24) are sequentially checked against the link capacity as in steps 1 and 2, and adjusted (if necessary) in a forward-moving fashion. If the volume occurring in hour 19 exceeds capacity then the hour 19 volume is set to capacity and the excess volume portion is added to the volume of hour 20 volume, and so on. There is no volume spreading at hour 24, even for rare cases where the resulting hour 24 volume exceeds capacity.</p>

Table 8 Freeway Through-Put Capacities Under Congested Conditions

V/C	Fwy AT1	Fwy AT2	Fwy AT3	Fwy AT4	Fwy AT5	FWY AT6
1.00	1,900	1,900	2,000	2,000	2,000	2,000
1.20	1,815	1,815	1,910	1,910	1,910	1,910
1.40	1,729	1,729	1,820	1,820	1,820	1,820
1.60	1,729	1,729	1,820	1,820	1,820	1,820
1.80	1,729	1,729	1,820	1,820	1,820	1,820
2.00	1,729	1,729	1,820	1,820	1,820	1,820
2.20	1,729	1,729	1,820	1,820	1,820	1,820
9.99	1,729	1,729	1,820	1,820	1,820	1,820

Table 9 Speed Delay Functions used in the Mobile Emissions Post Processor by Facility Type and Area Type (1-7)

V/C Atp -->	Freeway			Major Arterial				Minor arterial				Collector				Expressway		
	1-2	3-4	5-7	1-2	3-4	5	6-7	1-2	3-4	5	6-7	1-2	3-4	5	6-7	1-2	3-5	6-7
0.000	55.000	60.000	67.000	25.000	35.000	40.000	45.000	20.000	30.000	35.000	40.000	15.000	20.000	25.000	30.000	45.000	50.000	55.000
0.100	54.783	59.764	66.736	24.774	34.683	39.638	44.593	19.762	29.643	34.583	39.523	14.630	19.506	24.383	29.259	44.649	49.610	54.571
0.200	54.479	59.431	66.365	24.464	34.250	39.143	44.036	19.441	29.161	34.022	38.882	14.171	18.895	23.619	28.342	44.166	49.074	53.981
0.300	54.174	59.099	65.994	24.155	33.817	38.648	43.479	19.120	28.680	33.460	38.240	13.713	18.284	22.855	27.426	43.683	48.537	53.390
0.400	53.645	58.522	65.350	23.646	33.105	37.834	42.563	18.611	27.916	32.569	37.222	13.093	17.457	21.822	26.186	42.878	47.642	52.406
0.500	53.116	57.945	64.705	23.138	32.393	37.020	41.648	18.102	27.152	31.678	36.203	12.473	16.631	20.789	24.947	42.073	46.747	51.422
0.600	51.976	56.701	63.316	22.165	31.031	35.465	39.898	17.193	25.790	30.088	34.387	11.631	15.508	19.385	23.262	40.485	44.984	49.482
0.700	50.835	55.456	61.926	21.193	29.670	33.909	38.147	16.285	24.427	28.499	32.570	10.789	14.385	17.982	21.578	38.898	43.220	47.542
0.800	48.329	52.722	58.873	19.427	27.198	31.083	34.969	14.789	22.183	25.880	29.577	9.762	13.016	16.270	19.524	35.880	39.867	43.853
0.900	42.731	46.616	52.054	16.595	23.233	26.552	29.871	12.669	19.003	22.171	25.338	8.643	11.524	14.405	17.286	30.702	34.113	37.524
1.000	27.500	30.000	33.500	12.500	17.500	20.000	22.500	10.000	15.000	17.500	20.000	7.500	10.000	12.500	15.000	22.500	25.000	27.500
1.100	22.610	24.665	27.543	11.200	15.681	17.921	20.161	9.155	13.733	16.022	18.311	7.141	9.521	11.901	14.282	19.893	22.103	24.313
1.170	19.187	20.931	23.373	10.291	14.407	16.465	18.524	8.564	12.846	14.987	17.129	6.889	9.186	11.482	13.779	18.068	20.075	22.083
1.200	17.719	19.330	21.585	9.901	13.861	15.842	17.822	8.311	12.466	14.544	16.622	6.782	9.042	11.303	13.563	17.286	19.206	21.127
1.300	12.829	13.995	15.628	8.601	12.042	13.762	15.483	7.466	11.200	13.066	14.933	6.423	8.563	10.704	12.845	14.678	16.309	17.940
1.400	12.829	13.995	15.628	8.601	12.042	13.762	15.483	7.466	11.200	13.066	14.933	6.423	8.563	10.704	12.845	14.678	16.309	17.940
1.500	12.829	13.995	15.628	8.601	12.042	13.762	15.483	7.466	11.200	13.066	14.933	6.423	8.563	10.704	12.845	14.678	16.309	17.940
1.600	12.829	13.995	15.628	8.601	12.042	13.762	15.483	7.466	11.200	13.066	14.933	6.423	8.563	10.704	12.845	14.678	16.309	17.940
1.800	12.829	13.995	15.628	8.601	12.042	13.762	15.483	7.466	11.200	13.066	14.933	6.423	8.563	10.704	12.845	14.678	16.309	17.940
2.000	12.829	13.995	15.628	8.601	12.042	13.762	15.483	7.466	11.200	13.066	14.933	6.423	8.563	10.704	12.845	14.678	16.309	17.940
2.250	12.829	13.995	15.628	8.601	12.042	13.762	15.483	7.466	11.200	13.066	14.933	6.423	8.563	10.704	12.845	14.678	16.309	17.940
99.990	12.829	13.995	15.628	8.601	12.042	13.762	15.483	7.466	11.200	13.066	14.933	6.423	8.563	10.704	12.845	14.678	16.309	17.940

Subsequent to the development of ‘final’ hourly link volumes and speeds, the general equation for computing running emissions at the link level is:

$$\text{RunningEm}_{ih} = \text{VMT}_h * \sum_{j=1}^{27} (\text{RRate}_j * \text{Tprop}_{ij})$$

Where:

- RunningEm_{ih} = Running link emissions at hour h in jurisdiction i
VMT_h = Vehicle Miles Travel (after peak-spreading) at hour h
RRate_j = Running rate (gm/mi) as a function of highway speed for jurisdiction j
Tprop_{ij} = Proportion of daily trips between jurisdiction i/j

The regional running emissions are the accumulation of calculated hourly emissions over all network links in the study area. Emissions in grams are converted to tons using a conversion factor of 907,184.74 gm/ton.

7.0 Local Emissions

Local (or off-network) emissions are those generated on smaller facilities that are not included in the regional network. Local emissions are associated with VOC/HC, CO, NO_x, and PM_{2.5} pollutants and are computed at jurisdiction level by applying per-mile emission rates to the local VMT. However, the local emission calculation requires that local VMT be further allocated among urban and rural categories, as the emission calculation is different.

Local VMT is developed by extrapolating base-year HPMS figures into the future based on the VMT growth forecasts produced by the travel model. TPB staff has summarized base year local VMT at the jurisdiction level for 2007 (see Table 12 in the appendix section of this memorandum).

The calculation steps of local emissions are detailed below:

- 1) Modeled network VMT for the analysis year is summarized at jurisdiction level and merged with the base year information, above.
- 2) Local urban and rural VMT is estimated for the analysis year. First, local VMT is estimated by applying a growth factor to the base year (2007) local VMT. The growth factor is based on modeled VMT change between the base year and analysis year. Next, the base year urban and rural percentages are applied to the local VMT computed for the analysis year.
- 3) Local PM_{2.5} emissions are computed based on total (urban and rural) VMT.
- 4) Urban/local NO_x, CO, and VOC emissions are computed using the single local/stabilized emission factor produced by Mobile. This factor is based on an assumed speed of 12.9 mph.
- 5) Rural/local NO_x, CO, and VOC emissions are computed by first allocating the rural VMT among speed ‘bins’ using an assumed average speed profile. The profile reflects a VMT distribution for rural jurisdictions that was summarized from previous modeling files. Next, rural arterial rates are applied to the VMT on the basis of speed.

Previous local emissions calculations have been made using the single (12.9 mph-based) local rate. It is believed that the use of arterial rates at higher speed levels will yield a more accurate emission result for rural areas of the region.

8.0 Conclusions

This memorandum has presented an overview of the technical procedures used to estimate mobile source emissions in the Washington, D.C. region, also known as the post processor. The process combines the travel demand outputs of the regional travel model with emission rates developed with the EPA Mobile 6.2 model. TPB staff has recently updated the post processor to become compliant with the recently released Version 2.3 model, which has been developed using a new 3,722 TAZ system.

Appendix A

Post-Processor Flow Chart

Figure 1

Figure 1 Single-season process

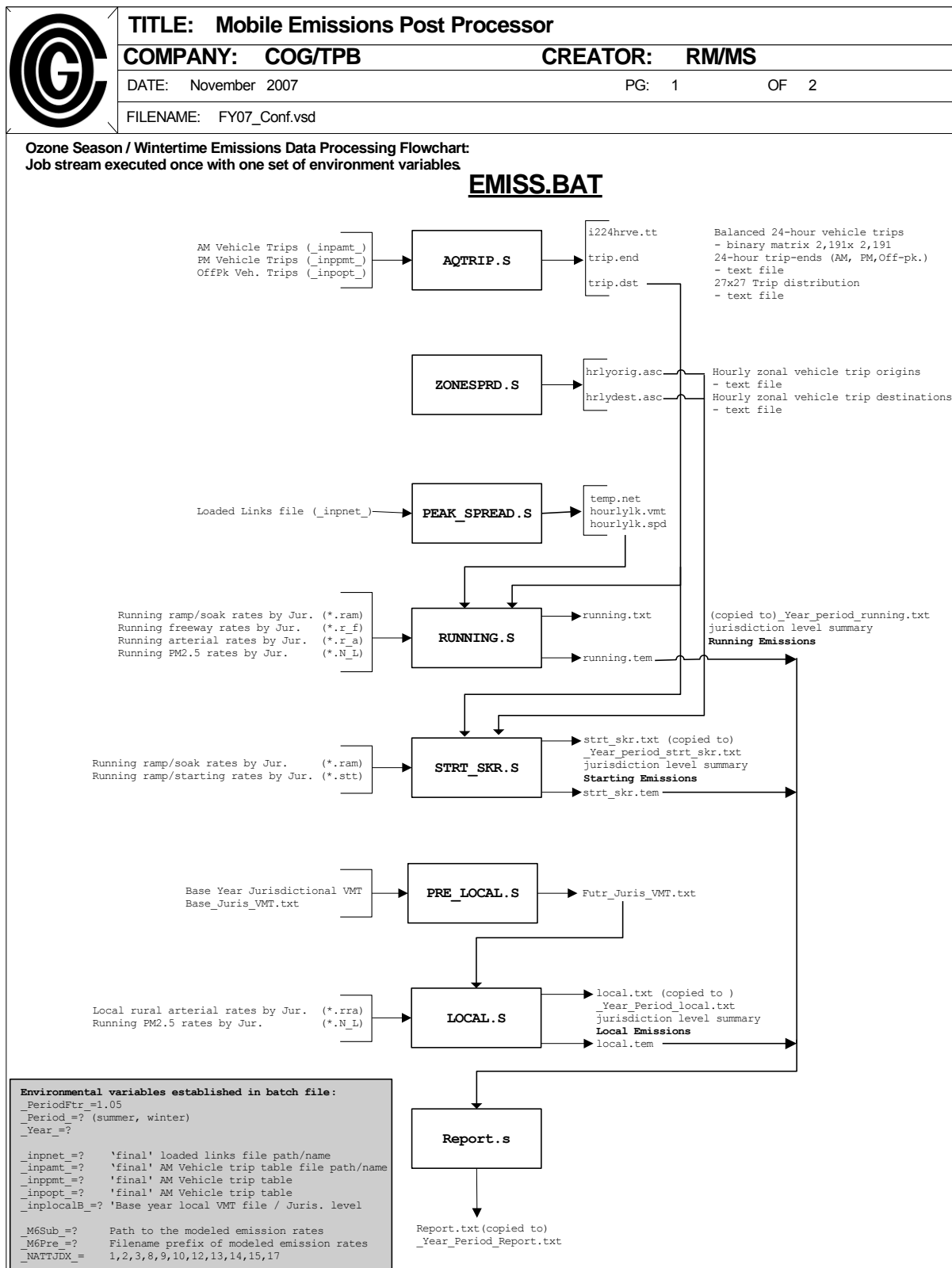
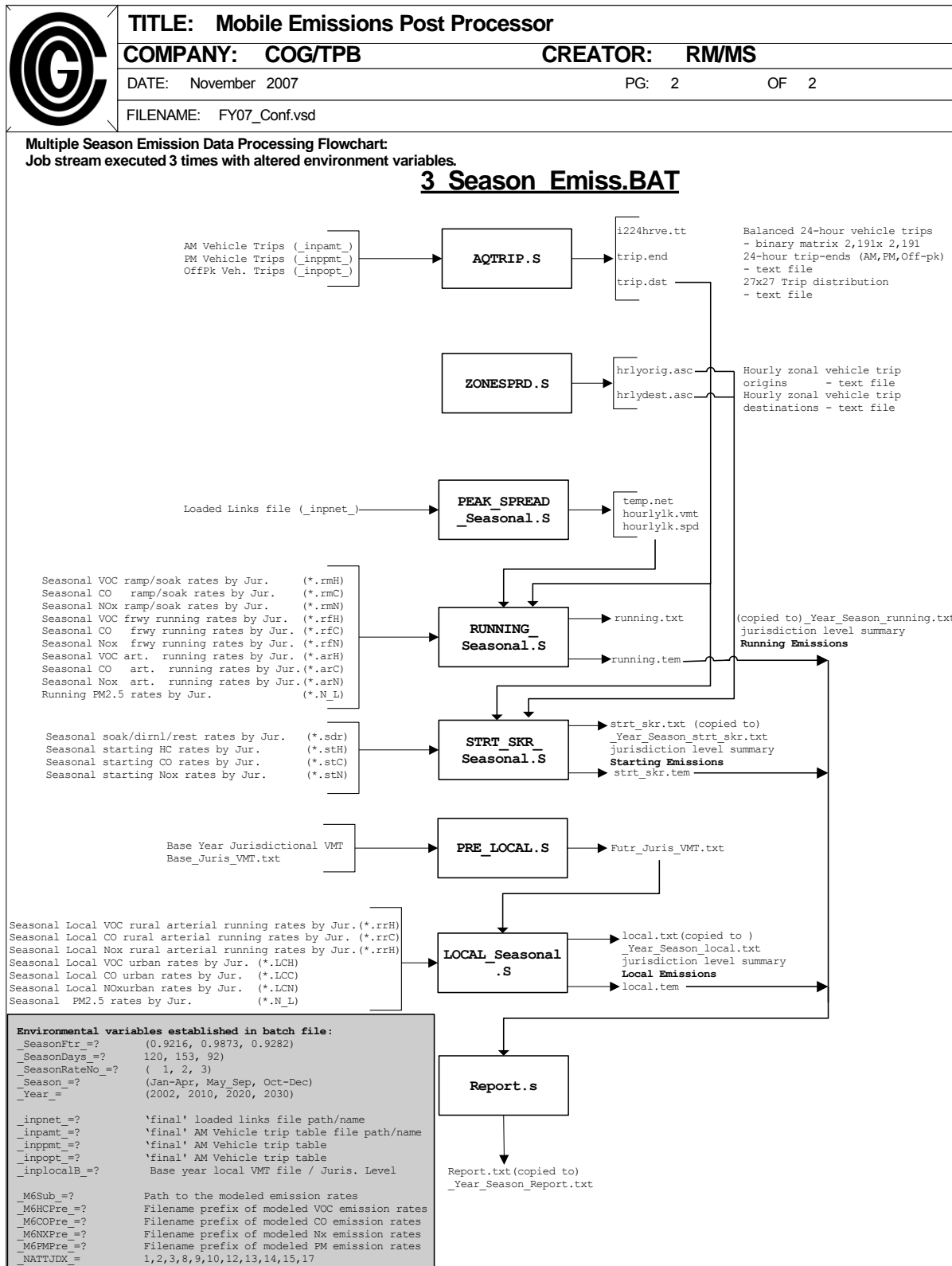


Figure 2

Figure 2 Three-season process



Appendix B

Mobile 6 rates

Table 10

Table 10 Listing of Emission Rate Filenames Prepared for the Post-Processor / Single-Season Post-Processor

	Running Arterial Rates	Running Freeway Rates	Running Freeway Ramp Rates	Starting (Hot/Cold) Rates	Running Local Rates	Running Local -Rural Arterial Rates
Jurisdiction	VOC, CO, Nx Rates by speed	VOC, CO, Nx Rates by speed	VOC, CO, Nx Rates @ 35 mph	Hot VOC, CO, Nox / Cold VOC, CO, Nox Rates	VOC, CO, Nox Rates @ 12.9 mph	VOC, CO, Nx Rates by speed
Alexandria	<prefix>AL.r_a	<prefix>AL.r_f	<prefix>AL.ram	<prefix>AL.stt	<prefix>AL.lcl	<prefix>AL.r_r
Arlington	<prefix>AR.r_a	<prefix>AR.r_f	<prefix>AR.ram	<prefix>AR.stt	<prefix>AR.lcl	<prefix>AR.r_r
Calvert	<prefix>CA.r_a	<prefix>CA.r_f	<prefix>CA.ram	<prefix>CA.stt	<prefix>CA.lcl	<prefix>CA.r_r
Charles	<prefix>CH.r_a	<prefix>CH.r_f	<prefix>CH.ram	<prefix>CH.stt	<prefix>CH.lcl	<prefix>CH.r_r
Calvert	<prefix>CL.r_a	<prefix>CL.r_f	<prefix>CL.ram	<prefix>CL.stt	<prefix>CL.lcl	<prefix>CL.r_r
DC	<prefix>DC.r_a	<prefix>DC.r_f	<prefix>DC.ram	<prefix>DC.stt	<prefix>DC.lcl	<prefix>DC.r_r
Frederick	<prefix>FR.r_a	<prefix>FR.r_f	<prefix>FR.ram	<prefix>FR.stt	<prefix>FR.lcl	<prefix>FR.r_r
Fairfax	<prefix>FX.r_a	<prefix>FX.r_f	<prefix>FX.ram	<prefix>FX.stt	<prefix>FX.lcl	<prefix>FX.r_r
Loudoun	<prefix>LD.r_a	<prefix>LD.r_f	<prefix>LD.ram	<prefix>LD.stt	<prefix>LD.lcl	<prefix>LD.r_r
Montgomery	<prefix>MC.r_a	<prefix>MC.r_f	<prefix>MC.ram	<prefix>MC.stt	<prefix>MC.lcl	<prefix>MC.r_r
Pr. George's	<prefix>PG.r_a	<prefix>PG.r_f	<prefix>PG.ram	<prefix>PG.stt	<prefix>PG.lcl	<prefix>PG.r_r
Pr. William	<prefix>PW.r_a	<prefix>PW.r_f	<prefix>PW.ram	<prefix>PW.stt	<prefix>PW.lcl	<prefix>PW.r_r
St. Mary's	<prefix>SM.r_a	<prefix>SM.r_f	<prefix>SM.ram	<prefix>SM.stt	<prefix>SM.lcl	<prefix>SM.r_r
Sprotsylvania	<prefix>SP.r_a	<prefix>SP.r_f	<prefix>SP.ram	<prefix>SP.stt	<prefix>SP.lcl	<prefix>SP.r_r
Stafford	<prefix>ST.r_a	<prefix>ST.r_f	<prefix>ST.ram	<prefix>ST.stt	<prefix>ST.lcl	<prefix>ST.r_r
Washington Co	<prefix>WE.r_a	<prefix>WE.r_f	<prefix>WE.ram	<prefix>WE.stt	<prefix>WE.lcl	<prefix>WE.r_r

Table 11

Table 11 Listing of Emission Rate Filenames Prepared for the Post-Processor / Three – Season Post-Processor

		Running Arterial Rates	Running Freeway Rates	Running Freeway Ramp Rates	Starting (Hot/Cold) Rates	Running Local Rates	Running Local -Rural Arterial Rates			
Pollutant	Jurisdiction	Seasonal Rates by speed	Seasonal Rates by speed	Seasonal Rates @ 35 mph speed	Seasonal Hot/Cold Rates	Seasonal Rates @ 12.9 mph speed	Seasonal Rates by speed	Pollutant	Jurisdiction	Seasonal PM 2.5 Network and Local Rates
CO	Alexandria	<prefix>COAL.arc	<prefix>COAL.frc	<prefix>COAL.rmC	<prefix>COAL.stc	<prefix>COAL.lcC	<prefix>COAL.rrC	PM 2.5 Seasonal Network / Seasonal Local	Alexandria	<prefix>pmAL.N_L
	Arlington	<prefix>COAR.arc	<prefix>COAR.frc	<prefix>COAR.rmC	<prefix>COAR.stc	<prefix>COAR.lcC	<prefix>COAR.rrC		Arlington	<prefix>pmAR.N_L
	Calvert	<prefix>COCA.arc	<prefix>COCA.frc	<prefix>COCA.rmC	<prefix>COCA.stc	<prefix>COCA.lcC	<prefix>COCA.rrC		Calvert	<prefix>pmCA.N_L
	Charles	<prefix>COCH.arc	<prefix>COCH.frc	<prefix>COCH.rmC	<prefix>COCH.stc	<prefix>COCH.lcC	<prefix>COCH.rrC		Charles	<prefix>pmCH.N_L
	Calvert	<prefix>COCL.arc	<prefix>COCL.frc	<prefix>COCL.rmC	<prefix>COCL.stc	<prefix>COCL.lcC	<prefix>COCL.rrC		Calvert	<prefix>pmCL.N_L
	DC	<prefix>CODC.arc	<prefix>CODC.frc	<prefix>CODC.rmC	<prefix>CODC.stc	<prefix>CODC.lcC	<prefix>CODC.rrC		DC	<prefix>pmDC.N_L
	Frederick	<prefix>COFR.arc	<prefix>COFR.frc	<prefix>COFR.rmC	<prefix>COFR.stc	<prefix>COFR.lcC	<prefix>COFR.rrC		Frederick	<prefix>pmFR.N_L
	Fairfax	<prefix>COFX.arc	<prefix>COFX.frc	<prefix>COFX.rmC	<prefix>COFX.stc	<prefix>COFX.lcC	<prefix>COFX.rrC		Fairfax	<prefix>pmFX.N_L
	Loudoun	<prefix>COLD.arc	<prefix>COLD.frc	<prefix>COLD.rmC	<prefix>COLD.stc	<prefix>COLD.lcC	<prefix>COLD.rrC		Loudoun	<prefix>pmLD.N_L
	Montgomery	<prefix>COMC.arc	<prefix>COMC.frc	<prefix>COMC.rmC	<prefix>COMC.stc	<prefix>COMC.lcC	<prefix>COMC.rrC		Montgomery	<prefix>pmMC.N_L
	Pr. George's	<prefix>COPG.arc	<prefix>COPG.frc	<prefix>COPG.rmC	<prefix>COPG.stc	<prefix>COPG.lcC	<prefix>COPG.rrC		Pr. George's	<prefix>pmPG.N_L
	Pr. William	<prefix>COPW.arc	<prefix>COPW.frc	<prefix>COPW.rmC	<prefix>COPW.stc	<prefix>COPW.lcC	<prefix>COPW.rrC		Pr. William	<prefix>pmPW.N_L
	St. Mary's	<prefix>COSM.arc	<prefix>COSM.frc	<prefix>COSM.rmC	<prefix>COSM.stc	<prefix>COSM.lcC	<prefix>COSM.rrC		St. Mary's	<prefix>pmSM.N_L
	Sprotsylvania	<prefix>COSP.arc	<prefix>COSP.frc	<prefix>COSP.rmC	<prefix>COSP.stc	<prefix>COSP.lcC	<prefix>COSP.rrC		Sprotsylvania	<prefix>pmSP.N_L
	Stafford	<prefix>COST.arc	<prefix>COST.frc	<prefix>COST.rmC	<prefix>COST.stc	<prefix>COST.lcC	<prefix>COST.rrC		Stafford	<prefix>pmST.N_L
	Washington Co	<prefix>COWE.arc	<prefix>COWE.frc	<prefix>COWE.rmC	<prefix>COWE.stc	<prefix>COWE.lcC	<prefix>COWE.rrC		Washington Co	<prefix>pmWE.N_L
VOC	Alexandria	<prefix>HCAL.arh	<prefix>HCAL.frh	<prefix>HCAL.rmH	<prefix>HCAL.stH	<prefix>HCAL.lcH	<prefix>HCAL.rrH		Alexandria	<prefix>HCAL.SDR
	Arlington	<prefix>HCAR.arh	<prefix>HCAR.frh	<prefix>HCAR.rmH	<prefix>HCAR.stH	<prefix>HCAR.lcH	<prefix>HCAR.rrH		Arlington	<prefix>HCAR.SDR
	Calvert	<prefix>HCCA.arh	<prefix>HCCA.frh	<prefix>HCCA.rmH	<prefix>HCCA.stH	<prefix>HCCA.lcH	<prefix>HCCA.rrH		Calvert	<prefix>HCCA.SDR
	Charles	<prefix>HCCH.arh	<prefix>HCCH.frh	<prefix>HCCH.rmH	<prefix>HCCH.stH	<prefix>HCCH.lcH	<prefix>HCCH.rrH		Charles	<prefix>HCCH.SDR
	Calvert	<prefix>HCCL.arh	<prefix>HCCL.frh	<prefix>HCCL.rmH	<prefix>HCCL.stH	<prefix>HCCL.lcH	<prefix>HCCL.rrH		Calvert	<prefix>HCCL.SDR
	DC	<prefix>HCDC.arh	<prefix>HCDC.frh	<prefix>HCDC.rmH	<prefix>HCDC.stH	<prefix>HCDC.lcH	<prefix>HCDC.rrH		DC	<prefix>HCDC.SDR
	Frederick	<prefix>HCFR.arh	<prefix>HCFR.frh	<prefix>HCFR.rmH	<prefix>HCFR.stH	<prefix>HCFR.lcH	<prefix>HCFR.rrH		Frederick	<prefix>HCFR.SDR
	Fairfax	<prefix>HCFX.arh	<prefix>HCFX.frh	<prefix>HCFX.rmH	<prefix>HCFX.stH	<prefix>HCFX.lcH	<prefix>HCFX.rrH		Fairfax	<prefix>HCFX.SDR
	Loudoun	<prefix>HCLD.arh	<prefix>HCLD.frh	<prefix>HCLD.rmH	<prefix>HCLD.stH	<prefix>HCLD.lcH	<prefix>HCLD.rrH		Loudoun	<prefix>HCLD.SDR
	Montgomery	<prefix>HCMC.arh	<prefix>HCMC.frh	<prefix>HCMC.rmH	<prefix>HCMC.stH	<prefix>HCMC.lcH	<prefix>HCMC.rrH		Montgomery	<prefix>HCMC.SDR
	Pr. George's	<prefix>HCPG.arh	<prefix>HCPG.frh	<prefix>HCPG.rmH	<prefix>HCPG.stH	<prefix>HCPG.lcH	<prefix>HCPG.rrH		Pr. George's	<prefix>HCPG.SDR
	Pr. William	<prefix>HCPW.arh	<prefix>HCPW.frh	<prefix>HCPW.rmH	<prefix>HCPW.stH	<prefix>HCPW.lcH	<prefix>HCPW.rrH		Pr. William	<prefix>HCPW.SDR
	St. Mary's	<prefix>HCSM.arh	<prefix>HCSM.frh	<prefix>HCSM.rmH	<prefix>HCSM.stH	<prefix>HCSM.lcH	<prefix>HCSM.rrH		St. Mary's	<prefix>HCSM.SDR
	Sprotsylvania	<prefix>HCSP.arh	<prefix>HCSP.frh	<prefix>HCSP.rmH	<prefix>HCSP.stH	<prefix>HCSP.lcH	<prefix>HCSP.rrH		Sprotsylvania	<prefix>HCSP.SDR
	Stafford	<prefix>HCST.arh	<prefix>HCST.frh	<prefix>HCST.rmH	<prefix>HCST.stH	<prefix>HCST.lcH	<prefix>HCST.rrH		Stafford	<prefix>HCST.SDR
	Washington Co	<prefix>HCWE.arh	<prefix>HCWE.frh	<prefix>HCWE.rmH	<prefix>HCWE.stH	<prefix>HCWE.lcH	<prefix>HCWE.rrH		Washington Co	<prefix>HCWE.SDR
NOx	Alexandria	<prefix>NXAL.arN	<prefix>NXAL.frn	<prefix>NXAL.rmN	<prefix>NXAL.stN	<prefix>NXAL.lcN	<prefix>NXAL.rrN	Soak, Diurnal, Resting Loss Rates Seasonal Soak, Seasonal Diurnal, Seasonal Rest Loss	Alexandria	<prefix>NXAL.SDR
	Arlington	<prefix>NXAR.arN	<prefix>NXAR.frn	<prefix>NXAR.rmN	<prefix>NXAR.stN	<prefix>NXAR.lcN	<prefix>NXAR.rrN		Arlington	<prefix>NXAR.SDR
	Calvert	<prefix>NXCA.arN	<prefix>NXCA.frn	<prefix>NXCA.rmN	<prefix>NXCA.stN	<prefix>NXCA.lcN	<prefix>NXCA.rrN		Calvert	<prefix>NXCA.SDR
	Charles	<prefix>NXCH.arN	<prefix>NXCH.frn	<prefix>NXCH.rmN	<prefix>NXCH.stN	<prefix>NXCH.lcN	<prefix>NXCH.rrN		Charles	<prefix>NXCH.SDR
	Calvert	<prefix>NXCL.arN	<prefix>NXCL.frn	<prefix>NXCL.rmN	<prefix>NXCL.stN	<prefix>NXCL.lcN	<prefix>NXCL.rrN		Calvert	<prefix>NXCL.SDR
	DC	<prefix>NXDC.arN	<prefix>NXDC.frn	<prefix>NXDC.rmN	<prefix>NXDC.stN	<prefix>NXDC.lcN	<prefix>NXDC.rrN		DC	<prefix>NXDC.SDR
	Frederick	<prefix>NXFR.arN	<prefix>NXFR.frn	<prefix>NXFR.rmN	<prefix>NXFR.stN	<prefix>NXFR.lcN	<prefix>NXFR.rrN		Frederick	<prefix>NXFR.SDR
	Fairfax	<prefix>NXFX.arN	<prefix>NXFX.frn	<prefix>NXFX.rmN	<prefix>NXFX.stN	<prefix>NXFX.lcN	<prefix>NXFX.rrN		Fairfax	<prefix>NXFX.SDR
	Loudoun	<prefix>NXLD.arN	<prefix>NXLD.frn	<prefix>NXLD.rmN	<prefix>NXLD.stN	<prefix>NXLD.lcN	<prefix>NXLD.rrN		Loudoun	<prefix>NXLD.SDR
	Montgomery	<prefix>NXMC.arN	<prefix>NXMC.frn	<prefix>NXMC.rmN	<prefix>NXMC.stN	<prefix>NXMC.lcN	<prefix>NXMC.rrN		Montgomery	<prefix>NXMC.SDR
	Pr. George's	<prefix>NXPG.arN	<prefix>NXPG.frn	<prefix>NXPG.rmN	<prefix>NXPG.stN	<prefix>NXPG.lcN	<prefix>NXPG.rrN		Pr. George's	<prefix>NXPG.SDR
	Pr. William	<prefix>NXPW.arN	<prefix>NXPW.frn	<prefix>NXPW.rmN	<prefix>NXPW.stN	<prefix>NXPW.lcN	<prefix>NXPW.rrN		Pr. William	<prefix>NXPW.SDR
	St. Mary's	<prefix>NXSM.arN	<prefix>NXSM.frn	<prefix>NXSM.rmN	<prefix>NXSM.stN	<prefix>NXSM.lcN	<prefix>NXSM.rrN		St. Mary's	<prefix>NXSM.SDR
	Sprotsylvania	<prefix>NXSP.arN	<prefix>NXSP.frn	<prefix>NXSP.rmN	<prefix>NXSP.stN	<prefix>NXSP.lcN	<prefix>NXSP.rrN		Sprotsylvania	<prefix>NXSP.SDR
	Stafford	<prefix>NXST.arN	<prefix>NXST.frn	<prefix>NXST.rmN	<prefix>NXST.stN	<prefix>NXST.lcN	<prefix>NXST.rrN		Stafford	<prefix>NXST.SDR
	Washington Co	<prefix>NXWE.arN	<prefix>NXWE.frn	<prefix>NXWE.rmN	<prefix>NXWE.stN	<prefix>NXWE.lcN	<prefix>NXWE.rrN		Washington Co	<prefix>NXWE.SDR

Appendix C

Jurisdictional Master VMT Table

Table 12

Table 12 2007 Daily Weekday VMT by Federal Functional Class and Jurisdiction

Jur. Code	Jurisdiction	1.Rural Interstate	2.Rural Other Principal Arterial	6.Rural Minor Arterial	7.Rural Major Collector	8.Rural Minor Collector	9.Rural Local	11.Urban Interstate	12.Urban Other Freeway & Expressway	14.Urban Other Principal Arterial	16.Urban Minor Arterial	17.Urban Collector	19.Urban Local	Total	Total Local VMT	Total Non-Local VMT	Total Urban VMT	Total Rural VMT	% Local	% Non-Local	% Urban	% Rural
0	District of Columbia	0	0	0	0	0	0	1,178,100	1,110,900	2,970,450	2,134,650	877,800	2,110,500	10,382,400	2,110,500	8,271,900	10,382,400	0	20.33%	79.67%	100.00%	0.00%
1	Montgomery County	411,370	0	327,945	284,795	129,452	146,712	6,955,890	621,370	6,320,137	3,095,342	1,743,288	1,455,616	21,491,918	1,602,329	19,889,589	20,191,644	1,300,274	7.46%	92.54%	93.95%	6.05%
2	Prince George's County	112,192	489,041	112,192	258,904	117,945	140,959	8,215,890	4,542,329	4,809,863	2,888,219	1,769,178	1,726,027	25,182,740	1,866,986	23,315,753	23,951,507	1,231,233	7.41%	92.59%	95.11%	4.89%
3	Arlington County	0	0	0	0	0	0	1,495,790	1,312,709	740,883	654,119	188,016	391,612	4,783,129	391,612	4,391,518	4,783,129	0	8.19%	91.81%	100.00%	0.00%
4	City of Alexandria	0	0	0	0	0	0	789,051	38,160	430,137	595,561	104,642	160,122	2,117,674	160,122	1,957,552	2,117,674	0	7.56%	92.44%	100.00%	0.00%
5	Fairfax County	0	0	0	0	0	0	9,646,576	2,050,380	7,478,728	6,100,151	1,523,361	1,720,282	28,519,477	1,720,282	26,799,196	28,519,477	0	6.03%	93.97%	100.00%	0.00%
6	Loudoun County	0	785,989	569,362	606,292	22,844	254,593	0	116,979	1,869,657	407,639	881,145	376,986	5,891,485	631,579	5,259,907	3,652,406	2,239,079	10.72%	89.28%	61.99%	38.01%
7	Prince William County	106,410	95,440	147,671	244,332	26,686	163,398	3,048,641	0	1,499,508	1,978,079	853,500	902,455	9,066,119	1,065,853	8,000,267	8,282,183	783,937	11.76%	88.24%	91.35%	8.65%
9	Frederick County	1,498,767	998,219	385,479	670,274	379,726	512,055	1,536,164	888,904	486,164	486,164	512,055	302,055	8,656,027	814,110	7,841,918	4,211,507	4,444,521	9.41%	90.59%	48.65%	51.35%
10	Howard County	736,438	276,164	253,151	244,521	77,671	218,630	3,057,945	2,885,342	630,000	1,254,247	678,904	661,644	10,974,658	880,274	10,094,384	9,168,082	1,806,575	8.02%	91.98%	83.54%	16.46%
11	Anne Arundel County	983,836	238,767	546,575	184,110	89,178	281,918	2,643,699	4,378,356	2,712,740	2,246,712	1,306,027	1,032,740	16,644,658	1,314,658	15,330,000	14,320,274	2,324,384	7.90%	92.10%	86.04%	13.96%
12	Charles County	0	900,411	258,904	333,699	169,726	215,753	0	0	1,127,671	325,068	233,014	129,452	3,693,699	345,205	3,348,493	1,815,205	1,878,493	9.35%	90.65%	49.14%	50.86%
14	Carrol County	0	143,836	773,836	388,356	184,110	186,986	106,438	0	1,360,685	241,644	195,616	146,712	3,728,219	333,699	3,394,521	2,051,096	1,677,123	8.95%	91.05%	55.02%	44.98%
15	Calvert County	0	969,452	57,534	126,575	132,329	166,849	0	92,055	348,082	103,562	140,959	54,658	2,192,055	221,507	1,970,548	739,315	1,452,740	10.10%	89.90%	33.73%	66.27%
16	St. Mary's County	0	451,644	540,822	293,425	195,616	184,110	0	23,014	514,932	83,425	92,055	54,658	2,433,699	238,767	2,194,932	768,082	1,665,616	9.81%	90.19%	31.56%	68.44%
17	King George County	0	275,350	376,047	134,035	3,657	37,179	0	0	0	0	0	0	826,268	37,179	789,089	0	826,268	4.50%	95.50%	0.00%	100.00%
18	City of Fredericksburg	0	0	0	0	0	0	493,056	0	272,654	104,304	78,482	94,679	1,043,174	94,679	948,495	1,043,174	0	9.08%	90.92%	100.00%	0.00%
19	Stafford County	0	150,880	98,655	155,634	8,349	156,734	2,238,793	0	502,451	132,572	542,032	240,041	4,226,142	396,775	3,829,366	3,655,890	570,252	9.39%	90.61%	86.51%	13.49%
20	Spotsylvania County	933,918	0	362,162	372,546	21,192	162,064	403,896	0	723,212	167,557	315,055	250,767	3,712,368	412,831	3,299,537	1,860,487	1,851,881	11.12%	88.88%	50.12%	49.88%
21	Fauquier County	859,616	1,486,597	315,031	433,123	54,769	231,305	0	0	0	0	0	0	3,380,441	231,305	3,149,136	0	3,380,441	6.84%	93.16%	0.00%	100.00%
22	Clarke County	0	339,087	330,968	70,525	29,029	42,796	0	0	0	0	0	0	812,404	42,796	769,608	0	812,404	5.27%	94.73%	0.00%	100.00%
23	Jefferson County	0	437,189	124,257	215,450	52,689	95,928	0	0	138,432	73,983	39,764	18,218	1,195,908	114,146	1,081,763	270,396	925,512	9.54%	90.46%	22.61%	77.39%
	Total	5,642,547	8,038,065	5,580,589	5,016,594	1,694,968	3,197,969	41,809,931	18,060,498	34,936,386	23,072,998	12,074,892	11,829,223	170,954,662	15,027,192	155,927,469	141,783,929	29,170,733	8.79%	91.21%	82.94%	17.06%

Appendix D

CLRP 2011 Air Quality Work Subdirectory and Input Files

Table 13 2011 CLRP Air Quality Data Processing Subdirectories

Description of Contents	Subdirectory
Location of Post – Processor Executions/Outputs	
2007 Ozone Season VOC, CO, Nx	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\2007_ozone
2007 Annual Nx Precursor, PM _{2.5}	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\2007_annual
2017 Ozone Season VOC, CO, Nx	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\2017_ozone
2017 Winter Season VOC, CO, Nx	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\2017_WCO
2017 Annual Nx Precursor, PM _{2.5}	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\2017_annual
2020 Ozone Season VOC, CO, Nx	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\2020_ozone
2020 Winter Season VOC, CO, Nx	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\2020_WCO
2020 Annual Nx Precursor, PM _{2.5}	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\2020_annual
2030 Ozone Season VOC, CO, Nx	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\2030_ozone
2030 Winter Season VOC, CO, Nx	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\2030_WCO
2030 Annual Nx Precursor, PM _{2.5}	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\2030_annual
2040 Ozone Season VOC, CO, Nx	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\2040_ozone
2040 Winter Season VOC, CO, Nx	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\2040_WCO
2040 Annual Nx Precursor, PM _{2.5}	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\2040_annual

Table 14 2011 CLRP Mobile 6.2 Emission Rate File Subdirectories

Emission Rate Inputs	
2007 VOC, CO, Nx rates Ozone Season	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\M6RATES\2007_Ozone
2007 VOC, CO, Nx, PM rates– 3 Seasons	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\M6RATES\2007_annual
2017 VOC, CO, Nx rates Ozone Season	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\M6RATES\2017_Ozone
2017 VOC, CO, Nx rates– Winter Season	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\M6RATES\2017_WCO
2017 VOC, CO, Nx, PM rates– 3 Seasons	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\M6RATES\2017_annual
2020 VOC, CO, Nx rates Ozone Season	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\M6RATES\2020_Ozone
2020 VOC, CO, Nx rates– Winter Season	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\M6RATES\2020_wco
2020 VOC, CO, Nx, PM rates– 3 Seasons	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\M6RATES\2020_annual
2030 VOC, CO, Nx rates Ozone Season	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\M6RATES\2030_ozone
2030 VOC, CO, Nx rates– Winter Season	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\M6RATES\2030_WCO
2030 VOC, CO, Nx, PM rates– 3 Seasons	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\M6RATES\2030_annual
2040 VOC, CO, Nx rates Ozone Season	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\M6RATES\2040_Ozone
2040 VOC, CO, Nx rates– Winter Season	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\M6RATES\2040_WCO
2040 VOC, CO, Nx, PM rates– 3 Seasons	I:\CGV2_2_3_39_July_12_Emiss_Conformity2012CLRP_FY2013_2018TIP\Emissions\M6RATES\2040_annual

Table 15 2011 CLRP Version 2.3 Travel Model File Subdirectories

Travel Model Inputs	
2007 Travel Model Files	N:\model_app\CGV2_3_Conformity2012CLRP\2007_final
2017 Travel Model Files	N:\model_app\CGV2_3_Conformity2012CLRP\2017_final
2020 Travel Model Files	N:\model_app\CGV2_3_Conformity2012CLRP\2020_final
2030 Travel Model Files	N:\model_app\CGV2_3_Conformity2012CLRP\2030_final
2040 Travel Model Files	N:\model_app\CGV2_3_Conformity2012CLRP\2040_final

APPENDIX F

Vehicle-related Emissions Calculations

Memo

To: Air Quality Files

From: Eulalie G Lucas, MWCOG/DTP

Date: June 11, 2012

Re: Vehicle Related Emissions: Diurnal and Resting Loss - 2012 CLRP & FY 2013-2018 TIP

Introduction

This memo documents the calculation of Diurnal and Resting Loss emissions associated with the air quality conformity analysis of the 2012 CLRP & FY 2013-2018 TIP. Diurnal and Resting Loss emissions are produced when the vehicle's engine is not engaged and are only linked to volcanic organic compounds (VOCs). These emissions are evaporative and occur under the following conditions: Diurnal emissions escape through a parked car's gasoline tank and resting loss through faulty control systems and fuel leaks. Calculation of diurnal and resting loss emissions is an off-line exercise requiring two inputs (1) number of vehicles and (2) an emission rate. Emission rates are developed using EPA's MOBILE model and reflect all approved local and federal control measures. Results are not impacted by changes in the network or the travel demand model. Below is the formula used in calculating diurnal and resting loss emissions.

Formula: Number of vehicles by jurisdiction X jurisdiction emissions factor = Emissions

Updates

For this year's analysis staff utilized output from the 2011 vehicle identification number (VIN) database. Vehicle ownership forecasts reflect trends through time for each jurisdiction; using the 2011 vehicle registration data, the slope of the forecast trend line in each jurisdiction was maintained but revised to 'intercept' 2011 conditions. A description of this process can be found in the May 24, 2012 memo from Yu Gao in Appendix D, of this report. The attached graph using Prince George's County data serves as a sample of data for base and forecasts years and Table 1 shows a summary of vehicle registration forecasts by jurisdiction. Also included is a spreadsheet listed as Table 2, showing diurnal and resting loss emissions for year 2017. Vehicle population for year 2017 was interpolated using 2011 and 2020 as data points. A summary of Diurnal and Resting Loss emissions for other milestone years 2002, 2007, 2020, 2030, and 2040 are available upon requests.

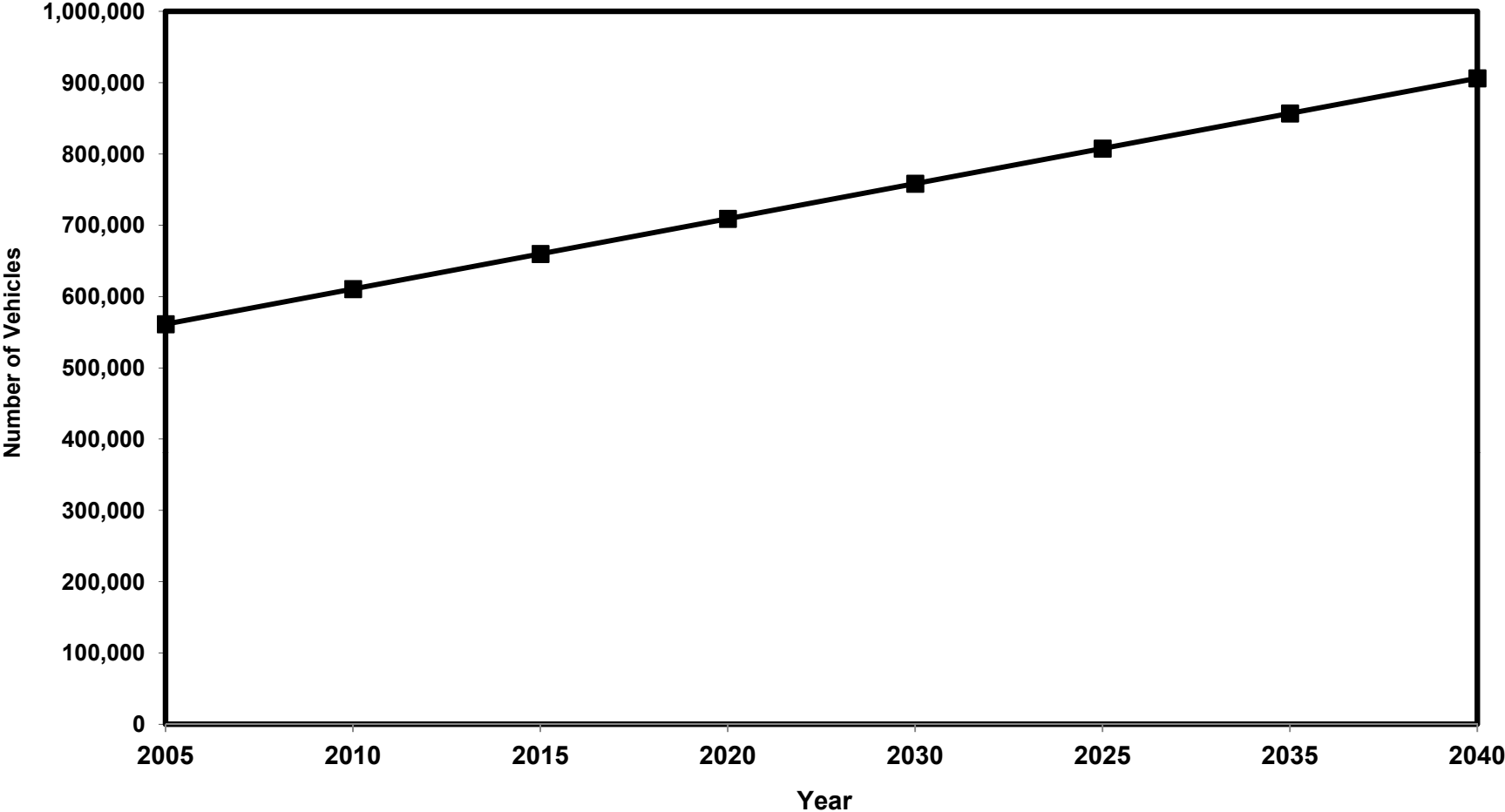
Attachments (3)

Table 1
VEHICLE REGISTRATION FORECASTS BY JURISDICTION (USING 2011 VIN)
REGISTRATION ADJUSTED TO YEAR 2011

Jurisdiction	2007	2011	2017	2020	2030	2040
District of Columbia	260,385	278,385	285,814	289,529	301,912	314,294
Calvert	89,476	90,359	111,660	122,311	157,812	193,314
Charles	130,846	137,868	160,257	171,451	208,766	246,081
Frederick	218,156	223,598	258,907	276,562	335,411	394,260
Montgomery	710,180	736,978	829,896	876,355	1,031,218	1,186,082
Prince George's	607,342	620,351	679,469	709,027	807,557	906,086
Alexandria	133,303	115,216	118,284	119,819	124,933	130,047
Arlington	129,440	140,942	144,685	146,557	152,795	159,034
Fairfax	814,869	890,439	984,298	1,031,228	1,187,660	1,344,093
Loudoun	215,230	257,480	303,479	326,479	403,144	479,809
Prince William	339,123	364,252	417,534	444,176	532,980	621,784
Total	3,648,349	3,855,868	4,294,285	4,513,493	5,244,188	5,974,882

The above forecasts are based on 2011 vehicle registration data decoded from raw VIN numbers provided by District of Columbia DMV, Maryland MVA, and Virginia DMV.
2007 registration data were forecasted based on the 2005 VIN numbers.

Vehicle Registration for Prince George's County by Year



MVA 2011 Vehicle Registration data

Table 2
DIURNAL AND RESTING LOSS EMISSIONS
VOC
YEAR 2017

JURISDICTION	TOTAL VEHICLES	FACTORS		EMISSIONS	
		DIURNAL (gm/day/veh)	RESTGL (gm/hr/veh)	DIURNAL (Tons/day)	RESTGL (Tons/day)
District of Columbia	285,814	0.274	1.388	0.085	0.429
Montgomery	829,896	0.224	1.015	0.201	0.910
Prince Georges	679,469	0.309	1.521	0.227	1.116
Frederick	258,907	0.372	1.893	0.104	0.529
Charles	160,257	0.394	2.113	0.068	0.366
Calvert	111,660	0.404	2.181	0.049	0.263
Arlington	144,685	0.222	1.060	0.035	0.166
Alexandria	118,284	0.203	0.927	0.026	0.118
Fairfax	984,298	0.215	1.027	0.229	1.092
Loudoun	303,479	0.211	1.044	0.069	0.342
Prince William	417,534	0.260	1.281	0.117	0.578
MSA - SUBTOTAL MODELED AREA	4,294,285			1.209	5.909
TOTAL	4,294,285			1.209	5.909

Note: 98% of vehicles, which are gas operated, are used to compute Diurnal and Resting Loss emissions
Based on 2011 vehicle registration

APPENDIX G

Auto Access Emissions Calculations

Memorandum

To: Air Quality Files

From: Eulalie G. Lucas
Transportation Engineer

Date: June 6, 2012

Re: Off- Network Emissions Calculations: Auto Access to transit

Introduction:

This memo documents emission estimates associated with auto access to transit for the following conditions: 8-Hour Ozone season precursors VOC and NO_x, Wintertime CO, direct PM_{2.5}, and precursor NO_x. Travel data associated with these emission calculations are based on network updates from the 2012 Constrained Long Range Plan (CLRP) and the FY 2013-2018 Transportation Improvement Plan (TIP). The following paragraphs describe the approach used in these emission estimates as well as updates to inputs.

Auto Access to transit emissions:

VMT Mix percent associated with auto access to transit includes passenger cars and only light duty trucks (LDGT2). The LDGT2 weight category includes Ford Navigators and van pool vehicles, consistent with vehicle types used by commuters to access transit and park and ride lots.

Methodology:

The procedure used in the calculation of emissions associated with auto access to transit is an off-line process. The approach is very simple; it involves the application of an emissions rate to the various components of travel, i.e. start up, running (35 mph for arterials and 45 mph for freeways) and hot soak. For trips originating outside the MSA, only those miles within the MSA are used in the calculation. Forecasting for 'out years' is based on growth rates developed from base year 2002 total internal modeled transit trips. The growth rates are then applied to the MWCOG/DTP 2002 Park and Ride Utilization inventory data.

Separate emissions rates are applied by components of a trip cycle i.e. a start up rate for trip origins, a running rate for the running component and hot soak rate for trip destinations. These three rates represent an average of the twelve composite rates for jurisdictions in the non-attainment area and for seven MOBILE6 vehicle types, HDD fractions were zeroed out of the VMT Mix. This adjustment was made based on the assumption that heavy duty vehicles such as tractor trailers are typically not used by

commuters for trips to and from transit locations or to park and ride lots, however as mentioned in the above paragraph Light Duty Trucks are included in the VMT Mix percents.

As with the other components of the annual emissions inventory for fine particles, seasonal adjustments to travel data associated were applied. Totals for each of the three seasons were then added to provide an annual total for each pollutant.

Updates:

Emission rates represent a regional average and are based on 2011 Vehicle Identification Number (VIN) decoded data. Transit trips are from Version 2.3.39 travel demand model and the Cooperative Forecasts round 8.1 land use data.

Results:

Total Auto Access Emissions by year are listed in Exhibits 18 and 19 of the AQC report for annual emissions, Exhibits 17 for ozone season and Exhibit 20 for Winter CO. The attached exhibits show detailed results for 2017 for pollutants that are part of this analysis. Results for all other analysis years are contained in the air quality conformity files and are available upon request.

Table
 2017 VOC AIR QUALITY EMISSIONS INVENTORY
 AUTO ACCESS TO TRANSIT
 (8-HOUR OZONE AREA)
 2012 CLRP/FY2013-2018 TIP AIR QUALITY CONFORMITY

LOCATION	2002				2017 INSIDE Growth Rate	2017 OUTSIDE Growth Rate	AVERAGE TRIP LENGTH	2002 VMT	2017 VMT	E M I S S I O N S								HOT SOAK Rate (gm/mile)	TOTAL	
	OUTSIDE MSA (%)	INSIDE MSA	OUTSIDE MSA	Total						ARTERIAL %	FREEWAY	ARTERIAL VMT	FREEWAY VMT	COLD START		RUNNING				
														Rate (gm/mile)	Rate (gm/mile)	Arterial Rate (gm/mile)	Freeway Rate (gm/mile)			Total (tons/day) Running
COMMUTER RAIL LOTS					1.25	1.25								0.6558	0.1293	0.1149		0.41785833		
Naylor Road	50	216	216	431	269	269	7.5	3232.5	4,029	57	43	2,297	1,733	0.0006	0.0007	0.0004	0.0011	0.0004	0.0020	
Prince George's Plaza	25	927	309	1236	1156	385	7.5	9270	11,555	57	43	6,586	4,969	0.0019	0.0019	0.0013	0.0031	0.0012	0.0063	
Southern Avenue	50	1090	1090	2180	1359	1359	4.5	9810	12,228	57	43	6,970	5,258	0.0029	0.0020	0.0013	0.0033	0.0019	0.0081	
Suitland	50	1033	1033	2065	1287	1287	4.5	9292.5	11,583	57	43	6,602	4,981	0.0028	0.0019	0.0013	0.0031	0.0018	0.0077	
Van Dorn Street	50	204	204	407	254	254	4.5	1831.5	2,283	57	43	1,301	982	0.0006	0.0004	0.0002	0.0006	0.0004	0.0015	
West Hyattsville	25	453	151	604	565	188	7.5	4530	5,647	57	43	3,219	2,428	0.0010	0.0009	0.0006	0.0015	0.0006	0.0031	
Wheaton	25	759	253	1012	946	315	7.5	7590	9,461	57	43	5,393	4,068	0.0016	0.0015	0.0010	0.0026	0.0010	0.0052	
		78629	29681	108,310	98010	36998		711714	887,149					0.1685	0.1441	0.0966	0.2407	0.1073	0.5165	

Bold figures: New numbers taken from P & R directory
 Figures in bracket: Carry forward figures from conformity doc.

Park lot Growth Rate	
transit trips 2017	1,361,783
transit trips 2002	1,092,489
Annual growth rate	0.016433056
Growth factor (2002-2017)	1.246495846

Table
 2017 NOx AIR QUALITY EMISSIONS INVENTORY
 AUTO ACCESS TO TRANSIT
 (8-HOUR OZONE AREA)
 2012 CLRP/FY2013-2018 TIP AIR QUALITY CONFORMITY

06-05-2012

LOCATION	2002				2017		AVERAGE TRIP LENGTH	VMT	ARTERIAL	FREEWAY	ARTERIAL	FREEWAY	COLD START Rate (gm/mile)	E M I S S I O N S RUNNING			TOTAL (tons/day)
	OUTSIDE MSA (%)	INSIDE MSA	OUTSIDE MSA	Total	INSIDE Growth Rate	OUTSIDE Growth Rate			%	VMT	VMT	Arterial Rate (gm/mile)		Freeway Rate (gm/mile)	Total Running Emission		
					1.25	1.25						0.3382		0.2045	0.2127		
COMMUTER RAIL LOTS																	
Forest Glen	50	329	329	658	410	410	7.5	6,151	57	43	3,506	2,645	0.0005	0.0016	0.0012	0.0028	0.0033
Franconia - Springfield	50	1987	1987	3973	2476	2476	4.5	22,285	57	43	12,703	9,583	0.0028	0.0057	0.0045	0.0102	0.0130
Glenmont	50	925	925	1850	1153	1153	4.5	10,377	57	43	5,915	4,462	0.0013	0.0027	0.0021	0.0048	0.0060
Greenbelt	50	1783	1783	3565	2222	2222	7.5	33,328	57	43	18,997	14,331	0.0025	0.0086	0.0067	0.0153	0.0178
Naylor Road	50	216	216	431	269	269	7.5	4,029	57	43	2,297	1,733	0.0003	0.0010	0.0008	0.0018	0.0021
Prince George's Plaza	25	927	309	1236	1156	385	7.5	11,555	57	43	6,586	4,969	0.0010	0.0030	0.0023	0.0053	0.0063
Southern Avenue	50	1090	1090	2180	1359	1359	4.5	12,228	57	43	6,970	5,258	0.0015	0.0031	0.0025	0.0056	0.0071
Suitland	50	1033	1033	2065	1287	1287	4.5	11,583	57	43	6,602	4,981	0.0014	0.0030	0.0023	0.0053	0.0068
Van Dorn Street	50	204	204	407	254	254	4.5	2,283	57	43	1,301	982	0.0003	0.0006	0.0005	0.0010	0.0013
West Hyattsville	25	453	151	604	565	188	7.5	5,647	57	43	3,219	2,428	0.0005	0.0015	0.0011	0.0026	0.0031
Wheaton	25	759	253	1012	946	315	7.5	9,461	57	43	5,393	4,068	0.0008	0.0024	0.0019	0.0043	0.0052
				108,310				887,149					0.0869	0.2280	0.1789	0.4068	0.4937

Bold figures: New numbers taken from P & R directory
 Figures in bracket: Carry forward figures from conformity doc.

Park lot Growth Rate	
transit trips 2017	1,361,783
transit trips 2000	1092489
Annual growth rate	0.016433056
Growth factor (2002-2016)	1.246495846

SEASON 1 (Jan-Apr)
2017 Precursor NOx
AUTO ACCESS TO TRANSIT
2012 CLRP / FY2013-2018 TIP AIR QUALITY CONFORMITY

LOCATION	E M I S S I O N S																		
	2002				2017		AVERAGE	2017	ARTERIAL	FREEWAY	ARTERIAL	Adj.Art	FREEWAY	Adj.Fwy	COLD START	RUNNING			TOTAL
	OUTSIDE	INSIDE	OUTSIDE	Total	INSIDE	OUTSIDE	TRIP LENGTH	VMT			VMT	VMT	VMT			Arterial	Freeway	Total Running	
	MSA (%)	MSA	MSA		Growth Rate	Growth Rate			%					Rate (gm/mile)	Rate (gm/mile)	Rate (gm/mile)	Emission		
					1.25	1.25								Wk Days = 83	0.3138	0.1736	0.1823	(tons/day)	
COMMUTER RAIL LOTS													Seasonal adj = 0.9216						
Glenmont	50	925	925	1850	1153	1153	4.5	10,377	57	43	5,915	5,451	4,462	4,112	0.0010	0.0021	0.0017	0.0037	0.0047
Greenbelt	50	1783	1783	3565	2222	2222	7.5	33,328	57	43	18,997	17,508	14,331	13,208	0.0018	0.0067	0.0053	0.0120	0.0139
Naylor Road	50	216	216	431	269	269	7.5	4,029	57	43	2,297	2,117	1,733	1,597	0.0002	0.0008	0.0006	0.0015	0.0017
Prince George's Plaza	25	927	309	1236	1156	385	7.5	11,555	57	43	6,586	6,070	4,969	4,579	0.0007	0.0023	0.0018	0.0042	0.0049
Southern Avenue	50	1090	1090	2180	1359	1359	4.5	12,228	57	43	6,970	6,424	5,258	4,846	0.0011	0.0025	0.0019	0.0044	0.0055
Suitland	50	1033	1033	2065	1287	1287	4.5	11,583	57	43	6,602	6,085	4,981	4,590	0.0011	0.0023	0.0018	0.0042	0.0052
Van Dorn Street	50	204	204	407	254	254	4.5	2,283	57	43	1,301	1,199	982	905	0.0002	0.0005	0.0004	0.0008	0.0010
West Hyattsville	25	453	151	604	565	188	7.5	5,647	57	43	3,219	2,966	2,428	2,238	0.0004	0.0011	0.0009	0.0020	0.0024
Wheaton	25	759	253	1012	946	315	7.5	9,461	57	43	5,393	4,970	4,068	3,749	0.0006	0.0019	0.0015	0.0034	0.0040
				108,749				891,253							0.0649	0.1792	0.1420	0.3212	0.386020
																			Seasonal Total (tons/season) = 32.04

Bold figures: New numbers taken from P & R directory
 Figures in bracket: Carry forward figures from conformity doc.

Park lot Growth Rate	
Transit trips 2017	1,361,783
transit trips 2002	1,092,489
Annual growth rate	0.01643
Growth factor (2002-2017)	1.24650

SEASON 2 (May-Sep)
2017 Precursor NOx
AUTO ACCESS TO TRANSIT
2012 CLRP / FY2013-2018 TIP AIR QUALITY CONFORMITY

06-05-2012

LOCATION	2002				2017		AVERAGE	2017	ARTERIAL	FREEWAY	ARTERIAL	Adj.Art	FREEWAY	Adj.Fwy	E M I S S I O N S			TOTAL (tons/day)	
	OUTSIDE MSA (%)	INSIDE MSA	OUTSIDE MSA	Total	INSIDE	OUTSIDE	TRIP LENGTH	VMT			VMT	VMT	VMT	COLD START Rate (gm/mile)	RUNNING		Total Running Emission (tones/day)		
					Growth Rate	Growth Rate			%						Arterial	Freeway			
					1.25	1.25						Wk Days =	107		0.2235	0.1274	0.1334		
COMMUTER RAIL LOTS											Seasonal adj =	0.9873							
Glenmont	50	925	925	1850	1153	1153	4.5	10,377	57	43	5,915	5,840	4,462	4,405	0.0007	0.0016	0.0013	0.0029	0.0036
Greenbelt	50	1783	1783	3565	2222	2222	7.5	33,328	57	43	18,997	18,756	14,331	14,149	0.0013	0.0053	0.0042	0.0094	0.0107
Naylor Road	50	216	216	431	269	269	7.5	4,029	57	43	2,297	2,268	1,733	1,711	0.0002	0.0006	0.0005	0.0011	0.0013
Prince George's Plaza	25	927	309	1236	1156	385	7.5	11,555	57	43	6,586	6,503	4,969	4,906	0.0005	0.0018	0.0014	0.0033	0.0038
Southern Avenue	50	1090	1090	2180	1359	1359	4.5	12,228	57	43	6,970	6,882	5,258	5,191	0.0008	0.0019	0.0015	0.0035	0.0043
Suitland	50	1033	1033	2065	1287	1287	4.5	11,583	57	43	6,602	6,518	4,981	4,917	0.0008	0.0018	0.0014	0.0033	0.0040
Van Dorn Street	50	204	204	407	254	254	4.5	2,283	57	43	1,301	1,285	982	969	0.0002	0.0004	0.0003	0.0006	0.0008
West Hyattsville	25	453	151	604	565	188	7.5	5,647	57	43	3,219	3,178	2,428	2,397	0.0003	0.0009	0.0007	0.0016	0.0019
Wheaton	25	759	253	1012	946	315	7.5	9,461	57	43	5,393	5,324	4,068	4,017	0.0004	0.0015	0.0012	0.0027	0.0031
				108,749				891,253							0.0462	0.1408	0.1113	0.2521	0.2983

Seasonal Total (tons/season) = 31.92

Bold figures: New numbers taken from P & R directory
Figures in bracket: Carry forward figures from conformity doc.

Park lot Growth Rate	
Transit trips 2017	1361783
transit trips 2002	1092489
Annual growth rate	0.016433
Growth factor (2002-2017)	1.246496

SEASON 3 (Oct-Dec)
2017 Precursor NOx
AUTO ACCESS TO TRANSIT
2012 CLRP / FY2013-2018 TIP AIR QUALITY CONFORMITY

06-05-2012

LOCATION	E M I S S I O N S														TOTAL (tons/day)					
	OUTSIDE MSA (%)	2002			2017		AVERAGE	2017	ARTERIAL	FREEWAY	ARTERIAL	Adj.Art	FREEWAY	Adj.Fwy		COLD START Rate (gm/mile)	RUNNING			TOTAL Running Emission (tons/day)
		INSIDE MSA	OUTSIDE MSA	Total	INSIDE Growth Rate	OUTSIDE Growth Rate	TRIP LENGTH	VMT	%	VMT	VMT	VMT	VMT	Arterial Rate (gm/mile)			Freeway Rate (gm/mile)	Total Running Emission (tons/day)		
					1.25	1.25								0.2609			0.1506		0.1583	
COMMUTER RAIL LOTS											Wk Days = 61									
											Seasonal adj = 0.9282									
Glenmont	50	925	925	1850	1153	1153	4.5	10,377	57	43	5,915	5,490	4,462	4,142	0.0008	0.0018	0.0014	0.0033	0.0041	
Greenbelt	50	1783	1783	3565	2222	2222	7.5	33,328	57	43	18,997	17,633	14,331	13,302	0.0015	0.0059	0.0046	0.0105	0.0120	
Naylor Road	50	216	216	431	269	269	7.5	4,029	57	43	2,297	2,132	1,733	1,608	0.0002	0.0007	0.0006	0.0013	0.0015	
Prince George's Plaza	25	927	309	1236	1156	385	7.5	11,555	57	43	6,586	6,113	4,969	4,612	0.0006	0.0020	0.0016	0.0036	0.0043	
Southern Avenue	50	1090	1090	2180	1359	1359	4.5	12,228	57	43	6,970	6,470	5,258	4,881	0.0009	0.0021	0.0017	0.0039	0.0048	
Suitland	50	1033	1033	2065	1287	1287	4.5	11,583	57	43	6,602	6,128	4,981	4,623	0.0009	0.0020	0.0016	0.0036	0.0045	
Van Dorn Street	50	204	204	407	254	254	4.5	2,283	57	43	1,301	1,208	982	911	0.0002	0.0004	0.0003	0.0007	0.0009	
West Hyattsville	25	453	151	604	565	188	7.5	5,647	57	43	3,219	2,987	2,428	2,254	0.0003	0.0010	0.0008	0.0018	0.0021	
Wheaton	25	759	253	1012	946	315	7.5	9,461	57	43	5,393	5,006	4,068	3,776	0.0005	0.0017	0.0013	0.0030	0.0035	
				108,749										0.0539	0.1565	0.1242	0.2807	0.3346		
																			Seasonal Total (tons/season) 20.41	

Bold figures: New numbers taken from P & R directory
Figures in bracket: Carry forward figures from conformity doc.

Park lot Growth Rate	
Transit trips 2017	1361783
transit trips 2002	1092489
Annual growth rate	0.016433
Growth factor (2002-2017)	1.246496

SEASON 1 (Jan-Apr)
 2017 PM AIR QUALITY EMISSIONS INVENTORY
 AUTO ACCESS TO TRANSIT
 2012 CLRP / FY2013-2018 TIP AIR QUALITY CONFORMITY

LOCATION	2002				2017		AVERAGE TRIP LENGTH	2017 VMT	ADJ WINTER VMT	RUNNING Rate (gm/mile)	TOTAL (tons/day)
	OUTSIDE MSA (%)	INSIDE MSA	OUTSIDE MSA	Total	INSIDE Growth Rate	OUTSIDE Growth Rate					
					1.25	1.25					
								Wk Days = 83	0.0113		
								Seasonal adj = 0.9216			
COMMUTER RAIL LOTS											
BRUNSWICK 25%	25	305	102	407	380	127	7.5	3,805	3,507	40	0.0000
PT OF ROCKS 25%	25	204	68	272	254	85	7.5	2,543	2,343	26	0.0000
DICKERSON	0	15	0	15	19	0	7.5	140	129	1	0.0000
BARNESVILLE	0	46	0	46	57	0	7.5	430	396	4	0.0000
GERMANTOWN	0	386	0	386	481	0	7.5	3,609	3,326	38	0.0000
MET GROVE	0	352	0	352	439	0	7.5	3,291	3,033	34	0.0000
WAS GROVE	0	15	0	15	19	0	7.5	140	129	1	0.0000
GARRETT PARK	0	22	0	22	27	0	7.5	206	190	2	0.0000
BOWIE 50%	50	188	188	375	234	234	7.5	3,506	3,231	37	0.0000
SEABROOK 15%	15	224	40	264	280	49	7.5	2,468	2,275	26	0.0000
KENSINGTON	0	45	0	45	56	0	7.5	421	388	4	0.0000
LAUREL 30%	30	209	90	299	261	112	7.5	2,795	2,576	29	0.0000
GAITHESBURG	0	280	0	280	349	0	7.5	2,618	2,412	27	0.0000
BERWYN HEIGHTS	0	30	0	30	37	0	4.5	168	155	2	0.0000
RIVERDALE	0	65	0	65	81	0	4.5	365	336	4	0.0000
METRO RAIL LOTS											
ADDISON ROAD 40%	40	791	527	1318	986	657	7.5	12,322	11,356	128	0.0001
ARCHIVES	0	12	0	12	15	0	4.5	67	62	1	0.0000
ARLING	0	10	0	10	12	0	4.5	56	52	1	0.0000
BALLSTON	0	1175	0	1175	1465	0	4.5	6,591	6,074	69	0.0001
BENN.RD	0	520	0	520	648	0	4.5	2,917	2,688	30	0.0000
BETH	0	395	0	395	492	0	4.5	2,216	2,042	23	0.0000
BRADD RD	0	10	0	10	12	0	4.5	56	52	1	0.0000
BROOKLAND	0	27	0	27	34	0	4.5	151	140	2	0.0000
CHEVERLY	0	557	0	557	694	0	4.5	3,124	2,879	33	0.0000
CLARENDON	0	554	0	554	691	0	4.5	3,108	2,864	32	0.0000
CLEVELAND PK	0	366	0	366	456	0	4.5	2,053	1,892	21	0.0000
COURT HOUSE	0	256	0	256	319	0	4.5	1,436	1,323	15	0.0000
CRYSTAL CITY	0	347	0	347	433	0	4.5	1,946	1,794	20	0.0000
DEANWOOD	0	194	0	194	242	0	4.5	1,088	1,003	11	0.0000
DUN LORING 10%	10	1220	136	1355	1520	169	4.5	7,601	7,005	79	0.0001
DUPONT CIRCLE	0	165	0	165	206	0	4.5	926	853	10	0.0000
EASTERN MKT	0	178	0	178	222	0	4.5	998	920	10	0.0000
EAST FALLS CH	0	442	0	442	551	0	4.5	2,479	2,285	26	0.0000
EIS	0	352	0	352	439	0	4.5	1,974	1,820	21	0.0000
FARRAGUT NORTH	0	102	0	102	127	0	4.5	572	527	6	0.0000
FARRAGUT WEST	0	221	0	221	275	0	4.5	1,240	1,142	13	0.0000
FEDERAL CENTER	0	75	0	75	93	0	4.5	421	388	4	0.0000
FEDERAL TRI	0	54	0	54	67	0	4.5	303	279	3	0.0000
FOGGY	0	102	0	102	127	0	4.5	572	527	6	0.0000
FORT TROTTEEN	0	445	0	445	555	0	4.5	2,496	2,300	26	0.0000
FRH.HEIGHTS	0	679	0	679	846	0	4.5	3,809	3,510	40	0.0000
GALLERY PLACE	0	124	0	124	155	0	4.5	696	641	7	0.0000
GROSVENOR	0	716	0	716	892	0	4.5	4,016	3,701	42	0.0000
HUNT NORTH 40%	40	1873	1249	3122	2335	1557	7.5	29,187	26,898	304	0.0003
JUD SQUARE	0	110	0	110	137	0	4.5	617	569	6	0.0000
KING ST	0	30	0	30	37	0	4.5	168	155	2	0.0000

SEASON 1 (Jan-Apr)
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LOCATION	2002				2017		AVERAGE TRIP LENGTH	2017 VMT	ADJ WINTER VMT	RUNNING Rate (gm/mile)	TOTAL (tons/day)
	OUTSIDE MSA (%)	INSIDE MSA	OUTSIDE MSA	Total	INSIDE Growth Rate	OUTSIDE Growth Rate					
					1.25	1.25					
								Wk Days = 83	0.0113		
COMMUTER RAIL LOTS								Seasonal adj = 0.9216			
LANDOVER 25%	25	1410	470	1880	1758	586	7.5	17,576	16,198	183	0.0002
L'ENFANT PLAZA	0	296	0	296	369	0	4.5	1,660	1,530	17	0.0000
MCPHERSON SQ	0	52	0	52	65	0	4.5	292	269	3	0.0000
MEDICAL CENTER	0	14	0	14	17	0	4.5	79	72	1	0.0000
METRO CENTER	0	177	0	177	221	0	4.5	993	915	10	0.0000
MINNES	0	353	0	353	440	0	4.5	1,980	1,825	21	0.0000
NAT AIR	0	87	0	87	108	0	4.5	488	450	5	0.0000
NEW CARROL 50%	50	1049	1049	2097	1307	1307	7.5	19,604	18,067	204	0.0002
PRNTAGON	0	561	0	561	699	0	4.5	3,147	2,900	33	0.0000
PENTAGON CITY	0	381	0	381	475	0	4.5	2,137	1,970	22	0.0000
POTOMAC AVE	0	533	0	533	664	0	4.5	2,990	2,755	31	0.0000
ROCKVILLE	0	667	0	667	831	0	4.5	3,741	3,448	39	0.0000
ROSSLYN	0	356	0	356	444	0	4.5	1,997	1,840	21	0.0000
SHADY GROVE 10%	10	3903	434	4337	4865	541	7.5	40,545	37,367	422	0.0005
SILVER SPRING	0	44	0	44	55	0	4.5	247	227	3	0.0000
SMITH MALL	0	120	0	120	150	0	4.5	673	620	7	0.0000
STADIUM ARM	0	976	0	976	1217	0	4.5	5,475	5,045	57	0.0001
TAKOMA PK	0	146	0	146	182	0	4.5	819	755	9	0.0000
TENLEYTON	0	17	0	17	21	0	4.5	95	88	1	0.0000
TWINBROOK	0	1136	0	1136	1416	0	4.5	6,372	5,873	66	0.0001
UNION STAT	0	378	0	378	471	0	4.5	2,120	1,954	22	0.0000
VAN NESS	0	343	0	343	428	0	4.5	1,924	1,773	20	0.0000
VIENNA 25%	25	2798	933	3731	3488	1163	7.5	34,880	32,145	363	0.0004
VA SQUARE	0	642	0	642	800	0	4.5	3,601	3,319	38	0.0000
WEST FALLS CHURCH	0	2183	0	2183	2721	0	4.5	12,245	11,285	128	0.0001
WHITE FLINT	0	1633	0	1633	2036	0	4.5	9,160	8,442	95	0.0001
WOODLEY	0	68	0	68	85	0	4.5	381	352	4	0.0000
RHODE ISLAND 30%	30	266	114	380	332	142	7.5	3,553	3,274	37	0.0000
BUS & CAR POOL LOTS											
CARTER BARRON	0	798	0	798	995	0	4.5	4,476	4,125	47	0.0001
PG PLAZA	0	47	0	47	59	0	4.5	264	243	3	0.0000
PENN MAR SHOPP.	0	100	0	100	125	0	4.5	561	517	6	0.0000
CAP PLAZA	0	100	0	100	125	0	4.5	561	517	6	0.0000
EASTOVER	0	100	0	100	125	0	4.5	561	517	6	0.0000
FOUR MILE RUN	0	28	0	28	35	0	4.5	157	145	2	0.0000
SPRINGFIELD MALL	0	580	0	580	723	0	4.5	3,253	2,998	34	0.0000
SPRINGFIELD METH CH	0	48	0	48	60	0	4.5	269	248	3	0.0000
FRED ARMORY	0	33	0	33	41	0	7.5	309	284	3	0.0000
MYERSVILLE	0	65	0	65	81	0	7.5	608	560	6	0.0000
ROSEMONT	0	45	0	45	56	0	7.5	421	388	4	0.0000
URBANA	0	193	0	193	241	0	7.5	1,804	1,663	19	0.0000
JEFFERSON	0	40	0	40	50	0	7.5	374	345	4	0.0000
NORBECK RD	0	248	0	248	309	0	7.5	2,318	2,137	24	0.0000
MONTROSE RD	0	650	0	650	810	0	7.5	6,077	5,600	63	0.0001
BRIGG CHENNY 50%	50	215	215	430	268	268	7.5	4,020	3,705	42	0.0000
COMUS ROAD	0	30	0	30	37	0	7.5	280	258	3	0.0000
LAKEFOREST MALL	0	300	0	300	374	0	7.5	2,805	2,585	29	0.0000
BURTONSVILLE	0	500	0	500	623	0	7.5	4,674	4,308	49	0.0001
FORCEY MEM.	0	200	0	200	249	0	7.5	1,870	1,723	19	0.0000

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	OUTSIDE MSA (%)	INSIDE MSA	OUTSIDE MSA	Total	INSIDE Growth Rate	OUTSIDE Growth Rate					
					1.25	1.25					
								Wk Days = 83	0.0113		
COMMUTER RAIL LOTS								Seasonal adj = 0.9216			
TECH ROAD	0	155	0	155	193	0	7.5	1,449	1,335	15	0.0000
BELTWAY	0	265	0	265	330	0	7.5	2,477	2,283	26	0.0000
LAUREL VAN DUSEN	0	62	0	62	77	0	7.5	580	534	6	0.0000
ACCOKEEK	0	450	0	450	561	0	7.5	4,207	3,877	44	0.0000
ABC DRIVE IN	0	100	0	100	125	0	7.5	935	862	10	0.0000
BOWIE 20%	20	526	131	657	655	164	7.5	6,142	5,661	64	0.0001
CLINTON 50%	50	212	212	424	264	264	7.5	3,964	3,653	41	0.0000
OXON HILL 20%	20	519	130	649	647	162	7.5	6,067	5,592	63	0.0001
EQUESTRIAN CENTER	50	150	150	300	187	187	7.5	2,805	2,585	29	0.0000
BOWIE MARKET PLACE	0	50	0	50	62	0	7.5	467	431	5	0.0000
FT.WASHINGTON	0	412	0	412	514	0	7.5	3,852	3,550	40	0.0000
MONTPELIER REC PARK	0	70	0	70	87	0	7.5	654	603	7	0.0000
RESTON	0	1547	0	1547	1928	0	7.5	14,462	13,329	151	0.0002
GREENBRIAR	0	55	0	55	69	0	7.5	514	474	5	0.0000
FAIR OAKS	0	150	0	150	187	0	7.5	1,402	1,292	15	0.0000
ROLLING VALLEY	0	628	0	628	783	0	7.5	5,871	5,411	61	0.0001
SPRINGFIELD PLAZA	0	230	0	230	287	0	7.5	2,150	1,982	22	0.0000
FAIRLANES BOWL	0	35	0	35	44	0	7.5	327	302	3	0.0000
NOTTOWAY PARK	0	14	0	14	17	0	7.5	131	121	1	0.0000
HORNER RD	0	2397	0	2397	2988	0	7.5	22,409	20,652	233	0.0003
LAKE RIDGE	0	555	0	555	692	0	7.5	5,189	4,782	54	0.0001
MINNIEVILLE RD 40%	40	336	224	560	419	279	7.5	5,235	4,825	55	0.0001
GORDON BLVD	0	156	0	156	194	0	7.5	1,458	1,344	15	0.0000
HILLENDALE	0	248	0	248	309	0	7.5	2,318	2,137	24	0.0000
POTOMAC MILLS	0	946	0	946	1179	0	7.5	8,844	8,151	92	0.0001
List of new lots to be added in Conformity Document list											
PARK-AND-RIDE LOTS - MARYLAND											
PARK-AND-RIDE LOTS - MARYLAND											
CHARLES COUNTY											
301 Park & Ride	25	287	96	383	358	119	7.5	3,581	3,300	37	0.0000
Charles County Governme	25	26	9	35	33	11	7.5	327	302	3	0.0000
Food Lion Shopping Cente	25	38	13	50	47	16	7.5	467	431	5	0.0000
La Plata Armory	25	15	5	20	19	6	7.5	187	172	2	0.0000
Laurel Springs Regional Pa	25	38	13	50	47	16	7.5	467	431	5	0.0000
Life Wesleyan Church	25	38	13	50	47	16	7.5	467	431	5	0.0000
Mattawoman-Beantown Rd	25	435	145	580	542	181	7.5	5,422	4,997	56	0.0001
Smallwood Village	25	75	25	100	93	31	7.5	935	862	10	0.0000
St. Charles Towne	25	263	88	350	327	109	7.5	3,272	3,016	34	0.0000
PARK-AND-RIDE LOTS - MARYLAND											
FREDERICK COUNTY											
Frederick (north)	25	123	41	164	153	51	7.5	1,533	1,413	16	0.0000
Frederick (south)	25	173	58	230	215	72	7.5	2,150	1,982	22	0.0000
Monacacy Marcst	25	600	200	800	748	249	7.5	7,479	6,893	78	0.0001
PARK-AND-RIDE LOTS - MARYLAND											
MONTGOMERY COUNTY											
Colesville	0	190	0	190	237	0	7.5	1,776	1,637	18	0.0000
Damascus	50	0	0	0	0	0	7.5	0	0	0	0.0000
Gaithersburg	50	259	259	517	322	322	7.5	4,833	4,454	50	0.0001
Gaithersburg	50	175	175	350	218	218	7.5	3,272	3,016	34	0.0000
Germantown Town	50	0	0	0	0	0	7.5	0	0	0	0.0000

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	OUTSIDE MSA (%)	INSIDE MSA	OUTSIDE MSA	Total	INSIDE Growth Rate	OUTSIDE Growth Rate					
					1.25	1.25					
COMMUTER RAIL LOTS								Seasonal adj = 0.9216			
Greencastle	50	75	75	150	93	93	7.5	1,402	1,292	15	0.0000
Milestone Shopping	50	88	88	175	109	109	7.5	1,636	1,508	17	0.0000
PARK-AND-RIDE LOTS - MAYLAND											
PRINCE GEORGE'S COUNTY											
Hampton Mall	0	100	0	100	125	0	4.5	561	517	6	0.0000
Laurel (south)	25	513	171	684	639	213	7.5	6,395	5,893	67	0.0001
PARK-AND-RIDE LOTS - VIRGINIA					0	0		0	0	0	0.0000
ARLINGTON COUNTY					0	0		0	0	0	0.0000
Ballston Public Parking Gara	25	375	125	500	467	156	7.5	4,674	4,308	49	0.0001
Washington-Lee	50	178	178	356	222	222	7.5	3,328	3,067	35	0.0000
PARK-AND-RIDE LOTS - VIRGINIA											
FAIRFAX COUNTY											
American Legion	50	50	50	100	62	62	7.5	935	862	10	0.0000
Canterbury Woods Pk	50	17	17	34	21	21	7.5	318	293	3	0.0000
Centreville	50	185	185	370	231	231	7.5	3,459	3,188	36	0.0000
Centreville United Methodi	50	74	74	147	92	92	7.5	1,374	1,267	14	0.0000
Fairfax County Governmer	50	85	85	170	106	106	7.5	1,589	1,465	17	0.0000
Greenbriar Park	50	28	28	55	34	34	7.5	514	474	5	0.0000
Herndon-Monroe	50	873	873	1,745	1088	1088	7.5	16,314	15,035	170	0.0002
Michael's	50	100	100	200	125	125	7.5	1,870	1,723	19	0.0000
Parkwood Baptist	50	9	9	18	11	11	7.5	168	155	2	0.0000
South Run District Pk	50	170	170	340	212	212	7.5	3,179	2,929	33	0.0000
St Paul Chung Catholic Ch	50	50	50	100	62	62	7.5	935	862	10	0.0000
Stringfellow Rd	50	181	181	361	225	225	7.5	3,375	3,110	35	0.0000
Sully Station	50	70	70	140	87	87	7.5	1,309	1,206	14	0.0000
Sydenstricker Rd	50	84	84	167	104	104	7.5	1,561	1,439	16	0.0000
Wakefield Chapel Pk	50	25	25	50	31	31	7.5	467	431	5	0.0000
PARK-AND-RIDE LOTS - VIRGINIA											
LOUDOUN COUNTY											
Ashburn Farm	50	10	10	20	12	12	7.5	187	172	2	0.0000
Ashburn Village	50	20	20	40	25	25	7.5	374	345	4	0.0000
Cascades	50	28	28	55	34	34	7.5	514	474	5	0.0000
Dulles North Transit	50	375	375	750	467	467	7.5	7,012	6,462	73	0.0001
Hamilton	50	25	25	50	31	31	7.5	467	431	5	0.0000
Innovation Avenue	50	38	38	75	47	47	7.5	701	646	7	0.0000
Leesburg	50	25	25	50	31	31	7.5	467	431	5	0.0000
Leesburg Kohls	50	600	600	1200	748	748	7.5	11,218	10,339	117	0.0001
Purcellville	50	18	18	35	22	22	7.5	327	302	3	0.0000
Sterling Park SC	50	23	23	45	28	28	7.5	421	388	4	0.0000
Sterling Shaw Rd	50	24	24	48	30	30	7.5	449	414	5	0.0000
PARK-AND-RIDE LOTS - VIRGINIA											
PRINCE WILLIAM COUNTY											
Brittany	50	48	48	95	59	59	7.5	888	818	9	0.0000
Dale City	50	294	294	587	366	366	7.5	5,488	5,057	57	0.0001
Harbor Drive	50	100	100	200	125	125	7.5	1,870	1,723	19	0.0000
Lindendale	50	108	108	216	135	135	7.5	2,019	1,861	21	0.0000
Montclair	50	25	25	50	31	31	7.5	467	431	5	0.0000
PRTC Transit Center	50	93	93	185	115	115	7.5	1,730	1,594	18	0.0000
Tackett's Mill	50	85	85	169	105	105	7.5	1,580	1,456	16	0.0000
Triangle	50	15	15	29	18	18	7.5	271	250	3	0.0000
I-95 / Rt 123	50	282	282	563	351	351	7.5	5,263	4,851	55	0.0001
US 1 / VA 234	50	137	137	274	171	171	7.5	2,562	2,361	27	0.0000
MARC TRAIN COMMUTER LOTS					0	0		0			
College Park	25	431	144	574	537	179	7.5	5,366	4,945	56	0.0001

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	OUTSIDE MSA (%)	INSIDE MSA	OUTSIDE MSA	Total	INSIDE Growth Rate	OUTSIDE Growth Rate					
					1.25	1.25					
								Wk Days = 83	0.0113		
								Seasonal adj = 0.9216			
COMMUTER RAIL LOTS											
Frederick	0	0	0	0	0	0	7.5	0	0	0	0.0000
Greenbelt	60	1346	2018	3364	1677	2516	7.5	31,449	28,983	328	0.0004
Harpers Ferry		98	0	98	122	0	7.5	916	844	10	0.0000
Muirkirk	60	260	390	650	324	486	7.5	6,077	5,600	63	0.0001
Seabrook	0	264	0	264	329	0	4.5	1,481	1,365	15	0.0000
Silver Spring	0	0	0	0	0	0	4.5	0	0	0	0.0000
Union Station	0	781	0	781	974	0	7.5	7,301	6,729	76	0.0001
VIRGINIA RAILWAY EXPRESS COMMUTER LOTS											
Backlick Road	50	110	110	220	137	137	7.5	2,057	1,895	21	0.0000
Broad Run	50	198	198	396	247	247	7.5	3,702	3,412	39	0.0000
Brooke	50	150	150	300	187	187	7.5	2,805	2,585	29	0.0000
Burke Center	50	275	275	550	343	343	7.5	5,142	4,739	54	0.0001
Franconia/Springfield (ope	50	1900	1900	3800	2368	2368	7.5	35,525	32,740	370	0.0004
Leeland Road	50	326	326	652	406	406	7.5	6,095	5,617	63	0.0001
Lorton	50	100	100	200	125	125	7.5	1,870	1,723	19	0.0000
Manassas	50	187	187	374	233	233	7.5	3,496	3,222	36	0.0000
Manassas Park	50	150	150	300	187	187	7.5	2,805	2,585	29	0.0000
Quantico	50	109	109	217	135	135	7.5	2,029	1,870	21	0.0000
Rippon 50		150	150	300	187	187	7.5	2,805	2,585	29	0.0000
Rolling Road	50	185	185	370	231	231	7.5	3,459	3,188	36	0.0000
Woodbridge	50	294	294	588	366	366	7.5	5,497	5,066	57	0.0001
METRORAIL PARKING LOTS											
Anacostia	25	861	287	1148	1073	358	7.5	10,732	9,891	112	0.0001
Branch Avenue	50	1611	1611	3222	2008	2008	7.5	30,122	27,760	314	0.0003
Capitol Heights	50	194	194	387	241	241	7.5	3,618	3,334	38	0.0000
College Park	25	465	155	620	580	193	7.5	5,796	5,342	60	0.0001
Congress Heights	0	66	0	66	82	0	4.5	370	341	4	0.0000
Deanwood	0	194	0	194	242	0	7.5	1,814	1,671	19	0.0000
East Falls Church	50	221	221	442	275	275	7.5	4,132	3,808	43	0.0000
Forest Glen	50	329	329	658	410	410	7.5	6,151	5,669	64	0.0001
Franconia - Springfield	50	1987	1987	3973	2476	2476	4.5	22,285	20,538	232	0.0003
Glenmont	50	925	925	1850	1153	1153	4.5	10,377	9,564	108	0.0001
Greenbelt	50	1783	1783	3565	2222	2222	7.5	33,328	30,715	347	0.0004
Naylor Road	50	216	216	431	269	269	7.5	4,029	3,713	42	0.0000
Prince George's Plaza	25	927	309	1236	1156	385	7.5	11,555	10,649	120	0.0001
Southern Avenue	50	1090	1090	2180	1359	1359	4.5	12,228	11,269	127	0.0001
Suitland	50	1033	1033	2065	1287	1287	4.5	11,583	10,675	121	0.0001
Van Dorn Street	50	204	204	407	254	254	4.5	2,283	2,104	24	0.0000
West Hyattsville	25	453	151	604	565	188	7.5	5,647	5,204	59	0.0001
Wheaton	25	759	253	1012	946	315	7.5	9,461	8,719	99	0.0001
								108,749	891,253	9,281,5762	0.0102
								Seasonal Total (tons/season) =		0.8492	

Bold figures: New numbers taken from P & R directory
 Figures in bracket: Carry forward figures from conformity doc.

Park lot Growth Rate	
Transit trips 2017	1361783
transit trips 2002	1092489
Annual growth rate	0.016433
Growth factor (2002-2017)	1.246496

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					Growth Rate	Growth Rate					
					1.25	1.25		Wk Days = 107	0.0113		
COMMUTER RAIL LOTS								Seasonal adj = 0.9873			
BRUNSWICK 25%	25	305	102	407	380	127	7.5	3,805	3,757	42 0.0000	
PT OF ROCKS 25%	25	204	68	272	254	85	7.5	2,543	2,511	28 0.0000	
DICKERSON	0	15	0	15	19	0	7.5	140	138	2 0.0000	
BARNESVILLE	0	46	0	46	57	0	7.5	430	425	5 0.0000	
GERMANTOWN	0	386	0	386	481	0	7.5	3,609	3,563	40 0.0000	
MET GROVE	0	352	0	352	439	0	7.5	3,291	3,249	37 0.0000	
WAS GROVE	0	15	0	15	19	0	7.5	140	138	2 0.0000	
GARRETT PARK	0	22	0	22	27	0	7.5	206	203	2 0.0000	
BOWIE 50%	50	188	188	375	234	234	7.5	3,506	3,461	39 0.0000	
SEABROOK 15%	15	224	40	264	280	49	7.5	2,468	2,437	28 0.0000	
KENSINGTON	0	45	0	45	56	0	7.5	421	415	5 0.0000	
LAUREL 30%	30	209	90	299	261	112	7.5	2,795	2,760	31 0.0000	
GAITHESBURG	0	280	0	280	349	0	7.5	2,618	2,584	29 0.0000	
BERWYN HEIGHTS	0	30	0	30	37	0	4.5	168	166	2 0.0000	
RIVERDALE	0	65	0	65	81	0	4.5	365	360	4 0.0000	
METRO RAIL LOTS											
ADDISON ROAD 40%	40	791	527	1318	986	657	7.5	12,322	12,165	137 0.0002	
ARCHIVES	0	12	0	12	15	0	4.5	67	66	1 0.0000	
ARLING	0	10	0	10	12	0	4.5	56	55	1 0.0000	
BALLSTON	0	1175	0	1175	1465	0	4.5	6,591	6,507	74 0.0001	
BENN.RD	0	520	0	520	648	0	4.5	2,917	2,880	33 0.0000	
BETH	0	395	0	395	492	0	4.5	2,216	2,188	25 0.0000	
BRADD RD	0	10	0	10	12	0	4.5	56	55	1 0.0000	
BROOKLAND	0	27	0	27	34	0	4.5	151	150	2 0.0000	
CHEVERLY	0	557	0	557	694	0	4.5	3,124	3,085	35 0.0000	
CLARENDON	0	554	0	554	691	0	4.5	3,108	3,068	35 0.0000	
CLEVELAND PK	0	366	0	366	456	0	4.5	2,053	2,027	23 0.0000	
COURT HOUSE	0	256	0	256	319	0	4.5	1,436	1,418	16 0.0000	
CRYSTAL CITY	0	347	0	347	433	0	4.5	1,946	1,922	22 0.0000	
DEANWOOD	0	194	0	194	242	0	4.5	1,088	1,074	12 0.0000	
DUN LORING 10%	10	1220	136	1355	1520	169	4.5	7,601	7,504	85 0.0001	
DUPONT CIRCLE	0	165	0	165	206	0	4.5	926	914	10 0.0000	
EASTERN MKT	0	178	0	178	222	0	4.5	998	986	11 0.0000	
EAST FALLS CH	0	442	0	442	551	0	4.5	2,479	2,448	28 0.0000	
EIS	0	352	0	352	439	0	4.5	1,974	1,949	22 0.0000	
FARRAGUT NORTH	0	102	0	102	127	0	4.5	572	565	6 0.0000	
FARRAGUT WEST	0	221	0	221	275	0	4.5	1,240	1,224	14 0.0000	
FEDERAL CENTER	0	75	0	75	93	0	4.5	421	415	5 0.0000	
FEDERAL TRI	0	54	0	54	67	0	4.5	303	299	3 0.0000	
FOGGY	0	102	0	102	127	0	4.5	572	565	6 0.0000	
FORT TROTTE	0	445	0	445	555	0	4.5	2,496	2,464	28 0.0000	
FRH.HEIGHTS	0	679	0	679	846	0	4.5	3,809	3,760	42 0.0000	
GALLERY PLACE	0	124	0	124	155	0	4.5	696	687	8 0.0000	
GROSVENOR	0	716	0	716	892	0	4.5	4,016	3,965	45 0.0000	
HUNT NORTH 40%	40	1873	1249	3122	2335	1557	7.5	29,187	28,816	326 0.0004	
JUD SQUARE	0	110	0	110	137	0	4.5	617	609	7 0.0000	
KING ST	0	30	0	30	37	0	4.5	168	166	2 0.0000	

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	OUTSIDE MSA (%)	INSIDE MSA	OUTSIDE MSA	Total	INSIDE	OUTSIDE					
					Growth Rate	Growth Rate					
					1.25	1.25		Wk Days = 107	0.0113		
COMMUTER RAIL LOTS								Seasonal adj = 0.9873			
LANDOVER 25%	25	1410	470	1880	1758	586	7.5	17,576	17,352	196	0.0002
L'ENFANT PLAZA	0	296	0	296	369	0	4.5	1,660	1,639	19	0.0000
MCPHERSON SQ	0	52	0	52	65	0	4.5	292	288	3	0.0000
MEDICAL CENTER	0	14	0	14	17	0	4.5	79	78	1	0.0000
METRO CENTER	0	177	0	177	221	0	4.5	993	980	11	0.0000
MINNES	0	353	0	353	440	0	4.5	1,980	1,955	22	0.0000
NAT AIR	0	87	0	87	108	0	4.5	488	482	5	0.0000
NEW CARROL 50%	50	1049	1049	2097	1307	1307	7.5	19,604	19,355	219	0.0002
PRNTAGON	0	561	0	561	699	0	4.5	3,147	3,107	35	0.0000
PENTAGON CITY	0	381	0	381	475	0	4.5	2,137	2,110	24	0.0000
POTOMAC AVE	0	533	0	533	664	0	4.5	2,990	2,952	33	0.0000
ROCKVILLE	0	667	0	667	831	0	4.5	3,741	3,694	42	0.0000
ROSSLYN	0	356	0	356	444	0	4.5	1,997	1,972	22	0.0000
SHADY GROVE 10%	10	3903	434	4337	4865	541	7.5	40,545	40,030	452	0.0005
SILVER SPRING	0	44	0	44	55	0	4.5	247	244	3	0.0000
SMITH MALL	0	120	0	120	150	0	4.5	673	665	8	0.0000
STADIUM ARM	0	976	0	976	1217	0	4.5	5,475	5,405	61	0.0001
TAKOMA PK	0	146	0	146	182	0	4.5	819	809	9	0.0000
TENLEYTON	0	17	0	17	21	0	4.5	95	94	1	0.0000
TWINBROOK	0	1136	0	1136	1416	0	4.5	6,372	6,291	71	0.0001
UNION STAT	0	378	0	378	471	0	4.5	2,120	2,093	24	0.0000
VAN NESS	0	343	0	343	428	0	4.5	1,924	1,900	21	0.0000
VIENNA 25%	25	2798	933	3731	3488	1163	7.5	34,880	34,437	389	0.0004
VA SQUARE	0	642	0	642	800	0	4.5	3,601	3,555	40	0.0000
WEST FALLS CHURCH	0	2183	0	2183	2721	0	4.5	12,245	12,089	137	0.0002
WHITE FLINT	0	1633	0	1633	2036	0	4.5	9,160	9,044	102	0.0001
WOODLEY	0	68	0	68	85	0	4.5	381	377	4	0.0000
RHODE ISLAND 30%	30	266	114	380	332	142	7.5	3,553	3,507	40	0.0000
BUS & CAR POOL LOTS											
CARTER BARRON	0	798	0	798	995	0	4.5	4,476	4,419	50	0.0001
PG PLAZA	0	47	0	47	59	0	4.5	264	260	3	0.0000
PENN MAR SHOPP.	0	100	0	100	125	0	4.5	561	554	6	0.0000
CAP PLAZA	0	100	0	100	125	0	4.5	561	554	6	0.0000
EASTOVER	0	100	0	100	125	0	4.5	561	554	6	0.0000
FOUR MILE RUN	0	28	0	28	35	0	4.5	157	155	2	0.0000
SPRINGFIELD MALL	0	580	0	580	723	0	4.5	3,253	3,212	36	0.0000
SPRINGFIELD METH CH	0	48	0	48	60	0	4.5	269	266	3	0.0000
FRED ARMORY	0	33	0	33	41	0	7.5	309	305	3	0.0000
MYERSVILLE	0	65	0	65	81	0	7.5	608	600	7	0.0000
ROSEMONT	0	45	0	45	56	0	7.5	421	415	5	0.0000
URBANA	0	193	0	193	241	0	7.5	1,804	1,781	20	0.0000
JEFFERSON	0	40	0	40	50	0	7.5	374	369	4	0.0000
NORBECK RD	0	248	0	248	309	0	7.5	2,318	2,289	26	0.0000
MONTROSE RD	0	650	0	650	810	0	7.5	6,077	5,999	68	0.0001
BRIGG CHENNY 50%	50	215	215	430	268	268	7.5	4,020	3,969	45	0.0000
COMUS ROAD	0	30	0	30	37	0	7.5	280	277	3	0.0000
LAKEFOREST MALL	0	300	0	300	374	0	7.5	2,805	2,769	31	0.0000

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					Growth Rate	Growth Rate					
					1.25	1.25		Wk Days = 107	0.0113		
COMMUTER RAIL LOTS								Seasonal adj = 0.9873			
BURTONSVILLE	0	500	0	500	623	0	7.5	4,674	4,615	52	0.0001
FORCEY MEM.	0	200	0	200	249	0	7.5	1,870	1,846	21	0.0000
TECH ROAD	0	155	0	155	193	0	7.5	1,449	1,431	16	0.0000
BELTWAY	0	265	0	265	330	0	7.5	2,477	2,446	28	0.0000
LAUREL VAN DUSEN	0	62	0	62	77	0	7.5	580	572	6	0.0000
ACCOKEEK	0	450	0	450	561	0	7.5	4,207	4,153	47	0.0001
ABC DRIVE IN	0	100	0	100	125	0	7.5	935	923	10	0.0000
BOWIE 20%	20	526	131	657	655	164	7.5	6,142	6,064	69	0.0001
CLINTON 50%	50	212	212	424	264	264	7.5	3,964	3,914	44	0.0000
OXON HILL 20%	20	519	130	649	647	162	7.5	6,067	5,990	68	0.0001
EQUESTRIAN CENTER	50	150	150	300	187	187	7.5	2,805	2,769	31	0.0000
BOWIE MARKET PLACE	0	50	0	50	62	0	7.5	467	461	5	0.0000
FT. WASHINGTON	0	412	0	412	514	0	7.5	3,852	3,803	43	0.0000
MONTPELIER REC PARK	0	70	0	70	87	0	7.5	654	646	7	0.0000
RESTON	0	1547	0	1547	1928	0	7.5	14,462	14,279	161	0.0002
GREENBRIAR	0	55	0	55	69	0	7.5	514	508	6	0.0000
FAIR OAKS	0	150	0	150	187	0	7.5	1,402	1,384	16	0.0000
ROLLING VALLEY	0	628	0	628	783	0	7.5	5,871	5,796	65	0.0001
SPRINGFIELD PLAZA	0	230	0	230	287	0	7.5	2,150	2,123	24	0.0000
FAIRLANES BOWL	0	35	0	35	44	0	7.5	327	323	4	0.0000
NOTTOWAY PARK	0	14	0	14	17	0	7.5	131	129	1	0.0000
HORNER RD	0	2397	0	2397	2988	0	7.5	22,409	22,124	250	0.0003
LAKE RIDGE	0	555	0	555	692	0	7.5	5,189	5,123	58	0.0001
MINNIEVILLE RD 40%	40	336	224	560	419	279	7.5	5,235	5,169	58	0.0001
GORDON BLVD	0	156	0	156	194	0	7.5	1,458	1,440	16	0.0000
HILLENDALE	0	248	0	248	309	0	7.5	2,318	2,289	26	0.0000
POTOMAC MILLS	0	946	0	946	1179	0	7.5	8,844	8,732	99	0.0001
List of new lots to be added in Conformity Document list											
PARK-AND-RIDE LOTS - MARYLAND											
PARK-AND-RIDE LOTS - MARYLAND											
CHARLES COUNTY											
301 Park & Ride	25	287	96	383	358	119	7.5	3,581	3,535	40	0.0000
Charles County Governme	25	26	9	35	33	11	7.5	327	323	4	0.0000
Food Lion Shopping Cente	25	38	13	50	47	16	7.5	467	461	5	0.0000
La Plata Armory	25	15	5	20	19	6	7.5	187	185	2	0.0000
Laurel Springs Regional Pa	25	38	13	50	47	16	7.5	467	461	5	0.0000
Life Wesleyan Church	25	38	13	50	47	16	7.5	467	461	5	0.0000
Mattawoman-Beantown Rd	25	435	145	580	542	181	7.5	5,422	5,353	60	0.0001
Smallwood Village	25	75	25	100	93	31	7.5	935	923	10	0.0000
St. Charles Towne	25	263	88	350	327	109	7.5	3,272	3,230	37	0.0000
PARK-AND-RIDE LOTS - MARYLAND											
FREDERICK COUNTY											
Frederick (north)	25	123	41	164	153	51	7.5	1,533	1,514	17	0.0000
Frederick (south)	25	173	58	230	215	72	7.5	2,150	2,123	24	0.0000
Monacacy Marcst	25	600	200	800	748	249	7.5	7,479	7,384	83	0.0001
PARK-AND-RIDE LOTS - MARYLAND											
MONTGOMERY COUNTY											
Colesville	0	190	0	190	237	0	7.5	1,776	1,754	20	0.0000
Damascus	50	0	0	0	0	0	7.5	0	0	0	0.0000
Gaithersburg	50	259	259	517	322	322	7.5	4,833	4,772	54	0.0001

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					Growth Rate	Growth Rate					
					1.25	1.25		Wk Days = 107	0.0113		
COMMUTER RAIL LOTS								Seasonal adj = 0.9873			
Gaithersburg	50	175	175	350	218	218	7.5	3,272	3,230	37 0.0000	
Germantown Town	50	0	0	0	0	0	7.5	0	0	0 0.0000	
Greencastle	50	75	75	150	93	93	7.5	1,402	1,384	16 0.0000	
Milestone Shopping	50	88	88	175	109	109	7.5	1,636	1,615	18 0.0000	
PARK-AND-RIDE LOTS - MAYLAND											
PRINCE GEORGE'S COUNTY											
Hampton Mall	0	100	0	100	125	0	4.5	561	554	6 0.0000	
Laurel (south)	25	513	171	684	639	213	7.5	6,395	6,313	71 0.0001	
PARK-AND-RIDE LOTS - VIRGINIA					0	0		0	0	0 0.0000	
ARLINGTON COUNTY					0	0		0	0	0 0.0000	
Ballston Public Parking Ga	25	375	125	500	467	156	7.5	4,674	4,615	52 0.0001	
Washington-Lee	50	178	178	356	222	222	7.5	3,328	3,286	37 0.0000	
PARK-AND-RIDE LOTS - VIRGINIA											
FAIRFAX COUNTY											
American Legion	50	50	50	100	62	62	7.5	935	923	10 0.0000	
Canterbury Woods Pk	50	17	17	34	21	21	7.5	318	314	4 0.0000	
Centreville	50	185	185	370	231	231	7.5	3,459	3,415	39 0.0000	
Centreville United Methodis	50	74	74	147	92	92	7.5	1,374	1,357	15 0.0000	
Fairfax County Governmen	50	85	85	170	106	106	7.5	1,589	1,569	18 0.0000	
Greenbriar Park	50	28	28	55	34	34	7.5	514	508	6 0.0000	
Herndon-Monroe	50	873	873	1,745	1088	1088	7.5	16,314	16,106	182 0.0002	
Michael's	50	100	100	200	125	125	7.5	1,870	1,846	21 0.0000	
Parkwood Baptist	50	9	9	18	11	11	7.5	168	166	2 0.0000	
South Run District Pk	50	170	170	340	212	212	7.5	3,179	3,138	35 0.0000	
St Paul Chung Catholic Ch	50	50	50	100	62	62	7.5	935	923	10 0.0000	
Stringfellow Rd	50	181	181	361	225	225	7.5	3,375	3,332	38 0.0000	
Sully Station	50	70	70	140	87	87	7.5	1,309	1,292	15 0.0000	
Sydenstricker Rd	50	84	84	167	104	104	7.5	1,561	1,541	17 0.0000	
Wakefield Chapel Pk	50	25	25	50	31	31	7.5	467	461	5 0.0000	
PARK-AND-RIDE LOTS - VIRGINIA											
LOUDOUN COUNTY											
Ashburn Farm	50	10	10	20	12	12	7.5	187	185	2 0.0000	
Ashburn Village	50	20	20	40	25	25	7.5	374	369	4 0.0000	
Cascades	50	28	28	55	34	34	7.5	514	508	6 0.0000	
Dulles North Transit	50	375	375	750	467	467	7.5	7,012	6,922	78 0.0001	
Hamilton	50	25	25	50	31	31	7.5	467	461	5 0.0000	
Innovation Avenue	50	38	38	75	47	47	7.5	701	692	8 0.0000	
Leesburg	50	25	25	50	31	31	7.5	467	461	5 0.0000	
Leesburg Kohls	50	600	600	1200	748	748	7.5	11,218	11,076	125 0.0001	
Purcellville	50	18	18	35	22	22	7.5	327	323	4 0.0000	
Sterling Park SC	50	23	23	45	28	28	7.5	421	415	5 0.0000	
Sterling Shaw Rd	50	24	24	48	30	30	7.5	449	443	5 0.0000	
PARK-AND-RIDE LOTS - VIRGINIA											
PRINCE WILLIAM COUNTY											
Brittany	50	48	48	95	59	59	7.5	888	877	10 0.0000	
Dale City	50	294	294	587	366	366	7.5	5,488	5,418	61 0.0001	
Harbor Drive	50	100	100	200	125	125	7.5	1,870	1,846	21 0.0000	
Lindendale	50	108	108	216	135	135	7.5	2,019	1,994	23 0.0000	
Montclair	50	25	25	50	31	31	7.5	467	461	5 0.0000	
PRTC Transit Center	50	93	93	185	115	115	7.5	1,730	1,708	19 0.0000	
Tackett's Mill	50	85	85	169	105	105	7.5	1,580	1,560	18 0.0000	
Triangle	50	15	15	29	18	18	7.5	271	268	3 0.0000	
I-95 / Rt 123	50	282	282	563	351	351	7.5	5,263	5,196	59 0.0001	
US 1 / VA 234	50	137	137	274	171	171	7.5	2,562	2,529	29 0.0000	
MARC TRAIN COMMUTER LOTS					0	0		0			
College Park	25	431	144	574	537	179	7.5	5,366	5,298	60 0.0001	

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					1.25	1.25					
COMMUTER RAIL LOTS								Wk Days = 107	0.0113		
								Seasonal adj = 0.9873			
Frederick	0	0	0	0	0	0	7.5	0	0	0	0.0000
Greenbelt	60	1346	2018	3364	1677	2516	7.5	31,449	31,050	351	0.0004
Harpers Ferry		98	0	98	122	0	7.5	916	905	10	0.0000
Muirkirk	60	260	390	650	324	486	7.5	6,077	5,999	68	0.0001
Seabrook	0	264	0	264	329	0	4.5	1,481	1,462	17	0.0000
Silver Spring	0	0	0	0	0	0	4.5	0	0	0	0.0000
Union Station	0	781	0	781	974	0	7.5	7,301	7,209	81	0.0001
VIRGINIA RAILWAY EXPRESS COMMUTER LOTS											
Backlick Road	50	110	110	220	137	137	7.5	2,057	2,031	23	0.0000
Broad Run	50	198	198	396	247	247	7.5	3,702	3,655	41	0.0000
Brooke	50	150	150	300	187	187	7.5	2,805	2,769	31	0.0000
Burke Center	50	275	275	550	343	343	7.5	5,142	5,076	57	0.0001
Franconia/Springfield (oper	50	1900	1900	3800	2368	2368	7.5	35,525	35,074	396	0.0004
Leeland Road	50	326	326	652	406	406	7.5	6,095	6,018	68	0.0001
Lorton	50	100	100	200	125	125	7.5	1,870	1,846	21	0.0000
Manassas	50	187	187	374	233	233	7.5	3,496	3,452	39	0.0000
Manassas Park	50	150	150	300	187	187	7.5	2,805	2,769	31	0.0000
Quantico	50	109	109	217	135	135	7.5	2,029	2,003	23	0.0000
Rippon 50		150	150	300	187	187	7.5	2,805	2,769	31	0.0000
Rolling Road	50	185	185	370	231	231	7.5	3,459	3,415	39	0.0000
Woodbridge	50	294	294	588	366	366	7.5	5,497	5,427	61	0.0001
METRORAIL PARKING LOTS											
Anacostia	25	861	287	1148	1073	358	7.5	10,732	10,596	120	0.0001
Branch Avenue	50	1611	1611	3222	2008	2008	7.5	30,122	29,739	336	0.0004
Capitol Heights	50	194	194	387	241	241	7.5	3,618	3,572	40	0.0000
College Park	25	465	155	620	580	193	7.5	5,796	5,723	65	0.0001
Congress Heights	0	66	0	66	82	0	4.5	370	366	4	0.0000
Deanwood	0	194	0	194	242	0	7.5	1,814	1,791	20	0.0000
East Falls Church	50	221	221	442	275	275	7.5	4,132	4,080	46	0.0001
Forest Glen	50	329	329	658	410	410	7.5	6,151	6,073	69	0.0001
Franconia - Springfield	50	1987	1987	3973	2476	2476	4.5	22,285	22,002	249	0.0003
Glenmont	50	925	925	1850	1153	1153	4.5	10,377	10,245	116	0.0001
Greenbelt	50	1783	1783	3565	2222	2222	7.5	33,328	32,905	372	0.0004
Naylor Road	50	216	216	431	269	269	7.5	4,029	3,978	45	0.0000
Prince George's Plaza	25	927	309	1236	1156	385	7.5	11,555	11,408	129	0.0001
Southern Avenue	50	1090	1090	2180	1359	1359	4.5	12,228	12,073	136	0.0002
Suitland	50	1033	1033	2065	1287	1287	4.5	11,583	11,436	129	0.0001
Van Dorn Street	50	204	204	407	254	254	4.5	2,283	2,254	25	0.0000
West Hyattsville	25	453	151	604	565	188	7.5	5,647	5,575	63	0.0001
Wheaton	25	759	253	1012	946	315	7.5	9,461	9,341	106	0.0001
							108,749	891,253	9,943,2511	0.0110	
										Seasonal Total (tons/season) =	1.1728

Bold figures: New numbers taken from P & R directory
 Figures in bracket: Carry forward figures from conformity doc.

Park lot Growth Rate	
Transit trips 2017	1361783
transit trips 2002	1092489
Annual growth rate	0.016433
Growth factor (2002-2017)	1.246496

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LOCATION	2002				2017		AVERAGE TRIP LENGTH	2017 VMT	ADJ WINTER VMT	RUNNING Rate (gm/mile)	TOTAL (tons/day)
	OUTSIDE MSA (%)	INSIDE MSA	OUTSIDE MSA	Total	INSIDE	OUTSIDE					
					Growth Rate	Growth Rate					
					1.25						
								Wk Days = 61	0.0113		
								Seasonal adj = 0.9282			
COMMUTER RAIL LOTS											
BRUNSWICK 25%	25	305	102	407	380	127	7.5	3,805	3,532	40	0.0000
PT OF ROCKS 25%	25	204	68	272	254	85	7.5	2,543	2,360	27	0.0000
DICKERSON	0	15	0	15	19	0	7.5	140	130	1	0.0000
BARNESVILLE	0	46	0	46	57	0	7.5	430	399	5	0.0000
GERMANTOWN	0	386	0	386	481	0	7.5	3,609	3,350	38	0.0000
MET GROVE	0	352	0	352	439	0	7.5	3,291	3,054	35	0.0000
WAS GROVE	0	15	0	15	19	0	7.5	140	130	1	0.0000
GARRETT PARK	0	22	0	22	27	0	7.5	206	191	2	0.0000
BOWIE 50%	50	188	188	375	234	234	7.5	3,506	3,254	37	0.0000
SEABROOK 15%	15	224	40	264	280	49	7.5	2,468	2,291	26	0.0000
KENSINGTON	0	45	0	45	56	0	7.5	421	390	4	0.0000
LAUREL 30%	30	209	90	299	261	112	7.5	2,795	2,595	29	0.0000
GAITHESBURG	0	280	0	280	349	0	7.5	2,618	2,430	27	0.0000
BERWYN HEIGHTS	0	30	0	30	37	0	4.5	168	156	2	0.0000
RIVERDALE	0	65	0	65	81	0	4.5	365	338	4	0.0000
METRO RAIL LOTS											
ADDISON ROAD 40%	40	791	527	1318	986	657	7.5	12,322	11,437	129	0.0001
ARCHIVES	0	12	0	12	15	0	4.5	67	62	1	0.0000
ARLING	0	10	0	10	12	0	4.5	56	52	1	0.0000
BALLSTON	0	1175	0	1175	1465	0	4.5	6,591	6,118	69	0.0001
BENN.RD	0	520	0	520	648	0	4.5	2,917	2,707	31	0.0000
BETH	0	395	0	395	492	0	4.5	2,216	2,057	23	0.0000
BRADD RD	0	10	0	10	12	0	4.5	56	52	1	0.0000
BROOKLAND	0	27	0	27	34	0	4.5	151	141	2	0.0000
CHEVERLY	0	557	0	557	694	0	4.5	3,124	2,900	33	0.0000
CLARENDON	0	554	0	554	691	0	4.5	3,108	2,884	33	0.0000
CLEVELAND PK	0	366	0	366	456	0	4.5	2,053	1,906	22	0.0000
COURT HOUSE	0	256	0	256	319	0	4.5	1,436	1,333	15	0.0000
CRYSTAL CITY	0	347	0	347	433	0	4.5	1,946	1,807	20	0.0000
DEANWOOD	0	194	0	194	242	0	4.5	1,088	1,010	11	0.0000
DUN LORING 10%	10	1220	136	1355	1520	169	4.5	7,601	7,055	80	0.0001
DUPONT CIRCLE	0	165	0	165	206	0	4.5	926	859	10	0.0000
EASTERN MKT	0	178	0	178	222	0	4.5	998	927	10	0.0000
EAST FALLS CH	0	442	0	442	551	0	4.5	2,479	2,301	26	0.0000
EIS	0	352	0	352	439	0	4.5	1,974	1,833	21	0.0000
FARRAGUT NORTH	0	102	0	102	127	0	4.5	572	531	6	0.0000
FARRAGUT WEST	0	221	0	221	275	0	4.5	1,240	1,151	13	0.0000
FEDERAL CENTER	0	75	0	75	93	0	4.5	421	390	4	0.0000
FEDERAL TRI	0	54	0	54	67	0	4.5	303	281	3	0.0000
FOGGY	0	102	0	102	127	0	4.5	572	531	6	0.0000
FORT TROTTEEN	0	445	0	445	555	0	4.5	2,496	2,317	26	0.0000
FRH.HEIGHTS	0	679	0	679	846	0	4.5	3,809	3,535	40	0.0000
GALLERY PLACE	0	124	0	124	155	0	4.5	696	646	7	0.0000
GROSVENOR	0	716	0	716	892	0	4.5	4,016	3,728	42	0.0000
HUNT NORTH 40%	40	1873	1249	3122	2335	1557	7.5	29,187	27,091	306	0.0003
JUD SQUARE	0	110	0	110	137	0	4.5	617	573	6	0.0000
KING ST	0	30	0	30	37	0	4.5	168	156	2	0.0000

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	OUTSIDE MSA (%)	INSIDE MSA	OUTSIDE MSA	Total	INSIDE	OUTSIDE					
					Growth Rate	Growth Rate					
					1.25	1.25		Wk Days = 61		0.0113	
								Seasonal adj = 0.9282			
COMMUTER RAIL LOTS											
LANDOVER 25%	25	1410	470	1880	1758	586	7.5	17,576	16,314	184	0.0002
L'ENFANT PLAZA	0	296	0	296	369	0	4.5	1,660	1,541	17	0.0000
MCPHERSON SQ	0	52	0	52	65	0	4.5	292	271	3	0.0000
MEDICAL CENTER	0	14	0	14	17	0	4.5	79	73	1	0.0000
METRO CENTER	0	177	0	177	221	0	4.5	993	922	10	0.0000
MINNES	0	353	0	353	440	0	4.5	1,980	1,838	21	0.0000
NAT AIR	0	87	0	87	108	0	4.5	488	453	5	0.0000
NEW CARROL 50%	50	1049	1049	2097	1307	1307	7.5	19,604	18,197	206	0.0002
PRNTAGON	0	561	0	561	699	0	4.5	3,147	2,921	33	0.0000
PENTAGON CITY	0	381	0	381	475	0	4.5	2,137	1,984	22	0.0000
POTOMAC AVE	0	533	0	533	664	0	4.5	2,990	2,775	31	0.0000
ROCKVILLE	0	667	0	667	831	0	4.5	3,741	3,473	39	0.0000
ROSSLYN	0	356	0	356	444	0	4.5	1,997	1,854	21	0.0000
SHADY GROVE 10%	10	3903	434	4337	4865	541	7.5	40,545	37,634	425	0.0005
SILVER SPRING	0	44	0	44	55	0	4.5	247	229	3	0.0000
SMITH MALL	0	120	0	120	150	0	4.5	673	625	7	0.0000
STADIUM ARM	0	976	0	976	1217	0	4.5	5,475	5,082	57	0.0001
TAKOMA PK	0	146	0	146	182	0	4.5	819	760	9	0.0000
TENLEYTON	0	17	0	17	21	0	4.5	95	89	1	0.0000
TWINBROOK	0	1136	0	1136	1416	0	4.5	6,372	5,915	67	0.0001
UNION STAT	0	378	0	378	471	0	4.5	2,120	1,968	22	0.0000
VAN NESS	0	343	0	343	428	0	4.5	1,924	1,786	20	0.0000
VIENNA 25%	25	2798	933	3731	3488	1163	7.5	34,880	32,376	366	0.0004
VA SQUARE	0	642	0	642	800	0	4.5	3,601	3,343	38	0.0000
WEST FALLS CHURCH	0	2183	0	2183	2721	0	4.5	12,245	11,366	128	0.0001
WHITE FLINT	0	1633	0	1633	2036	0	4.5	9,160	8,502	96	0.0001
WOODLEY	0	68	0	68	85	0	4.5	381	354	4	0.0000
RHODE ISLAND 30%	30	266	114	380	332	142	7.5	3,553	3,297	37	0.0000
BUS & CAR POOL LOTS											
CARTER BARRON	0	798	0	798	995	0	4.5	4,476	4,155	47	0.0001
PG PLAZA	0	47	0	47	59	0	4.5	264	245	3	0.0000
PENN MAR SHOPP.	0	100	0	100	125	0	4.5	561	521	6	0.0000
CAP PLAZA	0	100	0	100	125	0	4.5	561	521	6	0.0000
EASTOVER	0	100	0	100	125	0	4.5	561	521	6	0.0000
FOUR MILE RUN	0	28	0	28	35	0	4.5	157	146	2	0.0000
SPRINGFIELD MALL	0	580	0	580	723	0	4.5	3,253	3,020	34	0.0000
SPRINGFIELD METH CH	0	48	0	48	60	0	4.5	269	250	3	0.0000
FRED ARMORY	0	33	0	33	41	0	7.5	309	286	3	0.0000
MYERSVILLE	0	65	0	65	81	0	7.5	608	564	6	0.0000
ROSEMONT	0	45	0	45	56	0	7.5	421	390	4	0.0000
URBANA	0	193	0	193	241	0	7.5	1,804	1,675	19	0.0000
JEFFERSON	0	40	0	40	50	0	7.5	374	347	4	0.0000
NORBECK RD	0	248	0	248	309	0	7.5	2,318	2,152	24	0.0000
MONTROSE RD	0	650	0	650	810	0	7.5	6,077	5,640	64	0.0001
BRIGG CHENNY 50%	50	215	215	430	268	268	7.5	4,020	3,731	42	0.0000
COMUS ROAD	0	30	0	30	37	0	7.5	280	260	3	0.0000
LAKEFOREST MALL	0	300	0	300	374	0	7.5	2,805	2,603	29	0.0000
BURTONSVILLE	0	500	0	500	623	0	7.5	4,674	4,339	49	0.0001
FORCEY MEM.	0	200	0	200	249	0	7.5	1,870	1,735	20	0.0000

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					Growth Rate	Growth Rate					
					1.25	1.25		Wk Days = 61		0.0113	
COMMUTER RAIL LOTS								Seasonal adj = 0.9282			
TECH ROAD	0	155	0	155	193	0	7.5	1,449	1,345	15	0.0000
BELTWAY	0	265	0	265	330	0	7.5	2,477	2,300	26	0.0000
LAUREL VAN DUSEN	0	62	0	62	77	0	7.5	580	538	6	0.0000
ACCOKEEK	0	450	0	450	561	0	7.5	4,207	3,905	44	0.0000
ABC DRIVE IN	0	100	0	100	125	0	7.5	935	868	10	0.0000
BOWIE 20%	20	526	131	657	655	164	7.5	6,142	5,701	64	0.0001
CLINTON 50%	50	212	212	424	264	264	7.5	3,964	3,679	42	0.0000
OXON HILL 20%	20	519	130	649	647	162	7.5	6,067	5,632	64	0.0001
EQUESTRIAN CENTER 50%	50	150	150	300	187	187	7.5	2,805	2,603	29	0.0000
BOWIE MARKET PLACE	0	50	0	50	62	0	7.5	467	434	5	0.0000
FT. WASHINGTON	0	412	0	412	514	0	7.5	3,852	3,575	40	0.0000
MONTPELIER REC PARK	0	70	0	70	87	0	7.5	654	607	7	0.0000
RESTON	0	1547	0	1547	1928	0	7.5	14,462	13,424	152	0.0002
GREENBRIAR	0	55	0	55	69	0	7.5	514	477	5	0.0000
FAIR OAKS	0	150	0	150	187	0	7.5	1,402	1,302	15	0.0000
ROLLING VALLEY	0	628	0	628	783	0	7.5	5,871	5,449	62	0.0001
SPRINGFIELD PLAZA	0	230	0	230	287	0	7.5	2,150	1,996	23	0.0000
FAIRLANES BOWL	0	35	0	35	44	0	7.5	327	304	3	0.0000
NOTTOWAY PARK	0	14	0	14	17	0	7.5	131	121	1	0.0000
HORNER RD	0	2397	0	2397	2988	0	7.5	22,409	20,800	235	0.0003
LAKE RIDGE	0	555	0	555	692	0	7.5	5,189	4,816	54	0.0001
MINNIEVILLE RD 40%	40	336	224	560	419	279	7.5	5,235	4,859	55	0.0001
GORDON BLVD	0	156	0	156	194	0	7.5	1,458	1,354	15	0.0000
HILLEDALE	0	248	0	248	309	0	7.5	2,318	2,152	24	0.0000
POTOMAC MILLS	0	946	0	946	1179	0	7.5	8,844	8,209	93	0.0001
List of new lots to be added in Conformity Document list											
PARK-AND-RIDE LOTS - MARYLAND											
PARK-AND-RIDE LOTS - MARYLAND											
CHARLES COUNTY											
301 Park & Ride	25	287	96	383	358	119	7.5	3,581	3,323	38	0.0000
Charles County Government B	25	26	9	35	33	11	7.5	327	304	3	0.0000
Food Lion Shopping Center	25	38	13	50	47	16	7.5	467	434	5	0.0000
La Plata Armory	25	15	5	20	19	6	7.5	187	174	2	0.0000
Laurel Springs Regional Park	25	38	13	50	47	16	7.5	467	434	5	0.0000
Life Wesleyan Church	25	38	13	50	47	16	7.5	467	434	5	0.0000
Mattawoman-Beantown Rd	25	435	145	580	542	181	7.5	5,422	5,033	57	0.0001
Smallwood Village	25	75	25	100	93	31	7.5	935	868	10	0.0000
St. Charles Towne	25	263	88	350	327	109	7.5	3,272	3,037	34	0.0000
PARK-AND-RIDE LOTS - MARYLAND											
FREDERICK COUNTY											
Frederick (north)	25	123	41	164	153	51	7.5	1,533	1,423	16	0.0000
Frederick (south)	25	173	58	230	215	72	7.5	2,150	1,996	23	0.0000
Monacacy Marcst	25	600	200	800	748	249	7.5	7,479	6,942	78	0.0001
PARK-AND-RIDE LOTS - MARYLAND											
MONTGOMERY COUNTY											
Colesville	0	190	0	190	237	0	7.5	1,776	1,649	19	0.0000
Damascus	50	0	0	0	0	0	7.5	0	0	0	0.0000
Gaithersburg	50	259	259	517	322	322	7.5	4,833	4,486	51	0.0001
Gaithersburg	50	175	175	350	218	218	7.5	3,272	3,037	34	0.0000
Germantown Town	50	0	0	0	0	0	7.5	0	0	0	0.0000

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					Growth Rate	Growth Rate					
					1.25	1.25		Wk Days = 61	0.0113		
COMMUTER RAIL LOTS								Seasonal adj = 0.9282			
Greencastle	50	75	75	150	93	93	7.5	1,402	1,302	15 0.0000	
Milestone Shopping	50	88	88	175	109	109	7.5	1,636	1,519	17 0.0000	
PARK-AND-RIDE LOTS - MAYLAND											
PRINCE GEORGE'S COUNTY											
Hampton Mall	0	100	0	100	125	0	4.5	561	521	6 0.0000	
Laurel (south)	25	513	171	684	639	213	7.5	6,395	5,935	67 0.0001	
PARK-AND-RIDE LOTS - VIRGINIA					0	0		0	0	0 0.0000	
ARLINGTON COUNTY					0	0		0	0	0 0.0000	
Ballston Public Parking Garag	25	375	125	500	467	156	7.5	4,674	4,339	49 0.0001	
Washington-Lee	50	178	178	356	222	222	7.5	3,328	3,089	35 0.0000	
PARK-AND-RIDE LOTS - VIRGINIA											
FAIRFAX COUNTY											
American Legion	50	50	50	100	62	62	7.5	935	868	10 0.0000	
Canterbury Woods Pk	50	17	17	34	21	21	7.5	318	295	3 0.0000	
Centreville	50	185	185	370	231	231	7.5	3,459	3,211	36 0.0000	
Centreville United Methodist C	50	74	74	147	92	92	7.5	1,374	1,276	14 0.0000	
Fairfax County Government C	50	85	85	170	106	106	7.5	1,589	1,475	17 0.0000	
Greenbriar Park	50	28	28	55	34	34	7.5	514	477	5 0.0000	
Herdon-Monroe	50	873	873	1,745	1088	1088	7.5	16,314	15,142	171 0.0002	
Michael's	50	100	100	200	125	125	7.5	1,870	1,735	20 0.0000	
Parkwood Baptist	50	9	9	18	11	11	7.5	168	166	2 0.0000	
South Run District Pk	50	170	170	340	212	212	7.5	3,179	2,950	33 0.0000	
St Paul Chung Catholic Church	50	50	50	100	62	62	7.5	935	868	10 0.0000	
Stringfellow Rd	50	181	181	361	225	225	7.5	3,375	3,133	35 0.0000	
Sully Station	50	70	70	140	87	87	7.5	1,309	1,215	14 0.0000	
Sydenstricker Rd	50	84	84	167	104	104	7.5	1,561	1,449	16 0.0000	
Wakefield Chapel Pk	50	25	25	50	31	31	7.5	467	434	5 0.0000	
PARK-AND-RIDE LOTS - VIRGINIA											
LOUDOUN COUNTY											
Ashburn Farm	50	10	10	20	12	12	7.5	187	174	2 0.0000	
Ashburn Village	50	20	20	40	25	25	7.5	374	347	4 0.0000	
Cascades	50	28	28	55	34	34	7.5	514	477	5 0.0000	
Dulles North Transit	50	375	375	750	467	467	7.5	7,012	6,508	74 0.0001	
Hamilton	50	25	25	50	31	31	7.5	467	434	5 0.0000	
Innovation Avenue	50	38	38	75	47	47	7.5	701	651	7 0.0000	
Leesburg	50	25	25	50	31	31	7.5	467	434	5 0.0000	
Leesburg Kohls	50	600	600	1200	748	748	7.5	11,218	10,413	118 0.0001	
Purcellville	50	18	18	35	22	22	7.5	327	304	3 0.0000	
Sterling Park SC	50	23	23	45	28	28	7.5	421	390	4 0.0000	
Sterling Shaw Rd	50	24	24	48	30	30	7.5	449	417	5 0.0000	
PARK-AND-RIDE LOTS - VIRGINIA											
PRINCE WILLIAM COUNTY											
Brittany	50	48	48	95	59	59	7.5	888	824	9 0.0000	
Dale City	50	294	294	587	366	366	7.5	5,488	5,094	58 0.0001	
Harbor Drive	50	100	100	200	125	125	7.5	1,870	1,735	20 0.0000	
Lindendale	50	108	108	216	135	135	7.5	2,019	1,874	21 0.0000	
Montclair	50	25	25	50	31	31	7.5	467	434	5 0.0000	
PRTC Transit Center	50	93	93	185	115	115	7.5	1,730	1,605	18 0.0000	
Tackett's Mill	50	85	85	169	105	105	7.5	1,580	1,466	17 0.0000	
Triangle	50	15	15	29	18	18	7.5	271	252	3 0.0000	
I-95 / Rt 123	50	282	282	563	351	351	7.5	5,263	4,885	55 0.0001	
US 1 / VA 234	50	137	137	274	171	171	7.5	2,562	2,378	27 0.0000	
MARC TRAIN COMMUTER LOTS					0	0		0			
College Park	25	431	144	574	537	179	7.5	5,366	4,981	56 0.0001	

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2012 CLRP / FY2013-2018 TIP AIR QUALITY CONFORMITY

LOCATION	2002				2017		AVERAGE TRIP LENGTH	2017 VMT	ADJ WINTER VMT	RUNNING Rate (gm/mile)	TOTAL (tons/day)
	OUTSIDE MSA (%)	INSIDE MSA	OUTSIDE MSA	Total	INSIDE	OUTSIDE					
					Growth Rate	Growth Rate					
					1.25	1.25		Wk Days = 61	0.0113		
COMMUTER RAIL LOTS								Seasonal adj = 0.9282			
Frederick	0	0	0	0	0	0	7.5	0	0	0	0.0000
Greenbelt	60	1346	2018	3364	1677	2516	7.5	31,449	29,191	330	0.0004
Harpers Ferry		98	0	98	122	0	7.5	916	850	10	0.0000
Muirkirk	60	260	390	650	324	486	7.5	6,077	5,640	64	0.0001
Seabrook	0	264	0	264	329	0	4.5	1,481	1,375	16	0.0000
Silver Spring	0	0	0	0	0	0	4.5	0	0	0	0.0000
Union Station	0	781	0	781	974	0	7.5	7,301	6,777	77	0.0001
VIRGINIA RAILWAY EXPRESS COMMUTER LOTS											
Backlick Road	50	110	110	220	137	137	7.5	2,057	1,909	22	0.0000
Broad Run	50	198	198	396	247	247	7.5	3,702	3,436	39	0.0000
Brooke	50	150	150	300	187	187	7.5	2,805	2,603	29	0.0000
Burke Center	50	275	275	550	343	343	7.5	5,142	4,773	54	0.0001
Franconia/Springfield (operate	50	1900	1900	3800	2368	2368	7.5	35,525	32,974	373	0.0004
Leeland Road	50	326	326	652	406	406	7.5	6,095	5,658	64	0.0001
Lorton	50	100	100	200	125	125	7.5	1,870	1,735	20	0.0000
Manassas	50	187	187	374	233	233	7.5	3,496	3,245	37	0.0000
Manassas Park	50	150	150	300	187	187	7.5	2,805	2,603	29	0.0000
Quantico	50	109	109	217	135	135	7.5	2,029	1,883	21	0.0000
Rippon 50		150	150	300	187	187	7.5	2,805	2,603	29	0.0000
Rolling Road	50	185	185	370	231	231	7.5	3,459	3,211	36	0.0000
Woodbridge	50	294	294	588	366	366	7.5	5,497	5,102	58	0.0001
METRORAIL PARKING LOTS											
Anacostia	25	861	287	1148	1073	358	7.5	10,732	9,962	113	0.0001
Branch Avenue	50	1611	1611	3222	2008	2008	7.5	30,122	27,959	316	0.0003
Capitol Heights	50	194	194	387	241	241	7.5	3,618	3,358	38	0.0000
College Park	25	465	155	620	580	193	7.5	5,796	5,380	61	0.0001
Congress Heights	0	66	0	66	82	0	4.5	370	344	4	0.0000
Deanwood	0	194	0	194	242	0	7.5	1,814	1,683	19	0.0000
East Falls Church	50	221	221	442	275	275	7.5	4,132	3,835	43	0.0000
Forest Glen	50	329	329	658	410	410	7.5	6,151	5,710	65	0.0001
Franconia - Springfield	50	1987	1987	3973	2476	2476	4.5	22,285	20,685	234	0.0003
Glenmont	50	925	925	1850	1153	1153	4.5	10,377	9,632	109	0.0001
Greenbelt	50	1783	1783	3565	2222	2222	7.5	33,328	30,935	350	0.0004
Naylor Road	50	216	216	431	269	269	7.5	4,029	3,740	42	0.0000
Prince George's Plaza	25	927	309	1236	1156	385	7.5	11,555	10,725	121	0.0001
Southern Avenue	50	1090	1090	2180	1359	1359	4.5	12,228	11,350	128	0.0001
Suitland	50	1033	1033	2065	1287	1287	4.5	11,583	10,751	121	0.0001
Van Dorn Street	50	204	204	407	254	254	4.5	2,283	2,119	24	0.0000
West Hyattsville	25	453	151	604	565	188	7.5	5,647	5,241	59	0.0001
Wheaton	25	759	253	1012	946	315	7.5	9,461	8,782	99	0.0001
				108,749				891,253		9,348.0458	0.0103
									Seasonal Total (tons/season) :		0.6286

Bold figures: New numbers taken from P & R directory
 Figures in bracket: Carry forward figures from conformity doc.

Park lot Growth Rate	
Transit trips 2017	1361783
transit trips 2002	1092489
Annual growth rate	0.016433
Growth factor (2002-2017)	1.246496

APPENDIX H

Bus Emissions Estimation

MEMORANDUM

June 11, 2012

To: Files

From: Anant Choudhary, MWCOG/DTP

Subject: Transit and School Bus Emissions

This memo discusses the development of ozone season NO_x and VOC, winter CO, and PM_{2.5} precursor NO_x and direct PM_{2.5} emissions estimates for transit and school buses for various analysis years. Also included is a listing of service from regional transit providers.

Approach

Data Collection

In order to obtain current regional transit data, staff developed a questionnaire for transit providers and school bus operators in the region. The technique of emailing and then conducting follow-up phone calls produced a high response rate. Staff used response data to complete a table showing daily VMT with average operating speed (Table 1).

Fleet Age Distribution

Using 2011 VIN data, staff developed regional school bus and transit bus age distributions (shown in Tables 2A and 2B respectively) and diesel sales fractions which were used in the Mobile6.2 model to develop emissions rates. A detailed description of this process can be found in the memo from Yu Gao dated May 24, 2012 in appendix D. Emissions for buses that are not diesel (e.g. CNG buses) are accounted for using TERM analysis.

VMT Estimates

The annual VMT from the survey was divided by the number of service days for each provider to calculate a daily VMT. To account for bus VMT for providers in the region for which no survey data was received, staff estimated VMT by using data from providers with similar service type. In many cases where VMT data was not provided, total number of buses was provided, making the estimate process more accurate. In Table 1 estimated VMT values are shown in italics. Daily school bus VMT represents a school day in May.

The resulting daily 2001 VMT from the survey, including estimation values from providers for which no data was received is 277,000 for transit buses (compared to 180,000 in the FY03-08 TIP), and 480,000 for school buses (Table 5A).

For estimating bus VMT for the future, staff used the HDBS (school bus) and HDBT (transit bus) values in the "National Average Vehicle Miles Traveled Fractions by Vehicle Class" table from EPA's *Technical Guidance on the use of Mobile 6 for Emission Inventory Preparation* to modify current data. This is shown as Table 3.

Emission Estimates

Using the survey data staff created transit bus and school bus emission tables. In the tables the daily VMT was adjusted from the base (survey) year (2001) using the method described above. Factors for PM_{2.5} pollutants were prepared for each of 3 seasons (Season 1: January-April, Season 2: May-September, Season 3: October-December) Using the appropriate emission factor based on the average operating speed for each provider, staff calculated each pollutant's emissions for

transit buses and school buses for each analysis year. Table 4 shows a one-year sample of bus emission factors. Tables 5A-5D show a one-year sample of transit and school bus emissions for each of the pollutants analyzed.

TABLE 1
2001 Bus
Operating Statistics

Service	Contact	Average Speed	Daily VMT
	Name		
Metrobus	Lora Byala	10	123,299
Fairfax Connector	Andy Szakos	15	18,036
PRTC Omnalink	Tim Roseboom	15	4038
Alexandria DASH	Cindy Modell	13	3,454
City of Fairfax CUE	Alex Verzosa	15	1,483
Arlington Co. ART	Jim Maslanka	16	794
Loudoun Transportation Assc.	Mark McGregor	15	4,532
Mont. Co. Ride-On	Phil McLaughlin	14.5	35,616
PG Co. The Bus	Frank Bell	15-20	9,723
Fredrick Co. TransiT	Sherry Burford	11.78	3,082
Corridor Transit (CTC)	Joe Gann	17.8	1,265
Crystal City Express		15	96
Skyline Crystal Express		15	144
PRTC OmniRide	Tim Roseboom	26.62	5,700
Loudoun Commuter Service	Sharon Affinito	25	1,866
MTA Commuter buses	Larry Dougherty	45	10,453
Lee Coaches	Joe Ann Foweler	45	70
Brooks Transit		45	750
Quicks Commuter Service	Robbie Quick	45	1,320
Eyre buses (under MTA)	Teri Lee Cosker	45	(under MTA)
Dillon buses (under MTA)	Ron Dillon Sr.	45	(under MTA)
Keller buses (under MTA)	Charles D. Keller	45	(under MTA)
National Coach Works	Jeff Bodnar	45	1,650
Greyhound / Trailways (VA)	David Cohen	55	5000
Peter Pan / Trailways	Christ Crean	55	2000
Carolina Trailways		55	500
Capitol Trailways	Ms.Gale Ellsworth	55	500
Martz / Grey Line sightseeing	Robert Lynch	55-68	5000
New World	Arnold Brown	20	299
Washington Flyer Coach Service	Nicholas Marshall	65	1,370
ShuttleUM (U. of MD)	Cynthia Trombly	11.1	1,864

TABLE 1
2001 Bus
Operating Statistics

Service	Contact	Average Speed	Daily VMT
	Name		
Georgetown U. shuttle	Diann Nock Smith	15	100
American U. shuttle	Thomas Leathers	20-25	83
George Washington U shuttle	John Kane	15	100
CIA Shuttle		15	200
EPA Shuttle		15	200
USDOT Shuttle	Franklin Weaver	15	200
Gallaudet Shuttle	Darnese Nicholson	15	100
Tourmobile	Richard Lewis	15	(Gas powered)
Old Town "trolley" buses		20	300
Metro Access - paratransit	Avon Mackel	15	5000
Fairfax Co. Fastran- paratransit	Steve Yaffe	14.53	11,427
Alexandria DOT-paratransit	Lakeshia Lewis	15	924
Arlington STAR-paratransit	Eric Smith	15	3,245
City of Ffx, City Wheels-paratransit.	Alex Verzosa	15	100
City of Falls Ch. Fare Wheels-paratransit	Letha Flippin	15	100
Loudoun Transit (LCTA)-paratransit	Mark McGregor	15	100
P.G. Co. paratransit	Frank Bell	15	3000
All buses excluding school			277,361
School buses - DC	Alfred Winder	14	10000
School buses- Mont. Co.	Qiyu C. Wu	30	27,000
School buses- P.G. Co.	Mark Dreszer	30	28,896
School buses- Fred. Co.	Richard Wandres	30	10,747
School buses- Alexandria	Velma Tsongos	25	3520
School buses- Arl. Co.	Daniel Roseboro	25	4800
School buses- Ffx. Co.	Tim Parker	30-35	24,112
School buses- Loud. Co.	J Michael Lunsfurg	30	11,906
School buses- P.W. Co.	Eward Bishop	30	8,144

Total for School Buses

129,126

Table 2A
2011 Regional Age Fractions
Vehicle Type=HDBS
Number of Decoded Vins=6246

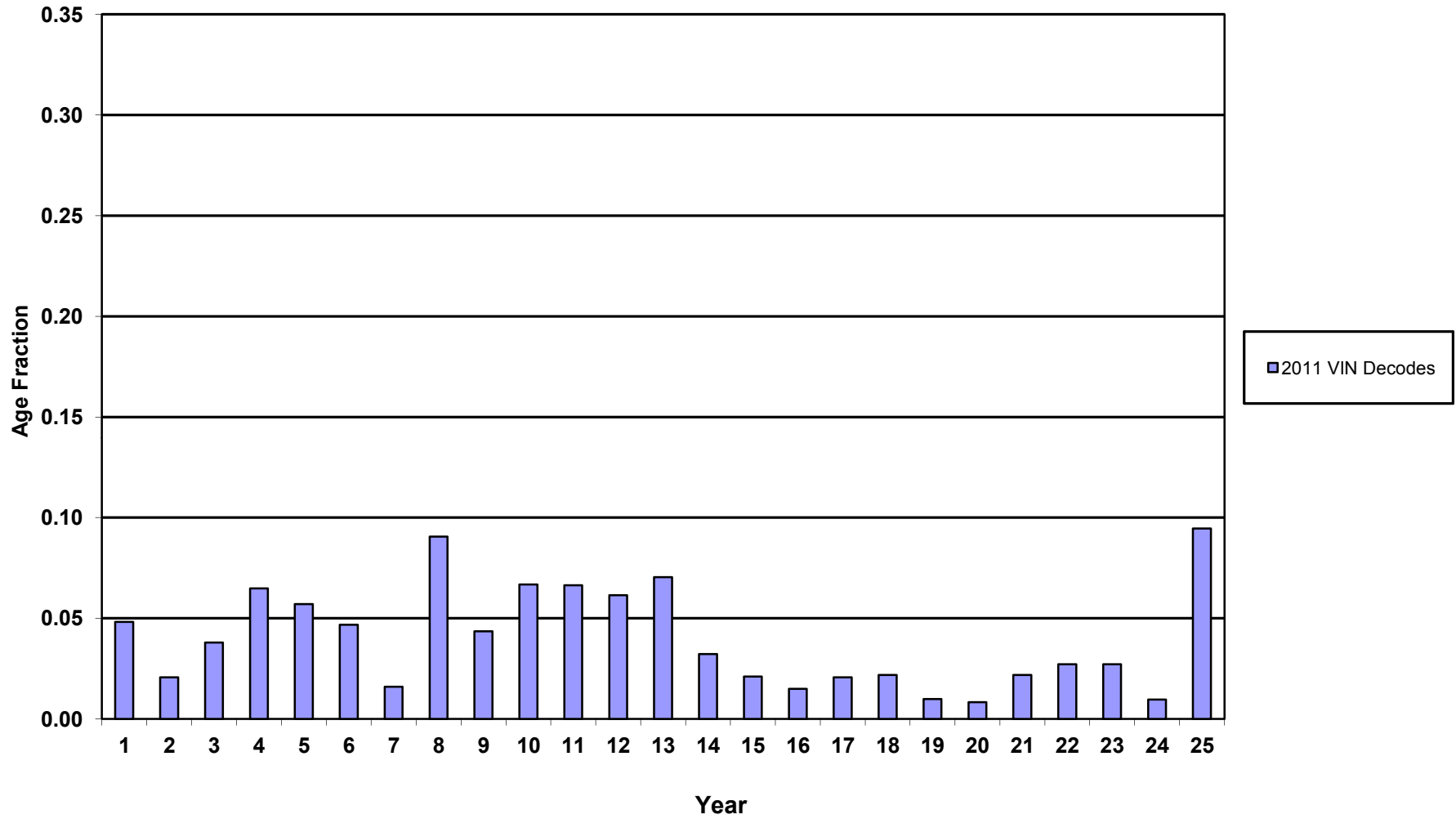


Table 2B
2011 Regional Age Fractions
Vehicle Type=HDBT
Number of Decoded Vins=7972

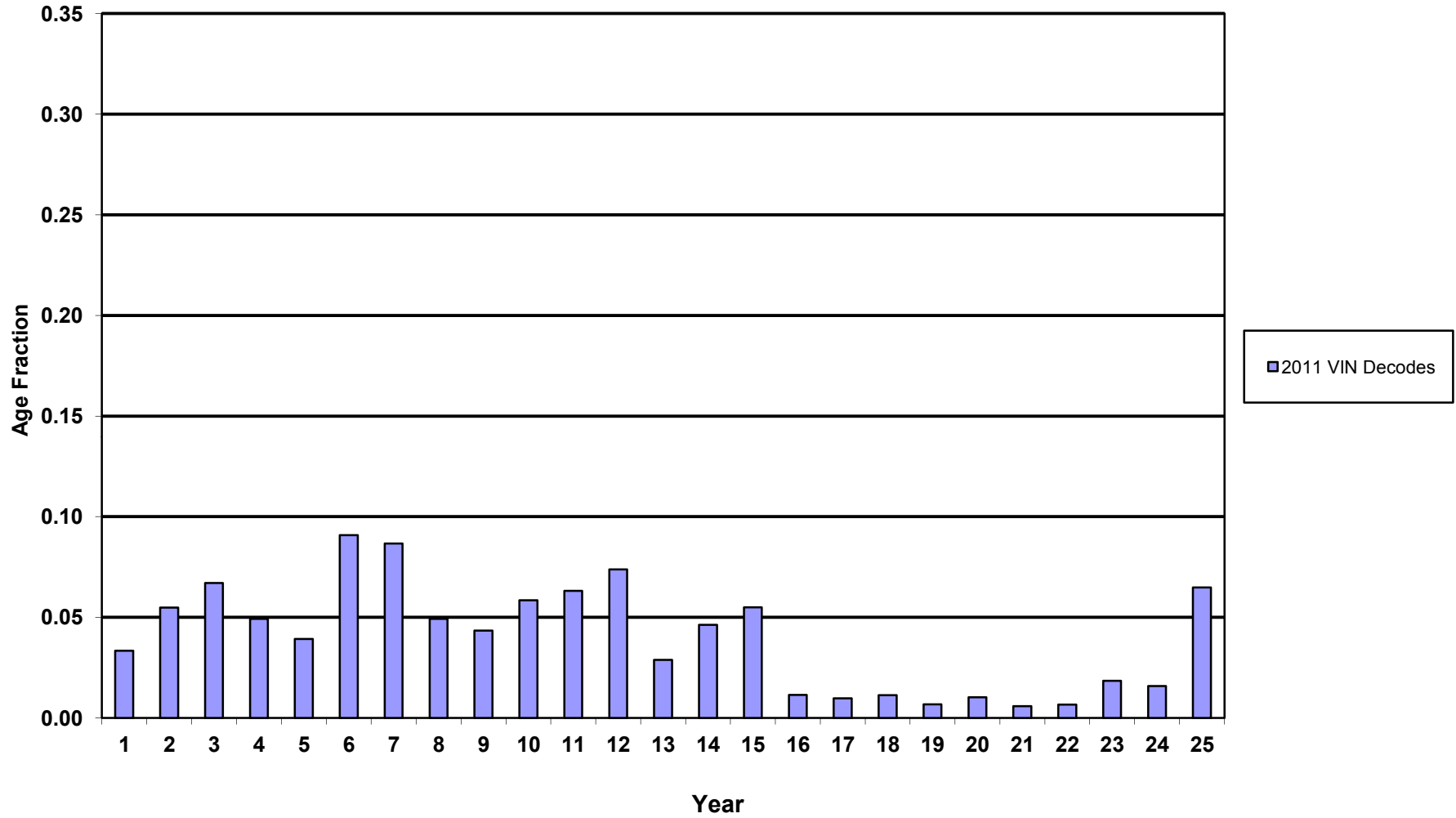


TABLE 3

National Average Vehicle Miles Traveled Fractions By Vehicle Class
Using MOBILE 6

Calendar Year	LDV 1	LDT1 2	LDT2 3	LDT3 4	LDT4 5	HDV2B 6	HDV3 7	HDV4 8	HDV5 9	HDV6 10	HDV7 11	HDV8A 12	HDV8B 13	HOBS 14	HDBT 15	MC 16
1990	0.6284	0.0420	0.1397	0.0566	0.0260	0.0332	0.0034	0.0020	0.0016	0.0064	0.0079	0.0094	0.0337	0.0017	0.0008	0.0073
1991	0.6212	0.0435	0.1448	0.0560	0.0267	0.0336	0.0035	0.0021	0.0017	0.0066	0.0081	0.0095	0.0341	0.0017	0.0008	0.0072
1992	0.6109	0.0456	0.1518	0.0565	0.0255	0.0342	0.0036	0.0022	0.0017	0.0068	0.0083	0.0097	0.0346	0.0017	0.0008	0.0071
1993	0.6009	0.0477	0.1587	0.0551	0.0253	0.0348	0.0036	0.0023	0.0018	0.0070	0.0085	0.0098	0.0350	0.0017	0.0008	0.0070
1994	0.5910	0.0497	0.1655	0.0546	0.0251	0.0354	0.0037	0.0024	0.0018	0.0072	0.0087	0.0100	0.0355	0.0018	0.0008	0.0070
1995	0.5816	0.0517	0.1721	0.0542	0.0249	0.0358	0.0037	0.0025	0.0019	0.0073	0.0089	0.0101	0.0360	0.0018	0.0009	0.0069
1996	0.5721	0.0534	0.1776	0.0547	0.0252	0.0362	0.0037	0.0025	0.0019	0.0075	0.0090	0.0102	0.0364	0.0018	0.0009	0.0068
1997	0.5639	0.0557	0.1833	0.0571	0.0263	0.0367	0.0037	0.0026	0.0020	0.0077	0.0092	0.0104	0.0370	0.0018	0.0009	0.0067
1998	0.5390	0.0590	0.1963	0.0605	0.0278	0.0372	0.0038	0.0027	0.0021	0.0079	0.0095	0.0106	0.0375	0.0019	0.0009	0.0065
1999	0.5153	0.0622	0.2071	0.0638	0.0294	0.0377	0.0038	0.0028	0.0021	0.0081	0.0097	0.0107	0.0382	0.0019	0.0009	0.0064
2000	0.4953	0.0655	0.2179	0.0672	0.0309	0.0380	0.0038	0.0029	0.0022	0.0082	0.0098	0.0108	0.0386	0.0019	0.0009	0.0062
2001	0.4785	0.0683	0.2273	0.0700	0.0322	0.0381	0.0038	0.0029	0.0022	0.0083	0.0099	0.0109	0.0388	0.0019	0.0009	0.0061
2002	0.4636	0.0706	0.2349	0.0724	0.0333	0.0382	0.0038	0.0030	0.0022	0.0084	0.0100	0.0109	0.0390	0.0019	0.0009	0.0060
2003	0.4507	0.0729	0.2425	0.0748	0.0344	0.0384	0.0038	0.0030	0.0023	0.0085	0.0100	0.0110	0.0392	0.0019	0.0009	0.0059
2004	0.4385	0.0752	0.2503	0.0771	0.0355	0.0386	0.0038	0.0030	0.0023	0.0085	0.0101	0.0111	0.0394	0.0019	0.0009	0.0058
2005	0.4231	0.0774	0.2577	0.0794	0.0365	0.0387	0.0038	0.0031	0.0023	0.0086	0.0102	0.0111	0.0395	0.0020	0.0009	0.0057
2006	0.4098	0.0797	0.2654	0.0818	0.0376	0.0387	0.0038	0.0031	0.0023	0.0086	0.0102	0.0111	0.0396	0.0020	0.0009	0.0056
2007	0.3952	0.0822	0.2735	0.0843	0.0388	0.0387	0.0038	0.0031	0.0023	0.0086	0.0102	0.0111	0.0396	0.0020	0.0009	0.0055
2008	0.3807	0.0846	0.2817	0.0868	0.0399	0.0388	0.0038	0.0031	0.0024	0.0087	0.0102	0.0111	0.0397	0.0020	0.0009	0.0054
2009	0.3669	0.0869	0.2894	0.0892	0.0410	0.0389	0.0038	0.0032	0.0024	0.0087	0.0103	0.0112	0.0398	0.0020	0.0010	0.0054
2010	0.3544	0.0891	0.2965	0.0914	0.0420	0.0390	0.0038	0.0032	0.0024	0.0087	0.0103	0.0112	0.0398	0.0020	0.0010	0.0054
2011	0.3428	0.0911	0.3031	0.0934	0.0430	0.0390	0.0038	0.0032	0.0024	0.0087	0.0103	0.0112	0.0398	0.0020	0.0010	0.0053
2012	0.3325	0.0928	0.3090	0.0952	0.0438	0.0390	0.0038	0.0032	0.0024	0.0087	0.0103	0.0112	0.0399	0.0020	0.0010	0.0053
2013	0.3231	0.0944	0.3143	0.0969	0.0445	0.0390	0.0038	0.0032	0.0024	0.0087	0.0103	0.0112	0.0399	0.0020	0.0010	0.0053
2014	0.3145	0.0959	0.3191	0.0983	0.0452	0.0391	0.0038	0.0032	0.0024	0.0088	0.0103	0.0112	0.0400	0.0020	0.0010	0.0052
2015	0.3071	0.0971	0.3233	0.0996	0.0458	0.0391	0.0038	0.0032	0.0024	0.0088	0.0104	0.0112	0.0400	0.0020	0.0010	0.0052
2016	0.3004	0.0982	0.3270	0.1008	0.0463	0.0392	0.0039	0.0033	0.0024	0.0088	0.0104	0.0112	0.0400	0.0020	0.0010	0.0052
2017	0.2944	0.0992	0.3304	0.1018	0.0468	0.0392	0.0039	0.0033	0.0024	0.0088	0.0104	0.0113	0.0401	0.0020	0.0010	0.0051
2018	0.2892	0.1001	0.3332	0.1027	0.0472	0.0393	0.0039	0.0033	0.0024	0.0088	0.0104	0.0113	0.0402	0.0020	0.0010	0.0051
2019	0.2846	0.1008	0.3357	0.1035	0.0476	0.0394	0.0039	0.0033	0.0025	0.0088	0.0104	0.0113	0.0403	0.0020	0.0010	0.0051
2020 - 2050	0.2793	0.1017	0.3384	0.1043	0.0480	0.0396	0.0039	0.0033	0.0025	0.0089	0.0105	0.0114	0.0405	0.0020	0.0010	0.0051

Source: Technical Guidance on the use of Mobile 6 for Emission Inventory Preparation, U.S. EPA, January 2002.

Table 4
MWCOG Regional 2017 Ozone Season Bus Emission Factors

Road Type	Speed (mph)	Diesel Bus Emission Factors (grams/mile)			
		School Bus		Transit Bus	
		VOC	NOx	VOC	NOx
Arterial/Freeway	1.00	1.323	9.301	0.803	8.614
Arterial/Freeway	2.00	1.323	9.301	0.803	8.614
Arterial/Freeway	3.00	1.269	8.985	0.770	8.317
Arterial/Freeway	4.00	1.202	8.591	0.730	7.947
Arterial/Freeway	5.00	1.162	8.354	0.705	7.725
Arterial/Freeway	6.00	1.079	7.876	0.655	7.277
Arterial/Freeway	7.00	1.019	7.534	0.619	6.957
Arterial/Freeway	8.00	0.975	7.278	0.592	6.717
Arterial/Freeway	9.00	0.940	7.079	0.571	6.530
Arterial/Freeway	10.0	0.912	6.920	0.554	6.381
Arterial/Freeway	11.0	0.863	6.653	0.524	6.130
Arterial/Freeway	12.0	0.822	6.430	0.499	5.921
Arterial/Freeway	13.0	0.788	6.241	0.478	5.744
Arterial/Freeway	14.0	0.758	6.080	0.460	5.593
Arterial/Freeway	15.0	0.732	5.940	0.444	5.462
Arterial/Freeway	16.0	0.699	5.776	0.424	5.308
Arterial/Freeway	17.0	0.670	5.631	0.407	5.172
Arterial/Freeway	18.0	0.645	5.502	0.391	5.052
Arterial/Freeway	19.0	0.621	5.387	0.377	4.944
Arterial/Freeway	20.0	0.601	5.283	0.365	4.847
Arterial/Freeway	21.0	0.578	5.185	0.351	4.754
Arterial/Freeway	22.0	0.557	5.096	0.338	4.671
Arterial/Freeway	23.0	0.537	5.015	0.326	4.594
Arterial/Freeway	24.0	0.520	4.940	0.316	4.524
Arterial/Freeway	25.0	0.504	4.871	0.306	4.460
Arterial/Freeway	26.0	0.487	4.821	0.296	4.413
Arterial/Freeway	27.0	0.472	4.775	0.286	4.370
Arterial/Freeway	28.0	0.458	4.732	0.278	4.330
Arterial/Freeway	29.0	0.444	4.692	0.270	4.292
Arterial/Freeway	30.0	0.432	4.655	0.262	4.257
Arterial/Freeway	31.0	0.420	4.645	0.255	4.248
Arterial/Freeway	32.0	0.408	4.636	0.248	4.240
Arterial/Freeway	33.0	0.398	4.628	0.241	4.232
Arterial/Freeway	34.0	0.388	4.619	0.235	4.224
Arterial/Freeway	35.0	0.378	4.612	0.230	4.217
Arterial/Freeway	36.0	0.370	4.639	0.224	4.243
Arterial/Freeway	37.0	0.361	4.666	0.219	4.267
Arterial/Freeway	38.0	0.354	4.690	0.215	4.290
Arterial/Freeway	39.0	0.346	4.714	0.210	4.312
Arterial/Freeway	40.0	0.339	4.736	0.206	4.333
Arterial/Freeway	41.0	0.333	4.803	0.202	4.396
Arterial/Freeway	42.0	0.327	4.867	0.198	4.456
Arterial/Freeway	43.0	0.321	4.928	0.195	4.513
Arterial/Freeway	44.0	0.316	4.986	0.192	4.568
Arterial/Freeway	45.0	0.310	5.042	0.188	4.620

Table 4
MWCOG Regional 2017 Ozone Season Bus Emission Factors

Road Type	Speed (mph)	Diesel Bus Emission Factors (grams/mile)			
		School Bus		Transit Bus	
		VOC	NOx	VOC	NOx
Arterial/Freeway	46.0	0.306	5.155	0.186	4.726
Arterial/Freeway	47.0	0.302	5.264	0.183	4.828
Arterial/Freeway	48.0	0.298	5.368	0.181	4.925
Arterial/Freeway	49.0	0.294	5.467	0.179	5.019
Arterial/Freeway	50.0	0.291	5.563	0.176	5.109
Arterial/Freeway	51.0	0.288	5.736	0.175	5.270
Arterial/Freeway	52.0	0.285	5.901	0.173	5.426
Arterial/Freeway	53.0	0.283	6.061	0.172	5.575
Arterial/Freeway	54.0	0.280	6.214	0.170	5.719
Arterial/Freeway	55.0	0.278	6.362	0.169	5.858
Arterial/Freeway	56.0	0.277	6.614	0.168	6.094
Arterial/Freeway	57.0	0.276	6.858	0.167	6.323
Arterial/Freeway	58.0	0.274	7.093	0.167	6.543
Arterial/Freeway	59.0	0.273	7.320	0.166	6.756
Arterial/Freeway	60.0	0.272	7.539	0.165	6.962
Arterial/Freeway	61.0	0.272	7.906	0.165	7.305
Arterial/Freeway	62.0	0.272	8.260	0.165	7.637
Arterial/Freeway	63.0	0.272	8.603	0.165	7.959
Arterial/Freeway	64.0	0.272	8.935	0.165	8.271
Arterial/Freeway	65.0	0.272	9.258	0.165	8.573
Fwy Ramp	34.6	0.382	4.673	0.232	4.381
Local	12.9	0.801	6.306	0.486	5.805

TABLE 5A
FOR 2012 CLRP AND THE FY 2013-2018 TIP AIR QUALITY CONFORMITY ANALYSIS
2017 SCHOOL BUS CHARACTERISTICS / EMISSIONS
(8-HOUR OZONE AREA*)

Jurisdiction	2002 Daily VMT	2017 Daily VMT	Average Speed	VOC			NOx		
				factors (g/mile)	emissions (grams)	emissions (tons)	factors (g/mile)	emissions (grams)	emissions (tons)
District of Columbia	12,696	13,331	14	0.758	10104.7464	0.0111	6.08	81051.2640	0.0893
Montgomery 100,000		105,000	30	0.432	45360.0000	0.0500	4.655	488775.0000	0.5388
Prince George's	129,967	136,465	30	0.432	58953.0312	0.0650	4.655	635246.2043	0.7002
Frederick	25,589	26,868	30	0.432	11607.1704	0.0128	4.655	125072.6348	0.1379
Charles	20,801	21,841	30	0.432	9435.3336	0.0104	4.655	101670.0878	0.1121
Calvert	25,653	26,936	30	0.432	11636.2008	0.0128	4.655	125385.4508	0.1382
Alexandria	2,028	2,129	25	0.504	1073.2176	0.0012	4.871	10372.3074	0.0114
Arlington	2,600	2,730	25	0.504	1375.9200	0.0015	4.871	13297.8300	0.0147
Fairfax	96,524	101,350	30	0.432	43783.2864	0.0483	4.655	471785.1810	0.5201
Prince William	36,114	37,920	30	0.432	16381.3104	0.0181	4.655	176516.2035	0.1946
Loudoun	28,347	29,764	30	0.432	12858.1992	0.0142	4.655	138553.0493	0.1527
TOTAL	480,319				222568.4160	0.2453		2367725.2127	2.6100

* MSA excluding Stafford County

TABLE 5B
FOR 2012 CLRP AND THE FY 2013-2018 TIP AIR QUALITY CONFORMITY ANALYSIS
2017 TRANSIT BUS CHARACTERISTICS / EMISSIONS
(8-HOUR OZONE AREA*)

06/05/2012

Jurisdiction	Operator	2002 Daily VMT	2017 VMT w/o Stafford	Average Speed	VOC			NOx		
					factors (g/mile)	emissions (grams)	emissions (tons)	factors (g/mile)	emissions (grams)	emissions (tons)
District of Columbia	Metrobus	50,552	56,113	10	0.5540	31086.4469	0.0343	6.3810	358055.2663	0.3947
District of Columbia	MTA Commuter buses	2,510	2,786	45	0.1880	523.7868	0.0006	4.6200	12871.7820	0.0142
District of Columbia	Peter Pan / Trailways	200	222	55	0.1690	37.5180	0.0000	5.8580	1300.4760	0.0014
District of Columbia	Carolina Trailways	20	22	55	0.1690	3.7518	0.0000	5.8580	130.0476	0.0001
District of Columbia	Capitol Trailways	100	111	55	0.1690	18.7590	0.0000	5.8580	650.2380	0.0007
District of Columbia	Martz / Grey Line sightseeing	500	555	55	0.1690	93.7950	0.0001	5.8580	3251.1900	0.0036
District of Columbia	New World Tours	100	111	20	0.3650	40.5150	0.0000	4.8470	538.0170	0.0006
District of Columbia	Georgetown U. shuttle	100	111	15	0.4440	49.2840	0.0001	5.4620	606.2820	0.0007
District of Columbia	American U. shuttle	83	92	20	0.3650	33.6275	0.0000	4.8470	446.5541	0.0005
District of Columbia	George Washington U shuttle	100	111	15	0.4440	49.2840	0.0001	5.4620	606.2820	0.0007
District of Columbia	EPA Shuttle	200	222	15	0.4440	98.5680	0.0001	5.4620	1212.5640	0.0013
District of Columbia	USDOT Shuttle	200	222	15	0.4440	98.5680	0.0001	5.4620	1212.5640	0.0013
District of Columbia	Gallaudet Shuttle	100	111	15	0.4440	49.2840	0.0001	5.4620	606.2820	0.0007
District of Columbia	Metro Access - paratransit	5,000	5,550	15	0.4440	2464.2000	0.0027	5.4620	30314.1000	0.0334
Maryland	Corridor Transit (CTC)	1,265	1,404	18	0.3910	549.0227	0.0006	5.0520	7093.7658	0.0078
Maryland	Peter Pan / Trailways	1,800	1,998	55	0.1690	337.6620	0.0004	5.8580	11704.2840	0.0129
Maryland	Carolina Trailways	225	250	55	0.1690	42.2078	0.0000	5.8580	1463.0355	0.0016
Maryland	Capitol Trailways	400	444	55	0.1690	75.0360	0.0001	5.8580	2600.9520	0.0029
Maryland	Martz / Grey Line sightseeing	2,250	2,498	55	0.1690	422.0775	0.0005	5.8580	14630.3550	0.0161
Maryland	New World Tours	100	111	20	0.3650	40.5150	0.0000	4.8470	538.0170	0.0006
Montgomery	Metrobus	17,262	19,161	15	0.4440	8507.4041	0.0094	5.4620	104656.3988	0.1154
Montgomery	MTA Commuter buses	2,180	2,420	45	0.1880	454.9224	0.0005	4.6200	11179.4760	0.0123
Montgomery	Mont. Co. Ride-On	35,616	39,534	15	0.4440	17552.9894	0.0193	5.4620	215933.3971	0.2380
Prince George's	Metrobus	24,660	27,373	15	0.4440	12153.4344	0.0134	5.4620	149509.1412	0.1648

TABLE 5B
FOR 2012 CLRP AND THE FY 2013-2018 TIP AIR QUALITY CONFORMITY ANALYSIS
2017 TRANSIT BUS CHARACTERISTICS / EMISSIONS
(8-HOUR OZONE AREA*)

Jurisdiction	Operator	2002 Daily VMT	2017 VMT w/o Stafford	Average Speed	VOC			NOx		
					factors (g/mile)	emissions (grams)	emissions (tons)	factors (g/mile)	emissions (grams)	emissions (tons)
Prince George's	MTA Commuter buses	6,840	7,592	45	0.1880	1427.3712	0.0016	4.6200	35076.8880	0.0387
Prince George's	PG Co. The Bus	9,723	10,793	15	0.4440	4791.8833	0.0053	5.4620	58948.7989	0.0650
Prince George's	ShuttleUM (U. of MD)	1,864	2,069	11	0.5240	1084.1770	0.0012	6.1300	12683.2152	0.0140
Prince George's	P.G. Co. paratransit	3,000	3,330	15	0.4440	1478.5200	0.0016	5.4620	18188.4600	0.0200
Frederick	MTA Commuter buses	370	411	45	0.1880	77.2116	0.0001	4.6200	1897.4340	0.0021
Frederick	Fredrick Co. TransiT	3,082	3,421	12	0.4990	1707.0890	0.0019	5.9210	20255.8594	0.0223
Charles	MTA Commuter buses	2,290	2,542	45	0.1880	477.8772	0.0005	4.6200	11743.5780	0.0129
Calvert	MTA Commuter buses	1,080	1,199	45	0.1880	225.3744	0.0002	4.6200	5538.4560	0.0061
Virginia	Metrobus	30,825	34,216	15	0.4440	15191.7930	0.0167	5.4620	186886.4265	0.2060
Virginia	Lee Coaches	70	54	45	0.1880	10.2253	0.0000	4.6200	251.2818	0.0003
Virginia	Brooks Transit	750	583	45	0.1880	109.5570	0.0001	4.6200	2692.3050	0.0030
Virginia	Quicks Commuter Service	1,320	1,026	45	0.1880	192.8203	0.0002	4.6200	4738.4568	0.0052
Virginia	National Coach Works	1,650	1,282	45	0.1880	241.0254	0.0003	4.6200	5923.0710	0.0065
Virginia	Greyhound / Trailways (VA)	5,000	3,885	55	0.1690	656.5650	0.0007	5.8580	22758.3300	0.0251
Virginia	Carolina Trailways	225	175	55	0.1690	29.5454	0.0000	5.8580	1024.1249	0.0011
Virginia	Martz / Grey Line sightseeing	2,250	1,748	55	0.1690	295.4543	0.0003	5.8580	10241.2485	0.0113
Virginia	New World Tours	100	78	20	0.3650	28.3605	0.0000	4.8470	376.6119	0.0004
Alexandria	Alexandria DASH	3,454	3,834	13	0.4780	1832.6233	0.0020	5.7440	22022.1514	0.0243
Alexandria	Old Town "trolley" buses	300	333	20	0.3650	121.5450	0.0001	4.8470	1614.0510	0.0018
Alexandria	Alexandria DOT-paratransit	924	1,026	15	0.4440	455.3842	0.0005	5.4620	5602.0457	0.0062
Arlington	Arlington Co. ART	794	881	16	0.4240	373.6882	0.0004	5.3080	4678.1527	0.0052
Arlington	Crystal City Express	96	107	15	0.4440	47.3126	0.0001	5.4620	582.0307	0.0006
Arlington	Skyline Crystal Express	144	160	15	0.4440	70.9690	0.0001	5.4620	873.0461	0.0010
Arlington	Arlington STAR-paratransit	3,245	3,602	15	0.4440	1599.2658	0.0018	5.4620	19673.8509	0.0217

TABLE 5B
FOR 2012 CLRP AND THE FY 2013-2018 TIP AIR QUALITY CONFORMITY ANALYSIS
2017 TRANSIT BUS CHARACTERISTICS / EMISSIONS
(8-HOUR OZONE AREA*)

Jurisdiction	Operator	2002 Daily VMT	2017 VMT w/o Stafford	Average Speed	VOC			NOx		
					factors (g/mile)	emissions (grams)	emissions (tons)	factors (g/mile)	emissions (grams)	emissions (tons)
Fairfax	Fairfax Connector	18,036	20,020	15	0.4440	8888.8622	0.0098	5.4620	109349.0215	0.1205
Fairfax	Washington Flyer Coach Service	1,370	1,521	65	0.1650	250.9155	0.0003	8.5730	13036.9611	0.0144
Fairfax	Fairfax Co. Fastran- paratransit	11,427	12,684	15	0.4440	5631.6827	0.0062	5.4620	69279.8441	0.0764
Fairfax	City of Fairfax CUE	1,483	1,646	15	0.4440	730.8817	0.0008	5.4620	8991.1621	0.0099
Fairfax	City of Ffx, City Wheels- paratransit.	100	111	15	0.4440	49.2840	0.0001	5.4620	606.2820	0.0007
Fairfax	City of Falls Ch. Fare Wheels- paratransit	100	111	15	0.4440	49.2840	0.0001	5.4620	606.2820	0.0007
Prince William	PRTC Omnilink	4,038	4,482	15	0.4440	1990.0879	0.0022	5.4620	24481.6672	0.0270
Prince William	PRTC OmniRide	5,700	6,327	27	0.2860	1809.5220	0.0020	4.3700	27648.9900	0.0305
Loudoun	Loudoun Transportation Assc.	4,532	5,031	15	0.4440	2233.5509	0.0025	5.4620	27476.7002	0.0303
Loudoun	Loudoun Commuter Service	1,866	2,071	25	0.3060	633.8056	0.0007	4.4600	9237.8196	0.0102
Loudoun	Loudoun Transit (LCTA)- paratransit	100	111	15	0.4440	49.2840	0.0001	5.4620	606.2820	0.0007
TOTAL		273,671	299,990			129625.4576	0.1429		1676701.3536	1.8482

* MSA excluding Stafford County

Notes:

- 1) Used WMATA percent VMT by jurisdiction from FY03-08 AQC, Appendix I (page I-3)
- 2) Assumed average freeway speed of 55 mph where higher than 55 speed limit is available, and 45 mph where speed limit is 55

TABLE 5C
FOR 2012 CLRP AND THE FY 2013-2018 TIP AIR QUALITY CONFORMITY ANALYSIS
2017 SCHOOL BUS CHARACTERISTICS / EMISSIONS
(PM_{2.5})

Jurisdiction	2001 Annual VMT	2002 Daily VMT	2017 Daily VMT	Average Speed	WINTER (January - April)					
					PM _{2.5}			precursor NOx		
					factors (g/mile)	emissions (grams)	emissions (tons)	factors (g/mile)	emissions (grams)	emissions (tons)
District of Columbia	2,800,000	12,670	13,303	14	0.1690	2248.2353	0.0025	6.3540	84528.3258	0.0932
Montgomery	19,000,000	85,973	90,271	30	0.1690	15255.8824	0.0168	4.8650	439170.8145	0.4841
Prince George's	21,000,000	95,023	99,774	30	0.1690	16861.7647	0.0186	4.8650	485399.3213	0.5351
Frederick	6,400,000	28,959	30,407	30	0.1690	5138.8235	0.0057	4.8650	147931.2217	0.1631
Charles	3,950,000	17,873	18,767	30	0.1690	3171.6176	0.0035	4.8650	91301.3009	0.1006
Alexandria	446,264	2,019	2,120	25	0.1690	358.3237	0.0004	5.0910	10794.2377	0.0119
Arlington	571,986	2,588	2,718	25	0.1690	459.2711	0.0005	5.0910	13835.2025	0.0153
Fairfax	18,200,000	82,353	86,471	30	0.1690	14613.5294	0.0161	4.8650	420679.4118	0.4637
Prince William	6,900,000	31,222	32,783	30	0.1690	5540.2941	0.0061	4.8650	159488.3484	0.1758
Loudoun	6,100,000	27,602	28,982	30	0.1690	4897.9412	0.0054	4.8650	140996.9457	0.1554
TOTAL	85,368,250	386,282	405,596			68545.6831	0.0756		1994125.1303	2.1981

Jurisdiction	2001 Annual VMT	2002 Daily VMT	2017 Daily VMT	Average Speed	SUMMER (May - September)					
					PM _{2.5}			precursor NOx		
					factors (g/mile)	emissions (grams)	emissions (tons)	factors (g/mile)	emissions (grams)	emissions (tons)
District of Columbia	2,800,000	12,670	13,303	14	0.1621	2156.4434	0.0024	6.0800	80883.2579	0.0892
Montgomery	19,000,000	85,973	90,271	30	0.1621	14633.0090	0.0161	4.6550	420213.8009	0.4632
Prince George's	21,000,000	95,023	99,774	30	0.1621	16173.3258	0.0178	4.6550	464446.8326	0.5120
Frederick	6,400,000	28,959	30,407	30	0.1621	4929.0136	0.0054	4.6550	141545.7014	0.1560
Charles	3,950,000	17,873	18,767	30	0.1621	3042.1256	0.0034	4.6550	87360.2376	0.0963
Alexandria	446,264	2,019	2,120	25	0.1621	343.6940	0.0004	4.8710	10327.7807	0.0114
Arlington	571,986	2,588	2,718	25	0.1621	440.5198	0.0005	4.8710	13237.3348	0.0146
Fairfax	18,200,000	82,353	86,471	30	0.1621	14016.8824	0.0155	4.6550	402520.5882	0.4437
Prince William	6,900,000	31,222	32,783	30	0.1621	5314.0928	0.0059	4.6550	152603.9593	0.1682
Loudoun	6,100,000	27,602	28,982	30	0.1621	4697.9661	0.0052	4.6550	134910.7466	0.1487
TOTAL	85,368,250	386,282	405,596			65747.0724	0.0725		1908050.2400	2.1033

Jurisdiction	2001 Annual VMT	2002 Daily VMT	2017 Daily VMT	Average Speed	FALL (October - December)					
					PM _{2.5}			precursor NOx		
					factors (g/mile)	emissions (grams)	emissions (tons)	factors (g/mile)	emissions (grams)	emissions (tons)
District of Columbia	2,800,000	12,670	13,303	14	0.0866	1152.0543	0.0013	5.8280	77530.8597	0.0855
Montgomery	19,000,000	85,973	90,271	30	0.0866	7817.5113	0.0086	4.4640	402971.9457	0.4442
Prince George's	21,000,000	95,023	99,774	30	0.0866	8640.4072	0.0095	4.4640	445390.0452	0.4910
Frederick	6,400,000	28,959	30,407	30	0.0866	2633.2670	0.0029	4.4640	135737.9186	0.1496
Charles	3,950,000	17,873	18,767	30	0.0866	1625.2195	0.0018	4.4640	83775.7466	0.0923
Alexandria	446,264	2,019	2,120	25	0.0866	183.6144	0.0002	4.6710	9903.7290	0.0109
Arlington	571,986	2,588	2,718	25	0.0866	235.3425	0.0003	4.6710	12693.8187	0.0140
Fairfax	18,200,000	82,353	86,471	30	0.0866	7488.3529	0.0083	4.4640	386004.7059	0.4255
Prince William	6,900,000	31,222	32,783	30	0.0866	2838.9910	0.0031	4.4640	146342.4434	0.1613
Loudoun	6,100,000	27,602	28,982	30	0.0866	2509.8326	0.0028	4.4640	129375.2036	0.1426
TOTAL	85,368,250	386,282	405,596			35124.5926	0.0387		1829726.4165	2.0169

Table 5D
2012 CLRP AND THE FY 2013-18 TIP AIR QUALITY CONFORMITY ANALYSIS
2017 SCHOOL BUS CHARACTERISTICS / EMISSIONS
Wintertime CO

Jurisdiction	Daily VMT	Average Speed	Wintertime CO		
			factors (g/mile)	emissions (grams)	emissions (tons)
District of Columbia *	13,331	14	2.3000	30661	0.0338
Montgomery *	105,000	30	1.0760	112980	0.1245
Prince George's *	136,465	30	1.0760	146837	0.1619
Frederick	26,868	30	1.0760	28910	0.0319
Charles	21,841	30	1.0760	23501	0.0259
Calvert	26,936	30	1.0760	28983	0.0319
Alexandria *	2,129	25	1.3010	2770	0.0031
Arlington *	2,730	25	1.3010	3552	0.0039
Fairfax	101,350	30	1.0760	109053	0.1202
Prince William	37,920	30	1.0760	40802	0.0450
Loudoun	29,764	30	1.0760	32026	0.0353
Stafford	10,091	30	1.0760	10857	0.0120
TOTAL	514,425			570932.0484	0.6293
TOTAL FOR CO NON-ATTAINMENT AREA*:					0.3272

* The non-attainment area for wintertime CO includes: DC, ARL, ALEX, MONT, PG

APPENDIX I

TERMs Implementation Reports

From: Hodgson, Fred R [mailto:Randy.Hodgson@VDOT.Virginia.gov]
Sent: Wednesday, September 29, 2010 1:44 PM
To: Anant Choudhary
Cc: Srikanth, Kanathur N.; Allahdoust, Fatemeh; McDonald, Robert, P.E.
Subject: TERMS Status Report

Sir: Attached is the updated TERMS Status Report for the NoVa District. The changes are shown in purple. Please let me know if you have any questions. Thank you. Randy Hodgson

<<TERM Status Report FY11 TIP.xls>>

Randy Hodgson, AICP

Regional Transportation Planning Engineer

Virginia Department of Transportation

Ph. 703-383-2216

Fx. 703-383-2230

Randy.Hodgson@VDOT.Virginia.gov

**Transportation Emission Reduction Measures - Status Report For Post Year 2000 TERMS
FROM VDOT FOR FY 2010- 2015 TIP AND 2009 CLRP Changes made during this review are in bold font.**

TERM No.	CREDIT TAKEN	TIP CREDITED	AGENCY	PROJECT	IMPLEMENTATION STATUS				STATUS REPORT	Project Category *
					FULL	SCALED BACK	UNDER-WAY	REMOVED		
56	X	1995-00	VDOT	Cherry Hill VRE Access				X	Complete construction -July 2008 Developer defaulted on project, so no timetable to providing access.	C (TCM)
69	X	1995-00	ARLG / FFX CO.	Bicycle Trails and Facilities (Arlington & Fairfax Co. - 7 locations)	X		X		Projects 4 & 6 incomplete due to incomplete funding. Project #6 projected to be complete in 2008, and Project # 4 projected to be completed in mid 2009. Project 3 revised to sidewalks & wide-curb lanes only, not bike lanes. All others complete. #4 - Phase I of project under construction. Phase 2 in final design. Possible construction in 2010 depending upon funding. #6 - Project design complete but underfunded. Negotiating with National Park Service which could result in reduced costs.	C
70	X	1995-00	VDOT		X		X		Burke station completed 2001. Phase 2 completed in 2007, improved geometry on Rte. 630 between Brooke High School and Rte. 629. Phase 3 replacing Rte. 630 bridge over railroad crossing expected to be completed after Six Year Plan Only change is possibility of securing ARRA Stimulus funds to advance bridge replacement to a Jan.2010 Ad. Otherwise, bridge replacement set for July 2012.	C
82	X	1996-01	ARLG / FFX	Old Dominion Drive Bike Trail			X		Arlington completing design review and permitting. Construction anticipated in early 2008. Contract to construct Phase I of bike lanes& sidewalks awarded. Construction in summer '09. Construction of Phase 2 expected to occur in 2010.	C
117	X	1998-03	ARLG	Arlington County Four Mile Run Bike Trail	X				Construction commenced September, 2007, to be completed March, 2009. Project now complete.	C
127	X	1999-04	VDOT	VA 234 Bike Trail	X				Completion by 2008. PWC reports that trail should be finished by 12/30/09.	C
136	X	2000-05	VDOT	Columbia Pike Trail - Now named Cross County Trail	X				Construction of Phase 2 (Cross County Trail - Accotink Stream Valley-Lake Accotink dam to Hunter Village Drive) includes three bridge crossings and an underpass of Old Keen mill Rd began in spring 2008 and scheduled to be complete summer 2009. Project completed in March 2009.	C
137	X	2000-05	VDOT	Lee Highway trail	X				Project complete & open to public.	C
177	X	2003-08	VDRPT	Interactive Rideshare & Kiosk Initiative	X				Phase I of project to be complete in January, 2008 and then Phase II will start. DRPT states that Phase I of TDM software System complete.Phase II mostly complete, & Phase III began in July.	C
190	X	2003-08	VDOT	Employer Vanpool Program (Bridge Bucks)	X				Pilot program started in 2004. Funded till 2008. Program completed with opening of bridge.	C
191	X	2003-08	LOU CO.	Town of Leesburg P&R Lot (150 spaces)	X				Project scheduled for completion in late 2008 or early 2009. County reports that P&R lot under construction, planned completion,Jan 2010.	C
221	X	1995-00	REGION	M-24 Sped Limit Adherence	X				This program has been underway since about 2000 and is anticipated to continue at least thru 2013.	TR

1. These TERM projects were a one-time, limited term (two years) infusion of funding from NoVa to support extra activities.

2010 UPDATES :

#69 - Bicycle Trail Facilities. #4 - Phase 1 was completed. Phase 2 is in final design and \$250,000 short on construction.

Want to build in 2011 provided that County bond money becomes available. Revenue Sharing request was denied. #6

Project is still in design and need of supplemental funding. Hope for construction in late 2011 or 2012 providing get grant.

#82 Old Dominion Drive. Phase 1 completed in 2010. Phase 2 in final design and right of way acquisition. Funds for construction largely secured and construction expected in 2011.

#70 - Fredericksburg District Projects . Fredericksburg officials indicate that the Rte. 630 Bridge over Railroad is now under Construction.

-----Original Message-----

From: Lyn Erickson [mailto:lerickson@mdot.state.md.us]
Sent: Monday, September 13, 2010 12:05 PM
To: Reena Mathews; Daivamani Sivasailam; Vaughn Lewis; Eric Beckett
Cc: Howard Simons
Subject: FW: TERMS Tracking - review, comment and add by Sept 10

Hi Siva-

Here are our comments on the TERMS tracking sheet. If you have trouble reading them, please let us know and we'll get you something cleaner. I haven't gotten anything yet from MTA so there still is the potential for more comments, but there won't be many. Thanks!

Lyn

Lyn Erickson, AICP
Maryland Department of Transportation
7201 Corporate Center Drive
Hanover, MD 21076
W410-865-1279
C703-587-7935

From: Reena Mathews
Sent: Friday, September 10, 2010 3:35 PM
To: Lyn Erickson
Cc: Howard Simons; Vaughn Lewis; Eric Beckett; Roy Gothie; L'Kiesha Markley
Subject: RE: TERMS Tracking - review, comment and add by Sept 10

Hi Lyn,

Let me know if you have a problem reading our comments.

Reena Mathews

410-545-5668

TERM TRACKING SHEET
TRANSPORTATION EMISSION REDUCTION MEASURES
Part A - Daily Ozone Precursor Emissions

* Project Category: TR - Traffic Stream, C - Commute, H - Heavy Duty Vehicles (Engine Technology), SP - Specific Vehicle Type, TCM - Transportation Control Measures

NOs	CREDIT TAKEN	TIP CREDITED	AGENCY	PROJECT	IMPLEMENTATION STATUS				ORIGINAL COMPLETION DATE	ACTUAL COMPLETION DATE	2010		2020		2030		Project Category*
					FULL	SCALED-BACK	UNDER-WAY	REM			VOC	NOX	VOC	NOX	VOC	NOX	
219	X	2003-06	VDOT	MV-123 Employer Outreach for Public Sector Employees ²	X				2005	2003	0.0147	0.0210	0.0086	0.0090	0.0077	0.0076	C
220	X	2003-08	REGION	Signal System Optimization	X				2005	2005	0.4155	0.1468	0.2445	0.0463	0.2204	0.0323	TR
221		2007-12	MDOT	Two P & R Lots in Frederick County (70 spaces)	X				2007	2008	0.0006	0.0011	0.0003	0.0005	0.0003	0.0004	C
											2.325	4.497	1.406	1.088	1.270	0.756	

222 MDOT Park and Ride Lot US 340 (Frederick CO) expanded 66-99 spaces X 2009 2007

223 MDOT " US 340 Mt Zion Rd new lot 37 spaces X 2008 2008

224 MDOT Park/Ride I-70 @ 355 (Frederick County) new lot 100 spaces X 2010 2010

225 MDOT US 340 Mt Zion Rd Expansion 39 new spaces 2011 2011

226 MDOT I-270 @ MD80 North Lot Expansion 164 New Spaces 2009 2009

227 MDOT Signal Systems Review 2010 ongoing

DOTS reviews the signal systems every 3 years (400 signals a year) They estimate that they save between 600,000-1M hours of delay, hundreds of thousands of fuel saved, and reduced emissions. The Annual User Cost Savings is between \$20 and \$30 million. This is statewide.

228 MDOT Takoma Langley Transit Center 2012 2012
↳ Check with MTA

MEMORANDUM

DATE: June 15, 2012
TO: FY 2013 – 2018 TIP Air Quality Conformity File
FROM: Nicholas W. Ramfos, Director
 Alternative Commute Programs
SUBJECT: Implementation of Commuter Connections Regional Transportation Emission Reduction Measures (TERMs)

The Commuter Connections regional TERM projects programmed and implemented for the FY95, FY96, FY97 and FY98 Transportation Improvement Programs (TIP) for the Washington metropolitan region for the purpose of reducing Nitrogen Oxides and Volatile Organic Compound emissions and achieving air quality conformity for the TIP include Employer Outreach, Guaranteed Ride Home, Telework Resource Center, Integrated Rideshare programs and the Mass Marketing TERM (M-101a) adopted in the FY 97-02 TIP and advanced for implementation in the FY 98-03 TIP. In addition to the above pollutants the programs reduce PM 2.5, and Pre-cursor NOx which the region needs to mitigate.

Impact results for each of these TERMS were produced through a vigorous evaluation methodology implemented by COG/TPB staff and several consulting firms.

An analysis report was completed in 2011 and the emissions benefit in 2011 is as shown below:

TERM Number	TERM Name	VOC (T/day)	NOx (T/day)	PM 2.5 Annual Tons	Precursor NOx Annual Tons
M-92*	Telework Resource Center	0.062	0.099	0.8	27.0
M-47C	Guaranteed Ride Home	0.042	0.076	0.7	22.2
M-47C	Employer Outreach	0.108	0.177	1.4	48.5
M-70B	Employer Outreach – Bicycling	0.001	0.001	0.0	0.1
M-47**	Integrated Rideshare	0.010	0.020	0.2	5.3
M-101A	Mass Marketing	0.021	0.031	0.2	8.4

*The District of Columbia does not participate on the Telework Resource Center

**The District of Columbia and Virginia discontinued the kiosk portion of the Integrated Rideshare TERM

Jane Posey

-----Original Message-----

From: Kristin M. Haldeman [mailto:khaldeman@wmata.com]
Sent: Monday, September 25, 2006 9:32 AM
To: Daivamani Sivasailam
Cc: Nat Bottigheimer; Tomika Hughey; Thomas Harrington; Wendy Jia
Subject: WMATA projects on the TERM Tracking Sheet

Two projects that WMATA had underway on the TERM Tracking sheet have been fully implemented. They are:

Item 143: Ultra Low Sulfur Diesel Fuel with CRT filters * completed installation, June 2006

Item 197: 250 CNG buses * completed purchase and in service, June 2006.

With this status report all the WMATA projects have been fully implemented.

Kristin Haldeman
Office of Business Planning & Project Development
Washington Metropolitan Area Transit Authority
600 Fifth Street, NW
Washington, DC 20001
202-962-1848
202-962-1409 (fax)

From: Casey, Austina (DDOT) [mailto:austina.casey@dc.gov]
Sent: Tuesday, September 28, 2010 10:17 AM
To: Daivamani Sivasailam; Keys, Maurice (DDOT)
Cc: Jane Posey; Anant Choudhary
Subject: RE: TERMS

Hello Siva,

Thanks for sending me the information. Here is the update for the DC projects:

#	Project	Current Status	Updated Status
72	Bicycle Facility	Scaled back	Full
146	Bicycle Lane in D.C. (35 miles)	Underway	Full
225	M-103 Taxicab Replacement (DC)	None	Remove

Currently, I do not have any new projects to add to the list. Maurice and other DDOT Executives have to meet and decide on which ones need to be added to the TERMS tracking. I don't know when that meeting would occur but I will update you as soon as the decision is made.

Please let me know if you have any questions.

Thanks
-Tina

From: Daivamani Sivasailam [mailto:siva@mwcog.org]
Sent: Monday, September 27, 2010 2:41 PM
To: Casey, Austina (DDOT); Keys, Maurice (DDOT)
Cc: Jane Posey; Anant Choudhary
Subject: TERMS

Tina:

Find attached a copy of the tracking sheet with projects 221 through 224. Please send an email to remove project number "225" from the list. You need to report only on projects that are underway which is two or three in DC. Also if you can add new projects that have already been funded to the list it will be good since we have not added projects since FY 2003 TIP. The reported will be presented to the TPB Tech this Friday and the full report will be released for public comment next Thursday. We need comments by Wednesday so we can incorporate them for Friday's release.

Siva

Daivamani Sivasailam
Principal Transportation Engineer
MwCOG
202 962-3226
siva@mwcog.org

APPENDIX J

PM_{2.5} Withdrawal Letters

GOVERNMENT OF THE DISTRICT OF COLUMBIA

District Department of the Environment



Office of the Director

February 6, 2012

Shawn M. Garvin
Regional Administrator
U.S. Environmental Protection Agency
Region III (Mail Code: 3RA00)
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Subject: Withdrawal of the District of Columbia Portion of 1997 PM_{2.5} NAAQS
Attainment SIP Revision for the Washington DC-MD-VA Nonattainment Area

Dear Mr. Garvin: *Shawn*

On April 2, 2008, the District of Columbia submitted a revision to its State Implementation Plan (SIP) for attaining the 1997 national ambient air quality standards (NAAQS) for PM_{2.5} and requested U.S. Environmental Protection Agency's (EPA) approval. The revision demonstrated the anticipated improvements to the air quality in the Washington DC-MD-VA Nonattainment Area and the efforts being taken to achieve the 1997 PM_{2.5} NAAQS by 2009. The April 2, 2008, SIP revision for the Washington DC-MD-VA area included (i) the attainment plan, (ii) analysis of reasonably available control measures, (iii) attainment demonstration, (iv) contingency plans for failure to attain the air quality standard, (v) mobile source budgets, and (vi) the base year 2002 air pollutant emissions inventory.

Air quality has significantly improved in the Washington DC-MD-VA area. On January 12, 2009, EPA issued a clean data determination for the area (74 FR 1146). The clean data determination suspended the requirements for the District of Columbia to submit attainment demonstrations and associated reasonably available control measures, reasonable further progress plans, contingency measures, and other SIPs related to attainment of the 1997 PM_{2.5} NAAQS in the area. The purpose of this letter is to withdraw those portions of the April 2, 2008, submittal. Specifically, the District of Columbia hereby withdraws the (i) attainment plan, (ii) analysis of reasonably available control measures, (iii) attainment demonstration, (iv) contingency plans for failure to attain the air quality standard, and (v) mobile source budgets, all of which were submitted on April 2, 2008. To ensure that the District of Columbia has met the requirements of § 172(c)(3) of the Clean Air Act regarding emissions inventory submittals, the District of Columbia is not requesting the withdrawal of the base year 2002 air pollutant emissions inventory, which comprised Chapter 3 and Appendix B of the SIP revision documents submitted on April 2, 2008.

DISTRICT
DEPARTMENT
OF THE
ENVIRONMENT



green forward



1200 First St. NE, 5th Floor, Washington, DC 20002 | tel: 202.535.2600 | web:ddoe.dc.gov

As a related matter, the District of Columbia, in partnership with Virginia, Maryland, and the Metropolitan Washington Air Quality Committee, is developing a redesignation request and a maintenance plan for the Washington DC-MD-VA area with respect to the 1997 PM_{2.5} NAAQS. This request and plan, which will contain mobile vehicle emissions budgets developed using MOVES2010, is expected to be ready for final submittal to EPA in 2012.

Should you have any questions or require additional information, please contact me at (202) 535-2615, or Ms. Cecily Beall, Associate Director for the Air Quality Division, at (202) 535-2626.

Sincerely,

A handwritten signature in black ink, appearing to read 'Christophe A.G. Tulou', with a long horizontal flourish extending to the right.

Christophe A.G. Tulou
Director

cc: Diana Esher, Director, Air Protection Division, EPA Region 3
Cecily Beall, Associate Director, Air Quality Division, DDOE



MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard • Baltimore MD 21230

410-537-3000 • 1-800-633-6101

Martin O'Malley
Governor

Robert M. Summers, Ph.D.
Secretary

Anthony G. Brown
Lieutenant Governor

FEB 29 2012

Mr. Shawn M. Garvin
Regional Administrator
U.S. Environmental Protection Agency, Region III
1650 Arch Street (3RA00)
Philadelphia, PA 19103-2029

Dear Mr. Garvin:

On April 3, 2008, Maryland officially requested EPA approval of the following state implementation plan (SIP) revision:

Maryland State Implementation Plan (SIP) for Fine Particle (PM_{2.5}) Standard and 2002 Base Year Inventory for the Washington DC-MD-VA Nonattainment Area

The plan revision demonstrated the improvements made to the air quality in the Washington DC-MD-VA Nonattainment Area ("the Area") and the efforts taken to achieve the 1997 national ambient air quality standard (NAAQS) for PM_{2.5} by 2009. This SIP revision for the Washington DC-MD-VA area included: (i) the attainment plan; (ii) an analysis of reasonably available control measures; (iii) an attainment demonstration; (iv) contingency plans for failure to attain the air quality standard; (v) mobile source budgets; and (vi) the base year 2002 air pollutant emissions inventory.

Air quality has significantly improved in the Washington DC-MD-VA area. On January 12, 2009 (74 FR 1146), EPA determined that the Area had attained the NAAQS and issued a clean data determination for the Area. This determination suspended the requirements for Maryland to submit attainment demonstrations and associated reasonably available control measures, reasonable further progress plans, contingency measures, and other planning SIPs related to attainment of the NAAQS in the Area. The purpose of this letter is to withdraw these portions of the April 3, 2008 submittal.

Specifically, the State of Maryland hereby withdraws: (i) the attainment plan; (ii) the analysis of reasonably available control measures; (iii) the attainment demonstration; (iv) the contingency plans for failure to attain the air quality standard; and (v) the mobile source budgets, all of which were submitted on April 3, 2008. To ensure that Maryland has met the requirements of Section 172(c)(3) of the Clean Air Act regarding inventory submittals, the State is not requesting the withdrawal of the base year 2002 air pollutant emissions inventory, which comprises Chapter 3 and Appendix B of the original April 3, 2008 SIP submission.

Mr. Shawn M. Garvin
Page 2

On a related matter, Maryland, in cooperation with the District of Columbia, Virginia, and the Metropolitan Washington Council of Governments, is developing a redesignation request and maintenance plan for the Washington DC-MD-VA area with respect to the 1997 PM_{2.5} NAAQS. This request and plan, which will contain mobile vehicle emissions budgets developed using MOVES2010, is expected to be ready for final submittal to EPA in 2012.

If you have any questions regarding these matters or require additional information, please contact Mr. George (Tad) S. Aburn, Jr., Director of the Air and Radiation Management Administration at 410-537-3255, or by email, at gaburn@mde.state.md.us.

Sincerely,



Secretary

cc: Diana Esher, Director, Air Protection Division, EPA Region III
George (Tad) S. Aburn, Jr., Director, Air and Radiation Management Administration



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

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Douglas W. Domenech
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

JAN 23 2012

Ms. Diana Esher, Director
Air Protection Division (3AP00)
U.S. Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Reference: Withdrawal of the
Virginia Portion of 1997 PM_{2.5}
NAAQS Attainment SIP Revision
for the Washington DC-MD-VA
Nonattainment Area

Dear Ms. Esher:

On April 4, 2008, Virginia officially requested approval of a revision to the Commonwealth of Virginia State Implementation Plan (SIP). The revision demonstrated the improvements made to the air quality in the Washington DC-MD-VA Nonattainment Area and the efforts taken to achieve the 1997 national ambient air quality standards (NAAQS) for PM_{2.5} by 2009. This SIP revision for the Washington DC-MD-VA area included (i) the attainment plan, (ii) analysis of reasonably available control measures, (iii) attainment demonstration, (iv) contingency plans for failure to attain the air quality standard, (v) mobile source budgets, and (vi) the base year 2002 air pollutant emissions inventory.

Air quality has significantly improved in the Washington DC-MD-VA area. On January 12, 2009 (74 FR 1146), EPA determined that the area had attained the NAAQS and issued a clean data determination for the area. This determination suspended the requirements for the Commonwealth to submit attainment demonstrations and associated reasonably available control measures, reasonable further progress plans, contingency measures, and other planning SIPs related to attainment of the NAAQS in the area. The purpose of this letter is to withdraw these portions of the April 4, 2008 submittal. Specifically, the Commonwealth hereby withdraws the (i) attainment plan, (ii) analysis of reasonably available control measures, (iii) attainment

Ms. Diana Esher

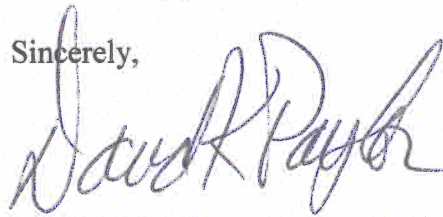
Page 2

demonstration, (iv) contingency plans for failure to attain the air quality standard, and (v) mobile source budgets, all of which were submitted on April 4, 2008. To ensure that Virginia has met the requirements of § 172(c)(3) regarding inventory submittals, the Commonwealth is not requesting the withdrawal of the base year 2002 air pollutant emissions inventory, which comprised Chapter 3 and Appendix B of the April 4, 2008 document

As a related matter, Virginia, in cooperation with the District of Columbia, Maryland, and the Metropolitan Washington Council of Governments, is developing a redesignation request and maintenance plan for the Washington DC-MD-VA area with respect to the 1997 PM_{2.5} NAAQS. This request and plan, which will contain mobile vehicle emissions budgets developed using MOVES2010, is expected to be ready for final submittal to EPA in 2012.

If you have any questions or need additional information, please let us know.

Sincerely,

A handwritten signature in blue ink that reads "David K. Paylor". The signature is written in a cursive style with a large initial "D".

David K. Paylor

DKP\kgs

TEMPLATES\SIP-REG\REG00w
SIP\NONATTN PLANS\2012\NVAPMw-SIP.DOC